CSID 4520

WORKSHEET 1
SUMMARY SCORE SHEET

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

Former Scott Paper Mill
Anacortes
Skagit County Parcels P32910, P32960, P114718, P32866, P118626, P118627, P32948, P118625, P32963, P32913, P32929, P32965, P32916, P32915, P32966, P32967, P32968, P32941, P32964
NW ¼ Section 19, Township 35 North, Range 2 East (former Scott Paper Mill Location), SW ¼ NW ¼ Section 18, Township 35 North, Range 2 East (former location Scott Paper Mill Diffuser to Guemes Channel)
Latitude 48 30 36.1 DMS, Longitude 122 36 25.7 DMS (former mill site)
FSID: 8122259

Owners/PLPs:
Kimberly-Clark Corporation
Environmental Programs
Ms. Cynthia L. Jernigan, Manager
1400 Holcomb Bridge Road
Roswell, GA 30076

Port of Anacortes
Daniel H. Stahl, Executive Director
First and Commercial Avenue
P.O. Box 297
Anacortes, WA 98221
Parcels owned:
P32910, P32960, P114718, P32866

Shared Healthcare Systems, Inc.
Mr. Leo Watterson, CEO/President
1601 R Avenue
Anacortes, WA 98221
Parcels owned:
P118626, P118627

Northwest Educational Service District
District #189
Superintendent Jerry Jenkins
1601 R Avenue
Anacortes, WA 98221
Parcels owned:
P32948

Anacortes Concept LLC
4912 Heather Dr.
Anacortes, WA 98221
Parcels owned:
P118625

MJB Properties
Gary M. Merlino, Managing Partner
9125 – 10th Avenue South
Seattle, WA 98108
Parcels owned:
P32963, P32943, P32913, P32929, P32965,
P32916, P32915, P32966, P32967, P32968, P32941

William L. Snelson, et. al.
c/o Lorren K. Levorsen
2691 Douglas Road
Ferndale, WA 98248
Parcels owned:
P32964

Site Description/History

Current Site Description
The Former Scott Paper Mill site encompasses several parcels of property in Anacortes, Washington. The main site, the former location of the mill operations, is located to the east of "Q" Avenue between 14th and 20th Streets. It is referred to in documents as Parcel 1(Skagit County Parcel P32910), Parcel 2 (Skagit County Parcels P118625, P32948, P118626, P118627,P32964) , and Parcel 3 (Skagit County Parcel P32960), and MJB North (refer to Attachment I for Skagit County Parcel locations). Parcel 1, 2, and 3 comprise the northern portion of the property owned mostly by the Port of Anacortes and Northwest Educational Service District. Parcels 1, 2, and 3 are approximately 15 acres in area. Parcel 3 is in the northeast portion of the site and is currently occupied by a 1 ½ acre waterfront park. Parcel 2

contains a building housing Shared Health Care Systems business and the Northwest Educational Service District offices, and a health club. A portion of Parcel 2 and all of Parcel 1 to the west are open grassland. About four of the 15 acres of Parcels 1, 2, and 3 are paved or covered with buildings. The southern half of the main Former Scott Paper Mill site, known as MJB North (approximately 20 acres), is mostly open, unpaved land. The property is largely fenced and appears to be used only for some storage of boat hulls and other large items. One large former assembly building exists on the property and appears to be currently vacant.

Parcels 1, 2, and 3 are currently zoned for Commercial Marine Services. This type of zoning allows for a variety of commercial and retail enterprises and the possibility for multifamily housing, motels, and hotels with a special use permit. The southern portion of the property, MJB North, is zoned industrial. The site is bordered to the north by Cap Sante Marina and Figalgo Bay, to the east by Fidalgo Bay, to the south by largely vacant industrial property and Anacortes Marina and to the west by a variety of commercial properties. The portion of the site bordering Fidalgo Bay has a bank approximately 6-10 feet high and in places there is significant erosion of this bank into the bay. A mix of single family and multi family housing is located within a one mile radius from the property with a population from the 2000 census of 4920. The site and the surrounding area are served by City of Anacortes for water and sewer. Storm water from the site drains to city storm sewers and to Fidalgo Bay. Fidalgo Bay is a commercial and private crabbing area. Eel grass beds exist in the bay sporadically near the site and heavily approximately 1 ½ to 2 miles to the southeast of the site. A small marine wetland on the National Wetlands Inventory is located at the northern extent of the bay approximately 2000 feet to the north of the site. Refer to Attachment I for a map of the current site features and parcel lines.

Included in the main site, the former mill location, are the former locations of a shoreline outfall pipe from the mill and a later diffuser pipe that extended into Guemes Channel from the mill. Both were located near the terminus of Q Avenue and the Channel. This property is Skagit County Parcel P32903 and is a narrow tideland parcel owned by the Port of Anacortes and occupied by Dakota Creek Industries for their boat building and repair business. The Port of Anacortes reports that the diffuser pipe is no longer present at this location.

Site History

The history of the mill site is well documented in the 1999 report by ThermoRetec Consulting Corporation titled "Remedial Investigation and Feasibility Study for Soils at Parcel 2 of the Former Scott Paper Company Mill Site". I will briefly summarize the information from that report. The property was first recorded being developed in 1890 and used for a lumber mill. It appears that wood waste and other refuse were used to fill in the tidelands around the mill. The mill operated under various owners until 1914 when it was closed during World War I. In 1918 the mill was re-opened and produced finished lumber and boxes until it was destroyed by a fire in 1924. After re-opening in 1925, the mill is reported to have doubled the infill of tidelands on the property. Part of the mill property was leased to Puget Sound Pulp Company for the construction of a pulp mill. Twenty to forty tons of pulp per day were produced using an acid sulfite process. Power for the lumber and pulp mills was mainly supplied by the burning of hog fuel until the mill converted to petroleum use in the 1950s. Small bleach tanks in the digester room are noted in maps from 1925. Wastes, including spent sulfite liquor, were discharged directly to Fidalgo Bay.

The pulp mill was purchased by Scott Paper in 1940 and the mill was known as Coos Bay Pulp Company. By 1950 three oil storage houses existed on the property as well as a tank farm. In 1951 the mill was converted to produce pulp for tissue paper. Pulp was sent to Everett for final processing into paper. In 1952 the mill began using an ammonia based sulfite process to digest the wood. The lumber mill buildings were demolished by Scott and pulp bleaching facilities were installed in 1955. The bleaching facility doubled the amount of waste water discharged from the site. Records show that in 1952 a wooden pipeline was installed down Q Avenue to divert most of the mill effluent from Fidalgo Bay to Guemes Channel. A 20,000 gallon unlined surge pond was built at this time to hold effluent until tides ebbed in Guemes Channel. The first permit for waste water discharge was issued in 1955 by the Washington Pollution Control Commission (WPCC). A knots and tailings pond was constructed in 1959 to settle solids out of wastes from four areas of the mill including post bleaching processes. In 1964 due to requirements from the WPCC all effluents except for saltwater used for cooling the acid plant were diverted to the Guemes Channel outfall. All wastes were converted back to Fidalgo Bay if the pumps at the surge pond were shut down or failed. In 1970 this pipeline was reconstructed to discharge through a diffuser 680 feet beyond the outer harbor line into the Guemes Channel currents. Scott records reportedly showed the average discharge volume per day for the Guemes Channel diffuser was 6.89 million gallons around 1970. Significant fill was still occurring on the property into the 1970s from barking wastes produced by the mill. In 1975 the EPA filed suit against Scott for violations to the Clean Water Act. In 1978 Scott closed the Anacortes mill because profits from the mill could not justify the expense of the necessary mill upgrades required for pollution control. A copy of the locations of the former mill site features is reproduced for this report from ThermoRetec (Attachment II).

The mill property was divided and purchased in part by the Port of Anacortes and in part by the Snelson Anvil Company in 1978 and 1979. Pulp tailings were removed from the mill site (from the pond area and a tailings pile) by Scott under the purchase agreement with the Port. Tailings were taken to Dahlstedt property in Skagit County for commercial use. Remaining mill buildings were demolished by the Port in the 1980s on northeastern quadrant of the former mill property. Anvil Corporation is reported to have replaced much of the wood waste fill on MJB North property in 1982 with granular fill in layers. The Cap Sante Marina, owned by the Port, was expanded with a dredging operation in 1983 and sediments containing wood waste and total volatile organic compounds exceeding open water disposal criteria were placed on part of the former tailings pond. The mill site remained largely vacant until the Port constructed a log yard on the northern portion of the site in the early 1990s. At that time bark piles were removed from the north western property and replaced with soil fill taken from a project at the Anacortes WWTP. The dredged sediments were re-graded in the tailings pond and geotextile fabric and pit run were added to the surface of the pond. By 1994 the log yard had closed and the Port was looking at a variety of other uses for the property. They obtained clean sands from the 1994 dredging of the Swinomish Channel to use as fill and preload on a large central portion of Parcels 1 and 2. In 1995 the northeastern 1 ½ acres of the site (Parcel 3) were developed by the Port into a park. As a part of this development the soils in this area were covered with 6 to 12 inches of topsoil. A building and public float were erected for the park. In 1998 Sun Systems (now Shared Health Care Systems) purchased Parcel 2 for the development of an office complex. Some site remediation occurred as part of this purchase agreement. This will be discussed below. In 2001 a building housing a health club was constructed to the west of this on Parcel 2.

Site Evaluations

MJB Properties site was placed on the Confirmed and Suspected Contaminated Sites list in 1995 based on sediment sample data provided by DNR in 1992 and historical use of the site as a pulp mill and other industrial uses to the south. This listing included the MJB North property of the former mill site as well as other property to the south of the mill site. In 1997 the remainder of the former Scott Paper Mill site was added by Ecology to the Confirmed and Suspected Contaminated Sites list. Property owners have been under on-going discussions and negotiations with the Department of Ecology since these site listing concerning contamination issues and remediation options on the property. Kimberly-Clark, the current parent company of Scott, has been brought in to discussions as a potentially liable party.

A number of investigations have occurred on and around the former mill site since the 1980s. This assessment largely relies upon a summary of sample data contained in the recent report "Comprehensive Evaluation of Existing Data – Former Scott Paper Mill Site – Anacortes, Washington" prepared by Anchor Environmental, L.L.C. for Kimberly-Clark Corporation, Port of Anacortes, and MJB Properties, Inc in March of 2002. Substances of potential concern on the property due to past use include diesel fuel and heavy oils, metals including lead, mercury, and arsenic, persistent chlorinated compounds such as PCBs and dioxin, combustion by-products such as PAHs, and semi-volatile organic compounds. The full Anchor report should be consulted by anyone seeking a complete data summary. Highlights only will be presented here in Attachment III. Concentration ranges or maximums are only presented for the samples exceeding a Sediment Quality Standard or a MTCA Method A or B clean up standard. Most sampling has occurred around the former mill structures on Parcel 2, Parcel 3 in the park area, and on the northwest quadrant of MJB North. The Anchor report provides maps showing locations of samples and results for substances of highest concern.

Hydrogen sulfide and methane releases related to the decomposition of the wood waste fill and pulp wastes at the mill site and in the sediments could be significant at the site, particularly during excavation of soils or sediments. There has been no documented monitoring for methane at the site. Very limited monitoring for hydrogen sulfide by Northwest Air Pollution Authority in 1993 near Seafarer's Park (Parcel 3) showed levels of 1ppm. In 1995 Hart Crowser tested air for hydrogen sulfide from 6 monitoring wells located in the area of the park on Parcel 3 and one in the sediment off Parcel 3. The sediment well had a level of 7 ppm hydrogen sulfide and one upland well had a level of 2 ppm. Seasonal variation is likely in the levels found as past samples of these wells taken in winter yielded no detectable hydrogen sulfide. Hydrogen sulfide can be naturally present in tidelands from the decay of organic matter such as seaweed but it is reasonable to assume at this site, given the amount of wood waste fill on the property, that some of the hydrogen sulfide released in the sediments and released into wells in the uplands would be due to wood and pulp waste decay from the former mill.

Excavation of soils heavily contaminated with petroleum occurred on Parcel 2 in two areas in 1999 as a part of the development of the site under a Cleanup Action Plan reviewed and approved by Ecology. Approximately 3500 tons of soils were removed from the vicinity of the former tank farm and taken off site for treatment. Sample results listed above do not include these excavated areas. At this same time a 200 foot section of sheet piling wall was installed to a depth of 26 feet below ground surface along the shoreline of Parcel 2 to prohibit further transport of contamination to surface water and sediments. No further remediation activities have been reported on the Former Scott Paper Mill site since this time. Current negotiations are underway with Ecology with the intent of developing a Cleanup Action Plan or Plans for the remainder of the site.

Four investigations from 1985 to 2001 have evaluated sediment quality near the former mill outfall and diffuser pipe locations to Guemes Channel. These investigations were not targeted at assessing contamination from the mill effluent but rather focused on use of the property as a ship building and repair yard for Dakota Creek Industries. An additional potential source of contamination near the former mill outfall is the City of Anacortes sanitary sewer outfall. Landau Associates summarized findings from the four investigations in the 2003 report "Sediment Data Assessment Dakota Creek Industries Shipyard Facility, Anacortes, Washington." Most sample locations were within an area referred to as the Dakota Creek Industries Basin, a working harbor that is directly to the east of the former outfalls for Scott Paper Mill. Arsenic, copper, mercury, zinc, some semi-volatile compounds including PAHs, and tributyltin were detected in some samples at levels that exceeded Sediment Quality Standards. Dioxins were not analyzed for in any samples. PCBs were analyzed for in some samples but not detected above Sediment Quality Standards. Sediment dredging occurred in the area of the former mill diffuser in the late 1980s as a part of the installation of a boat lift for Dakota Creek Industries but no activities directed toward remediation of contaminated sediments have occurred.

Special Considerations

Hydrogen sulfide is included in the scoring for the air route. Hydrogen sulfide can have natural sources in tidelands, however, this is a conservative scoring of relative risk at the site and there is a high likelihood, given the amount of wood waste present at the site, that hydrogen sulfide is being released related to this decaying wood waste from the mill. A release to air could not be scored for this route because there is no adequate documentation of background levels of hydrogen sulfide on similar nearby beach areas that would not be impacted by wood waste from the mill or other source.

PCBs were not able to be included in the scoring for the Air/Human Health route due to a lack of appropriate toxicity values.

For each route there were more than six substances of concern. Substances included in scoring were chosen by the number, significance of exceedences, and presence in uplands as well as sediments. In each route, the toxicity scored at the maximum values and would not have been affected by including all substances of concern. Sediment data from near the mill outfall to Guemes Channel indicate a number of substances of concern including some not found at the main mill site on Fidalgo Bay. These substances are noted in Attachment II and on Worksheet 2 but were not included in the scoring because the toxicity values using substances at the main mill site were already the maximum value and the substances may be from the shipyard activities or the city sewer outfall and unrelated to mill activities.

Route Scores

Surface Water/Human Health:	19.4	Surface Water/Environment:	41.6
Air/Human Health:	22.0	Air/Environmental:	29.6
Ground Water/Human Health	43.6		
		Overall Rank	**2**

Attachment II – Summary of Significant Sample Data Former Scott Paper Mill Location(data from Anchor, 2002)

Substance	Matrices Evaluated	Concentration Range of Exceedences
Antimony	Surface and subsurface soils, surface sediments, groundwater	Surface and subsurface soil: Max 101 mg/kg
Arsenic	Surface and subsurface soils, surface sediments, groundwater	Surface and subsurface soil: 23 – 142 mg/kg Groundwater: Max 27 ug/L
Cadmium	Surface and subsurface soils, surface sediments, groundwater	5 surface and subsurface soil samples exceeded 4 mg/kg (screening level for ecological protection)
Copper	Surface and subsurface soils, surface sediments, groundwater	2 subsurface soil samples exceeded 2960 mg/kg (screening level)
Lead	Surface and subsurface soils, surface sediments, groundwater	Subsurface soil: 390 – 6428 mg/kg Surface sediments: Max 1020 mg/kg Groundwater: Max 37 ug/L
Mercury	Surface and subsurface soils, surface sediments, groundwater	Surface and subsurface soil: Max 29 mg/kg Max sediment 0.88 mg/kg
Thallium	Surface and subsurface soils, surface sediments, groundwater	Subsurface soil: Max 51 mg/kg
CPAHs	Surface and subsurface soils, groundwater	Surface and subsurface soil: 119.3 – 6670 ug/kg
PCBs	Surface and subsurface soils, surface sediments, groundwater	Subsurface soil – 6500 and 23800 ug/kg Surface sediments – 16667 – 107692 ug/kg-oc
Dioxin	Surface and subsurface soils, surface sediments, groundwater	Subsurface soil: 8.4 – 61.7 ng/kg TEQ
Diesel	Surface and subsurface soils, Groundwater	Subsurface soil: 3000 – 42,000 mg/kg

Summary of Significant Sediment Sample Data, Near Former Scott Paper Mill Outfall to Guemes Channel (Landau, 2003)

Substance	Matrices Evaluated	Maximum Detected
Arsenic	Surface sediments	82.6 mg/kg – in Dakota Creek Industries Basin
Copper	Surface sediments	1,440 mg/kg – in Dakota Creek Industries Basin
Mercury	Surface sediments	0.43 mg/kg – in Dakota Creek Industries Basin
Zinc	Surface sediments	665 mg/kg – in Dakota Creek Industries Basin
Tributyltin	Surface sediments	11,748 ug/kg - bulk sample in Dakota Creek Industries Basin
LPAHs	Surface sediments	522 mg/kg – in Dakota Creek Industries Basin
HPAHs	Surface sediments	1,967 mg/kg – in Dakota Creek Industries Basin
Bis(2-ethylhexyl)phthalate	Surface sediments	75 mg/kg – in Dakota Creek Industries Basin
Dibenzofuran	Surface sediments	16 mg/kg – in Dakota Creek Industries Basin
Butylbenzylphthalate	Surface sediments	20 mg/kg – near former mill outfall

WORKSHEET 2
ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE

List those substances to be considered for scoring: Source: 2, 5, 8
Arsenic, Lead, Mercury, PCBs, CPAHs, Antimony, Tributlytin, Bis(2-ethylhexyl)phthalate
Dibenzofuran, Butylbenzylphthalate

Explain basis for choice of substance(s) to be used in scoring.
Substances measured in surface soil above MTCA Unrestricted Land Use
Clean Up Standards, or substances measured in surface sediments greater
than Sediment Quality Standards up to the six substances most closely associated with the mill.

List those management units to be considered for scoring: Source: 2,5
Contaminated surface soil and sediments.

Explain basis for choice of unit to be used in scoring.
Documented surface soil and sediment contamination available to surface water.

2. AIR ROUTE

List those substances to be considered for scoring: Source: 2,4, 8
Arsenic, Lead, Mercury, PCBs, CPAHs, Antimony, Hydrogen sulfide, Methane

Explain basis for choice of substance(s) to be used in scoring.
Substances measured in surface soil above MTCA Unrestricted Land Use
Clean Up Standards, or substances measured in surface sediments greater
than Sediment Quality Standards, or substances detected in air monitoring.
Substances actually scored were those that had appropriate toxicity values
available for the route. PCBs did not have inhalation human toxicity values
available..

List those management units to be considered for scoring: Source: 2,4, 8
Surface soil, surface sediments, and air.

Explain basis for choice of unit to be used in scoring.
Documented surface soil and surface sediment contamination, documented release to air.

WORKSHEET 2 (CONTINUED)
ROUTE DOCUMENTATION

3. GROUND WATER ROUTE

List those substances to be considered for scoring: Source: 2,8
Arsenic, CPAHs, Diesel, Dioxin, Lead, PCBs, Mercury, Antimony

Explain basis for choice of substance(s) to be used in scoring.
Substances measured in groundwater above MTCA clean up standards or substances found in subsurface soils at levels exceeding MTCA protection of groundwater standards. Six substances with most significant exceedences were actually scored.

List those management units to be considered for scoring: Source: 2,8
Contaminated groundwater, contaminated subsurface soil.

Explain basis for choice of unit to be used in scoring.
Documented groundwater contamination, documented subsurface soil contamination.

WORKSHEET 4
SURFACE WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

	Drinking Water Standard (ug/l)	Val.	Acute Toxicity (mg/kg-bw)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Carcino-genicity WOE	PF*	Val.
1. Arsenic	10	8	763(rat)	5	0.001	5	A	1.75	7
2. Lead	5	8	X	X	X	X	B2	X	X
3. Mercury	2	8	X	X	0.0003	5	X	X	X
4. PCBs	0.5	10	1315(rat)	3	X	X	B2	7.7	6
5. Antimony	3	8	7(rat)	10	0.0004	5	X	X	X
6.CPAHs	0.2	10	50(rat)	10	X	X	B2	12	7

*Potency Factor

Source: 2,8,9
Highest Value: 10 (Max.=10)

+2 Bonus Points? +2
Final Toxicity Value 12 (Max.=12)

1.2 Environmental Toxicity

( ) Freshwater
(X) Marine

Substance	Acute Water Quality Criteria (ug/l)	Value	Non-human Mammalian Acute Toxicity (mg/kg)	Value
1.Arsenic	69	6		
2.Lead	140	4		
3.Mercury	2.1	8		
4.PCBs	10.0	8		
5.Antimony	X	X	7.0(rat)	10
6.CPAHs	300	4		

Source: 2,8,9 Value: 10 (Max.=10)

1.3 Substance Quantity: 1.9 – 10 acres
Explain basis: estimated area from surface soil sampling

Source: 2,4,8,17 **Value: 9** (Max.=10)

WORKSHEET 4 (CONTINUED)
SURFACE WATER ROUTE

2.0 MIGRATION POTENTIAL

2.1 Containment — Source: 1,2,3,4,8 **Value: 4**
Explain basis: Uplands partially capped with clean fill however entire site not Capped or contained. In addition bank above bay is eroding in places. Score as contaminated Soil at surface with ineffectively maintained run-on/run-off control.

2.2 Surface Soil Permeability: In sediment, adjacent to surface water — Source: 2,8 **Value: 7** (Max.=7)

2.3 Total Annual Precipitation: 25.7 inches — Source: 8,10 **Value: 2** (Max.=5)

2.4 Max. 2-Yr/24-hour Precipitation: 1.5 inches — Source: 8 **Value: 2** (Max.=5)

2.5 Flood Plain: Not in flood plain — Source: 2,8,17 **Value: 0** (Max.=2)

2.6 Terrain Slope: Adjacent to surface water — Source: 1,2,8 **Value: 5** (Max.=5)

3.0 TARGETS

3.1 Distance to Surface Water: 0 ft — Source: 1,2,8 **Value: 10** (Max.=10)

3.2 Population Served within 2 miles (See WARM Scoring Manual Regarding Direction): pop.=0 = 0 — Source: 8,1116,17 **Value: 0** (Max.=75)

3.3 Area Irrigated within 2 miles 0.75√no. acres =
(Refer to note in 3.2.): 0.75√0 =0.75(0)= 0 — Source: 1,8,11 **Value: 0** (Max.=30)

3.4 Distance to Nearest Fishery Resource: Fidalgo Bay < 1000 ft — Source: 1,2,8 **Value: 12** (Max.=12)

3.5 Distance to, and Name(s) of, Nearest Sensitive Environment(s) Fidalgo Bay < 1000 ft — Source: 1,2,8 **Value: 12** (Max.=12)

4.0 RELEASE

Explain basis for scoring a release to surface water: Present in surface sediments — Source: 2,5,8 **Value: 5** (Max.=5)

WORKSHEET 5
AIR ROUTE

1.0 SUBSTANCE CHARACTERISTICS

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

1.2 Human Toxicity

Substances	Air Standard (ug/m^3)	Val.	Acute Toxicity (mg/m^3)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Carcino-genicity WOE	PF*	Val.
1.Arsenic	0.00023	10	X	X	X	X	A	50	9
2.Lead	0.05	10	X	X	X	X	X	X	X
3.Mercury	0.03	10	X	X	0.000085	8	X	X	X
4.Antimony	1.7	9	X	X	X	X	X	X	X
5.cPAHs	0.0006	10	X	X	X	X	X	X	X
6.Hydrogen sulfide	0.9	10	335-587 (rat)	10	0.003	3	X	X	X

*Potency Factor

Source: 2,4,8
Highest Value: 10 (Max.=10)

+2 Bonus Points? +2
Final Toxicity Value: 12 (Max.=12)

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

1.3.1 Gaseous Mobility

Vapor Pressure: 6=14,469 mmHg

Source: 7,8
Value: 4 (Max.=4)

1.3.2 Particulate Mobility

Soil type: coarse sand, gravel, silt (all fill soils on tidelands)
Erodibility: 73 (score as coarse sand)
Climatic Factor: 1-10

Source: 2,8
Value: 1 (Max.=4)

1.4 Highest Human Health Toxicity/Mobility Matrix Value (from Table A-7) equals
Vapor = 10/4 = 20, Particulate = 12/1 =6

Final Matrix Value: 20 (Max.=24)

1.5 Environmental Toxicity/Mobility

Source: 2,4,7,8

Substance	Non-human Mammalian Inhal. Toxicity (mg/m^3)	Acute Value	Mobility (mmHg)	(Table A-7) Value	**Matrix Value**
1.Arsenic	X	X	X	X	
2.Lead	X	X	X	X	
3.Mercury	X	X	X	X	
4.Antimony	X	X	X	X	
5.CPAHs	X	X	X	X	
6.Hydrogen sulfide	335 – 587 (rat)	10	14,469	4	20

Highest Environmental Toxicity/Mobility Matrix Value
(From Table A-7) equals **Final Matrix Value: 20** (Max.=24)

WORKSHEET 5 (CONTINUED)
AIR ROUTE

1.6 Substance Quantity: 1.55-7.8 acres Source: 2,4,8,17 **Value: 6** (Max.=10)
Explain basis: estimate quantity from surface soil sampling

2.0 MIGRATION POTENTIAL

2.1 Containment: Parts of site capped with clean soil or paved but not entire site. Source: 1,2,3,4,5,8 **Value: 5** (Max.=10)
Site has eroding shoreline in parts. Site has contaminated uncontained surface sediments.

3.0 TARGETS

3.1 Nearest Population: < 1000 feet Source: 1,8 **Value: 10** (Max.=10)

3.2 Distance to, and Name(s) of, Nearest Sensitive Environment(s) Wetlands approximately 2000 feet Source: 8,15 **Value: 5** (Max.=7)

3.3 Population within 0.5 miles: √1230 pop.=35 Source: 8,16 **Value: 35** (Max.=75)

4.0 RELEASE

Explain basis for scoring a release to air: Hydrogen sulfide measured at site but no documented background levels available to compare if over 3 times. Source: 4,8 **Value: 0** (Max=5)

WORKSHEET 6
GROUND WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard (ug/l)	Val.	Acute Toxicity (mg/kg-bw)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Carcino-genicity WOE	PF*	Val.
1.Arsenic	10	8	763(rat)	5	0.001	5	A	1.75	7
2.CPAHs	0.2	10	50(rat)	10	X	X	B2	12	7
3.Diesel	160	4	490(rat)	5	0.004	3	B2	X	X
4.Dioxin	0.00005	10	X	X	X	X	B2	150000	8
5.Lead	5	8	X	X	X	X	B2	X	X
6.PCB	0.5	10	1315(rat)	3	X	X	B2	7.7	6

*Potency Factor

Source: 2,6,8,9
Highest Value: 10 (Max.=10)

+2 Bonus Points? +2
Final Toxicity Value: 12 (Max.=12)

1.2 Mobility (Use numbers to refer to above listed substances)
Cations/Anions: 1= 3 ; 2= ; 3= ; 4= ; 5= 2 ; 6= . Source: 8,9 **Value: 3** (Max.=3)

OR
Solubility(mg/l): 1= ; 2= 0 ; 3=1 , 4= 0 ; 5= ; 6=0 .

1.3 Substance Quantity: 500,000 – 1,000,000 cubic yards Source: 1,2,8,17 **Value: 9** (Max.=10)
Explain basis: estimate from sampling of subsurface soil (area estimate)

2.0 MIGRATION POTENTIAL

2.1 Containment Source: 1,2,3,8 **Value: 10** (Max.=10)
Explain basis: release to groundwater, not capped throughout site

2.2 Net Precipitation: 11.0 inches Source: 8,10 **Value: 2** (Max.=5)

2.3 Subsurface Hydraulic Conductivity: silt, sandy silt Source: 2,8 **Value: 3** (Max.=4)

2.4 Vertical Depth to Ground Water: 0 - 25 feet observed at site Source: 2,8 **Value: 8** (Max.=8)

WORKSHEET 6 (CONTINUED)
GROUND WATER ROUTE

3.0 TARGETS

3.1 Ground Water Usage: private supply, alternative source available Source: 8,11,12 **Value: 4** (Max.=10)

3.2 Distance to Nearest Drinking Water Well: 5000 – 10000 ft Source: 8,12,17 **Value: 1** (Max.=5)

3.3 Population Served within 2 Miles: √45=7 Source: 8,12 **Value: 7** (Max.=50)

3.4 Area Irrigated by (Groundwater) Wells within 2 miles: 0.75√no.acres= 0 Source: 1,8,11 **Value: 0** (Max.=100)

4.0 RELEASE

Explain basis for scoring a release to ground water: documented release to ground water of arsenic, lead, and diesel Source: 2,8 **Value: 5** (Max.=5)

SOURCES USED IN SCORING

1. Skagit County Health Department, Field Notes from Site Hazard Assessment Site Visit, January 12, 2004.
2. Anchor Environmental, L.L.C. et al, Comprehensive Evaluation of Existing Data Former Scott Paper Mill Site Anacortes, Washington, March 2002.
3. Applied Geotechnology Inc., Site Assessment, SL Resources Inc. Property, Anacortes, Washington, September 11, 1987.
4. Garry E. Horvitz, P.E., Letter RE: Summary of Results of Hydrogen Sulfide Monitoring Cap Sante South Uplands, October 10, 1996.
5. Landau Associates, Sediment Data Assessment Dakota Creek Industries Shipyard Facility Anacortes, Washington, February 21, 2003.
6. ThermoRetec Consulting Corporation, Remedial Investigation and Feasibility Study for Soils at Parcel 2 of the Former Scott Paper Company Mill Site Anacortes, Washington, January 8, 1999.
7. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances Disease Registry, Toxicological Profile for Hydrogen Sulfide, July, 1999.
8. Washington Department of Ecology, WARM Scoring Manual, April, 1992.
9. Washington Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January, 1992.
10. National Weather Service, Washington Climate Data.
11. Washington Department of Ecology, Water Rights Information System (WRIS), 1997.
12. Washington Department of Ecology, Well Logs.
13. USGS 7.5 minute Topographical Quadrangles – Anacortes South.

14. Washing Department of Health Public Water Supply Data.

15. Skagit County Planning and Permit Center, Critical Areas Maps.

16. EPA Geographic Query Information System, Scott Paper Mill Site, January 2004.

17. Skagit County Mapping, SkagitView Version 3.0, December 2003.