~~HRRP~~ www.ecy.wa.gov/programs/SIT2.1/frcp/cleanup.html

MLD Dec 1991

SITE HAZARD ASSESSMENT
KENMORE INDUSTRIAL PARK/KENMORE LANDFILL
6400 BLOCK OF NORTHEAST 175TH STREET
KENMORE, WASHINGTON

SITE BACKGROUND

Historical Review

A limited historical review of the Kenmore Industrial Park/Kenmore Landfill area revealed that much dredging and filling activity has occurred on the property. Property ownership has also changed hands throughout the twentieth century.

County Atlases. Metsker county atlases from 1926 and 1936 identify the Puget Mill Company as occupying at least that portion of the site north of the present dredged channel. In addition, much of the filling activity on the site had occurred as of 1936 (refer to Appendix A).

In 1950, Squire Investment was listed on Kroll county atlases as the owner or occupant of the site area south of the dredged channel, while the Newburg shingle and lumber mill occupied the area north of this channel. In 1958, Pioneer Towing was identified as owning and/or occupying most of the site area. By 1974 through 1991, Kenmore Building Materials owned or occupied the site area north of the dredged channel, while Pioneer Towing remained as the owner/occupant of much the area south of the channel (Appendix A). At present, Pioneer Towing again owns the entire site location.

Aerial Photographs. Aerial photographs obtained from Walker and Associates in Seattle were viewed as part of the historical review for the Kenmore Landfill/Kenmore Industrial Park site.

A 1936 aerial photograph confirmed that much of the filling activity on the property was completed prior to 1936. That portion of the site situated south of the dredged channel was noted to be partially wooded and apparently unoccupied in this aerial photograph. Several buildings, other structures, and driveways were observed on the site area north of the dredged channel.

By 1946, additional dredging had occurred in the site vicinity. A new channel was dredged at the southern site boundary, forming the island area still present at the mouth of the Sammamish River, directly south of the property. Unidentified vegetative impacts were noted on the southern portion of the site, although this area apparently remained undeveloped. The northern section of the site was somewhat more developed than in 1936, with more vegetative impacts noted. Additional residential areas had also been constructed in the site vicinity.

By 1956, the northern portion of the site was highly developed. Many additional buildings had been constructed. In addition, the dredged channel separating the northern and southern site sections had apparently been widened, and the channel was occupied by barges. Heavy vegetative impacts were noted along the northern edge of that property section south of the dredged channel. The rest of the southern parcel remained wooded and/or undeveloped. Areas surrounding the site were also much more highly developed than in 1946.

The 1969 aerial photograph identified additional buildings constructed on the northern portion of the site. Roadways had also been built on the southern site section through the former wooded area. The precise location of the landfill (see **Kenmore Landfill Operations**, below) is not apparent on this aerial photograph, although additional filling appeared to have occurred at the southwesterly-most corner of the property. The Kenmore area was also much more highly residential in the site vicinity.

A portion of the former landfill location is apparent on a 1971 aerial photograph obtained for the site. In this photograph, the landfill was obviously located on the northwestern corner of the site section south of the dredged channel. The on-site building presently occupied by Olympic Forest Products (Figure 1) is also apparent on the site section south of the dredged channel. In addition, the eastern half of the southern site section appears to be used for lumber storage.

By 1985, an attachment to the Olympic Forest Products' building had been constructed on the southern portion of the site. In addition, the building presently occupied by Nelbro Packing (Figure 1) is apparent on the southern site section. The western edge of the southern section was also apparently in use for storage. In addition, the cement truck wash-out pond location is obvious on this aerial photograph. The number of residences in the Kenmore area also continued to increase through 1985.

Kenmore Landfill Operations

In 1984, a Potential Hazardous Waste Site Preliminary Assessment (PA) was conducted at the Kenmore Landfill by JRB Associates, an EPA consultant. The PA indicated that the portion of the Kenmore Industrial Park site located south of the dredged channel was operated as a private landfill from 1965 to 1981. At the time of the EPA assessment, there were no records documenting that hazardous materials had been disposed of in the landfill. The only records available indicated that stumps, demolition debris, and restaurant wastes had been disposed. However, a 1981 letter received by EPA from Bayside Disposal listed 20 landfills in King County (including the Kenmore Landfill) potentially used by the company for the disposal of hazardous materials. These hazardous materials included medical wastes and transformers.

Previous Site Investigations

GeoTech, Inc. Subsurface Explorations. In late 1990, GeoTech, Inc. was hired by Pioneer Towing through the Trammell-Crow Company to conduct a pre-acquisition environmental assessment of the Kenmore Industrial Park site. Four soil borings/groundwater monitoring wells were installed in the section of Pioneer Towing's property south of the dredged channel. The wells were situated both upgradient and downgradient of the assumed former landfill location.

Wood waste and fill material was encountered during drilling operations. Groundwater was also encountered at depths ranging from 3 to 10 feet.

Elevated pH levels (>11) were encountered in two of the monitoring wells installed on the property. Arsenic, cadmium, chromium, and lead were also detected at concentrations above Model Toxics Control Act (MTCA) standards. The GeoTech report cited nearby operations by Kenmore Pre-Mix, one of the site lessees, as a possible source for the groundwater impacts. The operations of concern included cement truck wash out activities. The truck wash waters are held in an unlined detention pond on the site. The detention pond is occasionally dredged of solids, and the solids are stockpiled nearby, also on an unlined area.

King County Fire Marshal Inspection. On March 20, 1991, Jeff LaFlam, Deputy Fire Marshal with the King County Fire Marshal's Office, was involved with an inspection in the Kenmore area when he noticed a series of tarps installed at the Kenmore Industrial Park. The tarps were situated within 15 feet of Lake Washington. Fire Marshal LaFlam investigated the operation, and discovered that Pacific Ventures was in the process of refurbishing the doors for the Ballard Locks, under contract to the U.S. Army Corps of Engineers. This activity was occurring on property leased from Pioneer Towing.

Fire Marshal LaFlam observed much sand blast grit and paint chips on the ground in the vicinity of the lock door refurbishing operation. He also noted overspray from on-going painting activities. Pacific Ventures was informed that the present refurbishing operations were in serious violation of the Uniform Fire Code. Fire Marshal LaFlam requested that the operation be suspended until compliance with the code was ensured.

While at the Kenmore Industrial Park, Fire Marshal LaFlam also noted environmental problems at Kenmore Pre-Mix and at Nelbro Packing, Inc. These included improperly stored and leaking 55-gallon drums, primarily containing petroleum-based compounds and corrosives. Much soil staining, particularly on the Kenmore Pre-Mix-leased property, was documented during this inspection.

Fire Marshal LaFlam referred the results of his investigation to the Washington Department of Ecology (Ecology).

Sterling Asphalt Investigations. On September 21, 1991, Sterling Asphalt personnel constructed two test pits and installed two hand borings on property at the Kenmore Industrial Park leased from Pioneer Towing. Soil samples were collected from each of the locations at the 6-inch and 4-foot depths. The samples were submitted to North Creek Analytical for analysis for total petroleum hydrocarbons (TPH) by EPA Method 418.1 modified, and by EPA Method 3550/8015.

The analytical results for the samples identified TPH concentrations (<10 to 23 parts per million (ppm)) well below the cleanup standards of 200 ppm in the vicinity of the asphalt plant. However, the 4-foot depth sample collected near a waste pile maintained by Sterling Asphalt was found to contain 160 ppm TPH. The matrix spike/matrix spike duplicate samples analyzed by the laboratory with the Sterling Asphalt samples (as part of its quality assurance/quality control package) gave recoveries of only 67 percent, indicating that the actual TPH concentration at the 4-foot depth near the waste pile may actually exceed the 200 ppm cleanup standard.

SEACOR Groundwater Monitoring Activity. In December 1991, SEACOR environmental consultants were hired by the Trammel Crow Company to re-sample the existing groundwater monitoring wells on the Pioneer Towing property in the vicinity of the former landfill. The wells were re-sampled because it was felt that they were not properly developed during installation, and that the elevated metals concentrations detected in the groundwater resulted from turbidity within the samples previously collected by GeoTech, Inc. The samples were not filtered during the GeoTech sampling event.

Those samples collected by SEACOR were found to be turbid in spite of extensive purging of the wells prior to sampling. Therefore, the SEACOR samples were filtered in the field. Although sample analysis identified concentrations of the same metals intitially detected by GeoTech (arsenic, cadmium, chromium, and lead), the detected concentrations did not exceed MTCA Method A standards.

SITE HAZARD ASSESSMENT ACTIVITIES

In September 1991, the Kenmore Industrial Park/Kenmore Landfill was selected by Ecology as a high priority for site hazard assessment (SHA) activities and subsequent ranking under the Washington ranking method (WARM). A notification letter was mailed to Gary Sergeant, Chairman of the Pioneer Towing Company, notifying him of Ecology's intent to conduct the SHA, and requesting any background information available regarding previous investigations on the property. Mr. Sergeant submitted the GeoTech subsurface investigation report detailed under the **SITE BACKGROUND** section, above. He also granted access to the site for the SHA field investigation, and notified the various site lessees of the upcoming inspection by Ecology. In addition, Mr. Sergeant arranged for the re-sampling of the on-site groundwater monitoring wells by

SEACOR, and submitted the report for Ecology's use in the SHA.

Field Investigation

The SHA field investigation was conducted on November 1, 1991, by Elaine Atkinson (Ecology) and Jeff LaFlam (King County Fire Marshal). Mike Kirkpatrick (Kenmore Pre-Mix) was also present throughout the investigation, and during sampling activities. In addition, Gary Sergeant (Pioneer Towing), Sam Johnson (Sterling Asphalt), Forrest Bailey (Sterling Asphalt), and John Cooper (Rittenhouse-Zeman and Associates) were present throughout much of the inspection.

The investigation commenced in Mr. Sergeant's office. The purpose of the SHA was explained, and the data summary scoring sheets were reviewed to provide information pertaining to waste storage practices, containment measures, and related data used in the WARM scoring process.

Sterling Asphalt. The Sterling Asphalt facility was first investigated during the field inspection (Figure 1). The asphalt plant was noted to be very clean and well-maintained. No above-ground pipeline leakages or other spillages were noted at the plant.

There are a number of above-ground storage tanks (ASTs) located at the Sterling Asphalt plant. Two of these are approximately 500 gallons in size and contain fuel oil. Three of the ASTs contain asphalt, are heated, and range in size from 4,500 to 24,000 gallons (photograph 1). None of the ASTs at the plant are bermed; however, drainage from the plant area is to a lined, bermed impoundment area (photograph 2). Storm water that collects in this impoundment is transferred to the truck wash-out ponds maintained by Kenmore Pre-Mix (see **Kenmore Pre-Mix**, below). There are no storm drains in the vicinity of the asphalt plant.

A waste pile is maintained by Sterling Asphalt on another section of the site leased from Pioneer Towing (Figure 1). The waste pile consists of TPH-contaminated soils brought onto the site from various off-site leaking underground storage tank (LUST) removals and related cleanup operations. These TPH-contaminated soils are processed through the asphalt plant within 8 weeks after receipt at the site. Sterling Asphalt supplied analytical results for a number of the TPH-contaminated soils it had accepted for batching. All of the analytical results indicated that the soils were free of solvents, PCBs, and elevated heavy metal concentrations.

The waste pile was maintained in an open structure with a roof, or under tarps (photograph 4). It is stored on an asphalt-lined area. The storage area is partially bermed; however, there appears to be no run-on/runoff control (photograph 5). During a heavy rain, runoff from the waste pile would flow to the adjacent Olympic Forest Products lumber storage yard. Also, there is no leachate

collection system associated with the waste pile.

Olympic Forest Products. Other than the runoff from the Sterling Asphalt waste pile to barren soils in the Olympic Forest Products storage yard, no environmental concerns were noted associated with this operation.

Nelbro Packing, Inc.. Nelbro Packing, Inc. maintains a boat dock at the eastern end of the dredged channel on Pioneer Towing property (Figure 1). Fishing boats from Alaska and other locations are loaded and unloaded at this location. A number of 55-gallon drums were noted stored near the loading dock.

Nelbro Packing also occupies one of the buildings at the Kenmore Industrial Park. The building is used primarily for packing operations. A number of partially-full 55-gallon drums were also noted stored on pallets or barren soil in an outdoor area at the southern end of the building (photograph 6). A number of the drums were observed to be open an/or leaking.

Kenmore Pre-Mix. Kenmore Pre-Mix maintains 10 ASTs at the Kenmore Industrial Park. Seven of these are in one location adjacent to Sterling Asphalt operations (Figure 1, photograph 3). They range in size from 1,500 to 8,000 gallons. These tanks are not bermed; however, they also drain to the nearby lined, bermed impoundment area.

Three additional Kenmore Pre-Mix ASTs are situated elsewhere on property leased from Pioneer Towing (Figure 1). These three ASTs are bermed, and include an 8,000 gallon gasoline tank and two 10,000 gallon diesel tanks.

Numerous 55-gallon drums are stored by Kenmore Pre-Mix in an open, covered storage area adjacent to Lake Washington (Figure 1, photographs 11 and 12). A bermed area located between the drums and the lake functions as secondary containment for the storage area. The drums are also stored on a concrete pad, although the pad itself is not bermed. Although many of these drums are empty, several were noted to contain petroleum products and related materials. Some oil-stained soil was noted surrounding the drum storage area.

The Kenmore Pre-Mix truck wash-out pond is used to wash out trucks (Figure 1, photograph 7). It also collects water from truck exterior washing operations using muriatic acid. In addition, storm water collected from the lined impoundment situated near Sterling Asphalt is also emptied into the pond. The wash-out pond is situated over the approximate location of the former Kenmore Landfill. The pond covers an estimated 1,700 square foot area and contains an estimated 40,000 gallons of liquid. The landfill area is thought to contain at least 15,000 cubic yards of waste.

The wash-out pond is not lined. At least 2 feet of freeboard appears to be maintained.

into an 8-ounce glass jar. The sample was submitted to the Ecology laboratory for analysis for total cadmium, chromium, copper, lead, nickel, and zinc.

A sample (WATERCON) was also collected of the sediments dredged from Lake Washington by Waterfront Construction (Figure 1). This sample was also collected using a clean trowel. Several 8-ounce glass jars were filled with sample and submitted to the Ecology laboratory for analysis for the base/neutral/acid extractable compounds, polychlorinated biphenyls, TPH, and total cadmium, chromium, copper, lead, nickel, and zinc.

The final sediment sample (PACVENT) was collected from the drainage ditch adjacent to Pacific Ventures. Runoff from much of the estimated 20,000 square foot area impacted by Pacific Ventures operations flows to this drainage ditch and ultimately to Lake Washington. The sediment sample was collected with a clean trowel and placed directly into 8-ounce glass jars and a 4-ounce VOA bottle. The sample was submitted to the Ecology laboratory for analysis for TPH, the volatile organic compounds, and total cadmium, chromium, copper, lead, nickel, and zinc.

Water Samples. A water sample (POND) was collected from Kenmore Pre-Mix's truck wash-out impoundment. Two 40-milliliter VOA bottles were filled (without headspace) by submerging the bottles just under the surface of the pond. This sample was submitted to the Ecology laboratory for analysis for the volatile organic compounds. A cubitainer was also filled with pond water, and was submitted to the Ecology laboratory for analysis for total cadmium, chromium, copper, lead, nickel, and zinc.

Analytical Results

Soil Samples. The soil sample collected from the Olympic Forest Products site (OLFORPRD) was found to contain 114 ppm TPH (as lubricating oil). This is below the MTCA Method A cleanup standard of 200 ppm for lubricating oil. Therefore, this location was not included in the WARM scoring process for the site. However, Sterling Asphalt officials were notified that run-on/runoff from their stockpiled petroleum-contaminated soils at the site were apparently impacting the adjacent site.

Sediment Samples. The grab sample collected from the stockpile of sediments dredged from the Kenmore Pre-Mix truck wash-out impoundment (PREMIX) was found to contain low levels of metals. However, the detected metals concentrations did not exceed MTCA cleanup standards, and the stockpiled sediments were therefore not included in the WARM scoring process for the site.

The sample collected from those sediments dredged from Lake Washington by Waterfront Construction (WATERCON) was also found to contain low concentrations of metals, as well as low levels of TPH and tentatively identified base/neutral/acid extractable compounds. However, the concentrations for these detected substances did not

exceed MTCA cleanup standards, where available. These sediments were therefore also not included in the WARM scoring process for the site.

The sediment sample collected from the drainage ditch adjacent to Pacific Ventures operations at the Kenmore Industrial Park (PACVENT) was found to contain elevated concentrations of lubricating oil (4,800 ppm). Because the drainage ditch flows directly to Lake Washington, this sample serves to confirm a release to surface waters for WARM scoring purposes. The surface soils impacted by Pacific Ventures operations were also included as a management unit for use in WARM scoring.

Water Sample. The water sample collected from the Kenmore Pre-Mix truck wash-out impoundment (POND) was found to contain elevated concentrations of acetone (8.7 ug/L), chromium (189 ug/L), and copper (16 ug/L). The impoundment was therefore considered as a management unit for WARM scoring purposes, and the detected compounds were also used in the scoring process.

Quality Assurance/Quality Control. The analytical results received for the Kenmore Industrial Park site from Ecology's laboratory contained useable data, and are presented in Appendix B. The quality assurance and control (QA/QC) performed on the samples was acceptable, with the following limitations:

- Methylene chloride was detected in a method blank run with the samples collected for volatile organic analysis. Therefore, the methylene chloride detected in the sample from the drainage ditch adjacent to Pacific Ventures is probably due to laboratory contamination and is not native to the sample.

- Trace levels of cadmium were found in a laboratory procedural blank run with the samples collected for metals analysis. Therefore, samples associated with this blank are flagged with a 'B'.

- Spiked sample and duplicate spiked sample analyses were performed on the sediment sample collected from the material dredged from the Kenmore Pre-Mix pond. Spike recoveries for chromium, lead, nickel, and zinc (61 to 70%) were outside the =/- 25% acceptable window, indicating probable interferences in the sample. Sediment results for these elements are therefore flagged with an 'N'.

Follow-up Inspection

On February 10, 1992, a follow-up inspection was conducted at this site by Ecology representatives. The purpose of the inspection was to acquaint personnel from Ecology's Site Management Unit with the

facility, for consideration in choosing a site for high priority remedial investigation/feasibility study activities with Ecology oversight.

Much of the site activities described above remained unchanged during the follow-up inspection. However, it was noted that many of the 55-gallon drums originally stored at the south end of the Nelbro Packing Company buildings had been removed and/or placed onto pallets and stored in a more appropriate manner.

It was also noted during the site inspection that the petroleum-contaminated soil waste piles maintained by Sterling Asphalt were only partially covered with tarps (Figure 1, photograph 13). No run-on/runoff control was observed for the area.

Conclusions

There are a number of concerns for contamination at the Kenmore Industrial Park. These include the previous filling of the site with unknown materials prior to its development. In addition, the historical useage of this site for industrial purposes may have resulted in contamination.

Also of concern at the site is the former landfill location, reported by Bayside Disposal to potentially have been used for the disposal of hazardous materials. Subsurface investigations in the vicinity of the landfill identified elevated heavy metal concentrations in sediments within the subsurface saturated zone.

Inspections by both the King County Fire Marshal and Ecology have identified a number of concerns pertaining to the Pacific Ventures operations at the Kenmore Industrial Park. The Fire Marshal observed paint overspray release to barren soil areas adjacent to Pacific Ventures operations. In addition, the SHA field investigation identified extensive areas of stained soil in the area. Sand blast grit and paint chips from the Ballard Lock door refurbishing operation had also been disposed on the soil at the site. A sediment sample collected from the drainage ditch adjacent to these activiites identified elevated lubricating oil concentrations. This drainage ditch discharges directly to Lake Washington.

Elevated concentrations of acetone, chromium, and copper were detected in the truck wash out impoundment maintained by Kenmore Pre-Mix. Although there is no evidence that the impoundment drains directly to Lake Washington, it is not lined and the potential therefore exists for release of the contaminants to groundwater beneath the site. In addition, numberous cubic yards of sediment dredged from this impoundment are staged nearby. This sediment likely has an elevated pH. Other observed problems with Kenmore

Pre-Mix operations include the improper storage of 55-gallon drums, resulting in the release of petroleum compounds to surface soils at the site.

Improper drum storage activities were also noted throughout property at the industrial park leased by the Nelbro Packing Company. In addition, concerns with the storage of petroleum-contaminated soils by Sterling Asphalt included partial cover maintained on the piles during a portion of the day, and surface run-on/runoff passing through the waste pile storage area.

The final scoring of this site using WARM resulted in a bin rank of 1 (highest rank). The scoring was based on the waste piles maintained by Sterling Asphalt. Other management units on the site considered for scoring included the former landfill and the truck wash-out impoundment maintained by Kenmore Pre-Mix.

Analytical results were submitted to Ecology previously by Sterling Asphalt that identified TPH and benzene/ethylbenzene/toluene/xylene (BETX) compounds in the petroleum-contaminated soils. These compounds were therefore also used for WARM scoring purposes. Other compounds considered for scoring included arsenic, cadmium, chromium, lead and mercury, detected in the vicinity of the former landfill; and acetone, chromium, and copper, detected in the surface impoundment at elevated concentrations.

Some of the factors contributing to the high bin ranking of this site include the toxicity and mobility of the BETX compounds, the partial cover over the Sterling Asphalt waste piles, and the proximity of the site to populated areas and Lake Washington (a fishery resource). Releases to surface water and air (apparently from Pacific Ventures operations) have also been documented.

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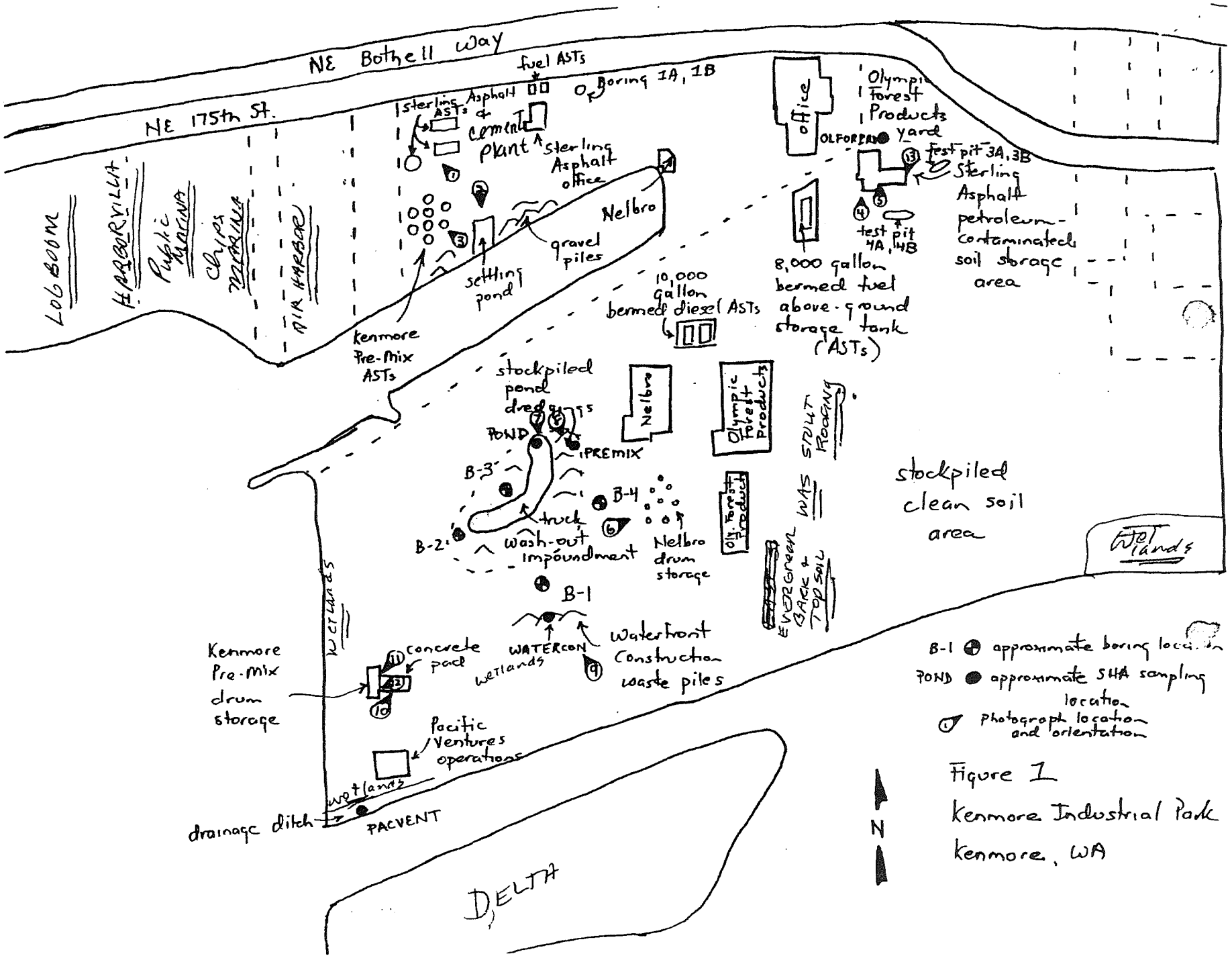
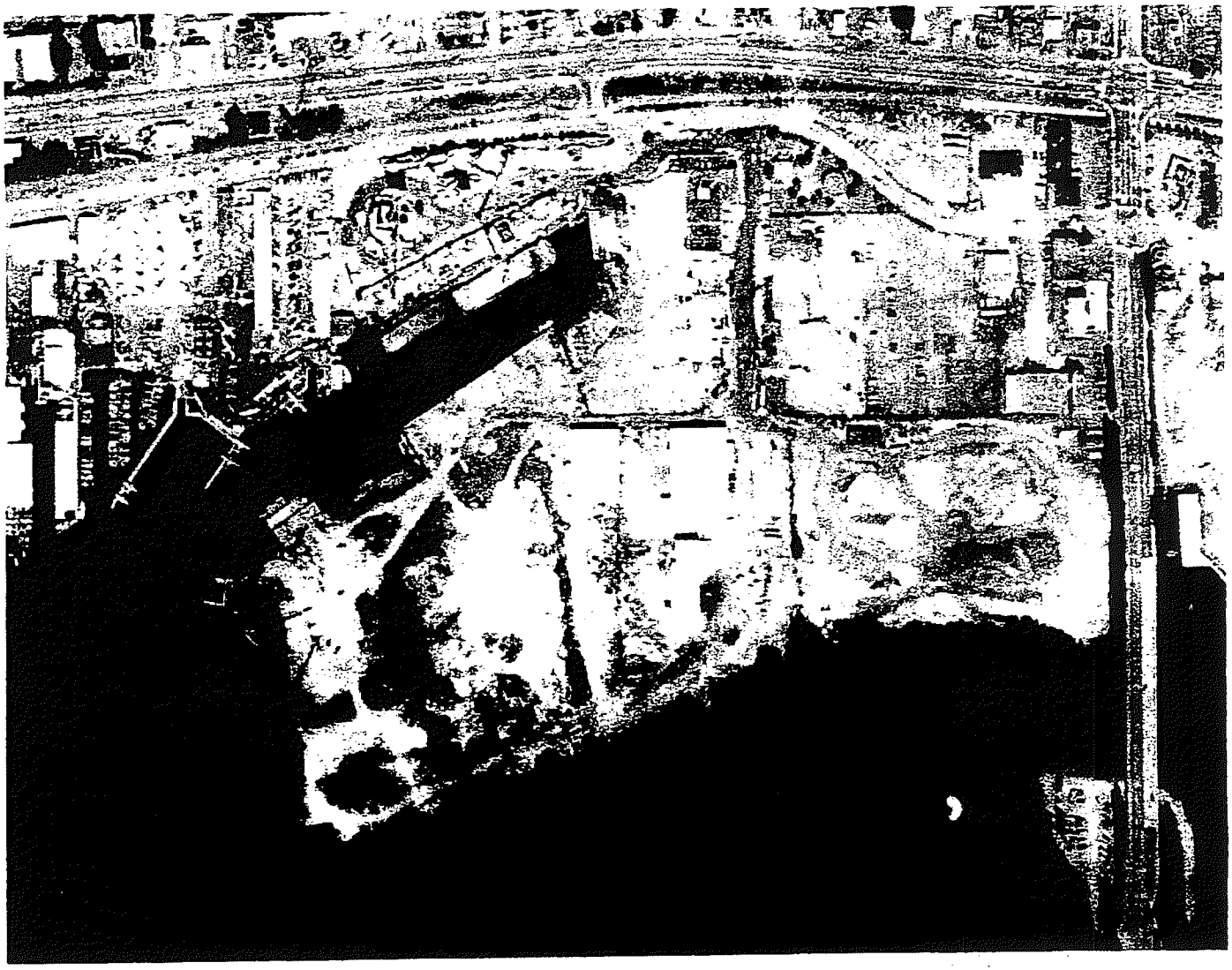
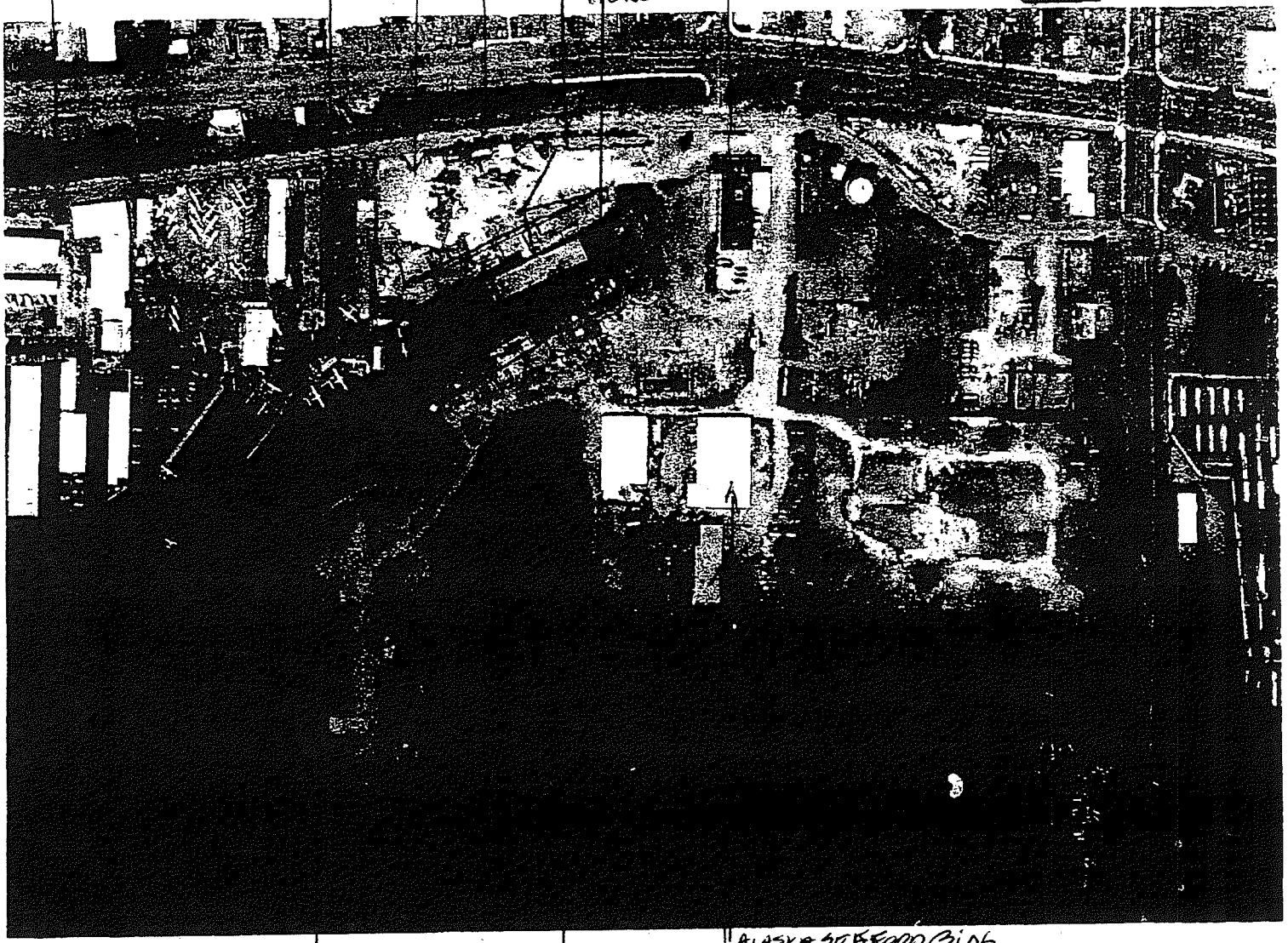


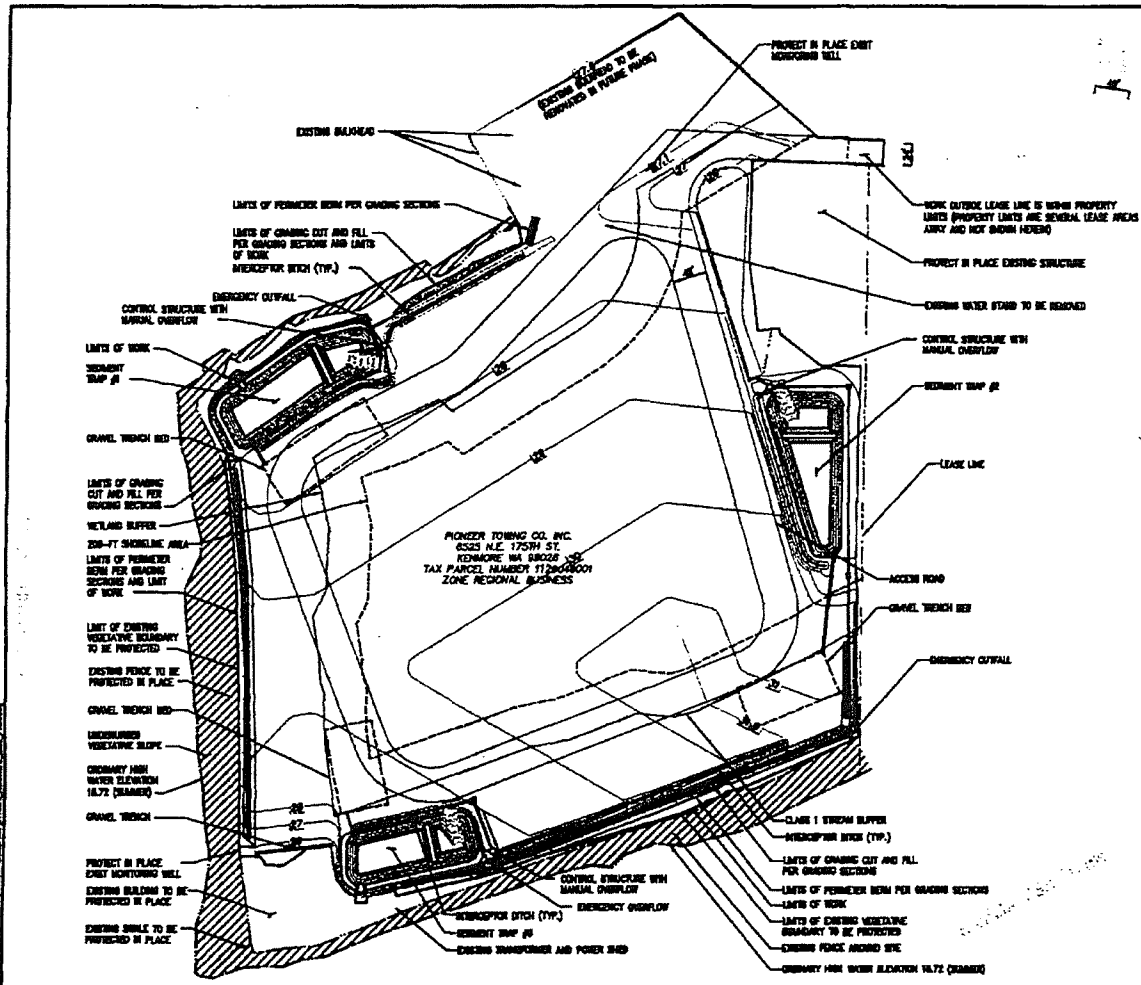
Figure 1
Kenmore Industrial Park
Kenmore, WA

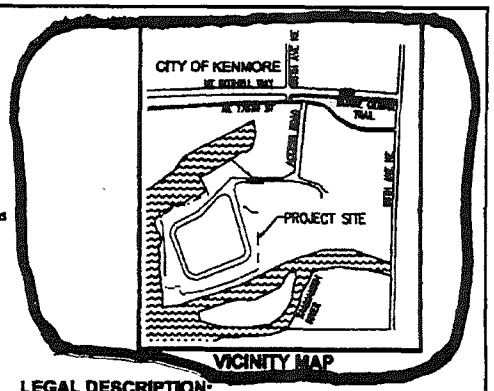
PIONEER TOWING – SITE MAINTENANCE AND RESTORATION
[redacted] 1998 SITE AERIAL PHOTO



PIONEER TOWING – SITE MAINTENANCE AND RESTORATION
2010 SITE AERIAL PHOTO







LEGAL DESCRIPTION:

LOT A KENMORE BLA (BLA0305-116 REC #20040818900001 SD BLA BEING POR GL 1 & 2 & S STR 11-26-4 TOW 2ND CL SH LDG LY SLY OF NE 175TH ST

SITE SUMMARY:

	IMPERVIOUS (ACRES)	PERVIOUS (ACRES)	TOTAL (ACRES)
EXISTING SITE "DISCHARGE TO ORDINARY HIGH WATER"	13.76	1.31	15.10
EXISTING POLLUTION GENERATING SURFACES	12.80	0.05	12.85
EXISTING NON-POLLUTION GENERATING SURFACES	0.96	1.26	1.22
PROPOSED NEW AND REPLACED POLLUTION GENERATING SURFACES	12.80	0.05	12.85
TOTAL TARGETED FLOW CONTROL SURFACES	12.80	0.05	12.85
PERCENT TREATED (SEE NOTE 4)	100%	5%	85%

NOTES:

1. ENTIRE SITE IS LOCATED WITHIN THE CITY OF KENMORE GEOLOGIC HAZARD AREA.
2. SEDIMENT TRAPS AND ASSOCIATED GRAVEL BEDS HAVE BEEN SIZED TO CONTAIN AND INFILTRATE ALL STORMWATER UP TO AND INCLUDING THE 100-YEAR STORM MANUALLY OPERATED EMERGENCY OUTFALLS WILL ONLY BE OPERATED IN CASE OF A FLOODING CONDITION.
3. ENTIRE PROPOSED SITE IS ASSUMED TO BE IMPERVIOUS FOR PURPOSES OF STORMWATER TREATMENT SIZING. HOWEVER, THE EXISTING AND PROPOSED GRAVEL SURFACING WILL ALLOW FOR INFILTRATION AND IS CONSIDERED AS SUCH FOR FLOW CONTROL ONSITE.
4. 88% OF THE TOTAL 14.68 ACRES CLEARED AS LAND DISTURBING ACTIVITIES. THE EXISTING SITE IS ONLY 14.03 ACRES BUT FOR THE PURPOSES OF WATER QUALITY AND FLOW CONTROL ALL AREAS SHOWN IN THE PLANS HEREIN HAVE BEEN TABULATED TO VALIDATE TARGETED TREATMENT AMOUNT.

LEGEND:

- 200' SHORELINE AREA
- 100-FT CLASS 1 STREAM AND WETLAND BUFFER
- LEASE LINE
- LIMITS OF WORK
- EXIST VEGETATIVE BOUNDARY
- CMP
- LIMITS OF FILL
- INTERCEPTOR DITCH
- STORM LINE
- CONTROL STRUCTURE
- CATCH BASIN

N

0' 60' 120'

SCALE: 1"=60'

NOT FOR CONSTRUCTION

NO.	DATE	BY	REVISION

PIONEER TOWING SITE MAINTENANCE AND RESTORATION

SITE PLAN

DRAWN: EV	PROJECT NO.: 111001
DESIGN: JS	SCALE: AS
CHECKED: BD	DATE: OCT 26, 2011
DRAWING NO.	
SHEET NO.	1 OF 1

SIT 2.1

WORKSHEET 1
SUMMARY SCORE SHEET

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

Kenmore Industrial Park
6400 Block of NE 175th Street
Kenmore, WA 98028
King County
S1/2 of NE1/4, and N1/2 of SE1/4, Sec. 11, T26N, R4E

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

A portion of the Kenmore Industrial Park site (east of the dredged channel) was also operated as a private landfill from 1965 to 1981. This landfill was listed by Bayside Disposal as one of twenty landfills in the King County area used for the disposal of hazardous materials, including possible medical waste and transformers. Monitoring wells installed in the vicinity of the former landfill by GeoTech Consultants initially detected elevated heavy metals, including arsenic, cadmium, chromium, lead, and mercury in groundwater beneath the site at concentrations exceeding cleanup standards. In addition, the pH in at least two of the installed wells exceeded 11.

In December 1991, the groundwater monitoring wells on the site were retested by SEACOR, because it was felt that the monitoring wells had not been properly developed during their installation by GeoTech Consultants. The collected groundwater samples were filtered prior to analysis because the groundwater was turbid (also believed to be a result of improper well development). Although the above-mentioned metals (except mercury) were again detected in the groundwater, the concentrations were not found to exceed cleanup standards. In addition, the pH in the wells fell within normal ranges (6.6 to 7.5).

Currently, there is much on-going debate about whether or not groundwater samples collected for metals analysis should be field-filtered. Therefore, even though the metals concentrations detected in the filtered samples collected by SEACOR were below MTCA standards, the former landfill was used as a management unit for WARM scoring purposes. The elevated metal levels detected in the unfiltered GeoTech samples appear to be indicative of subsurface contamination in the vicinity of the former landfill.

The size of the landfill is unknown. However, GeoTech Consultants outlined an area in their report as the possible limits of the landfill deposits. The area is approximately 100 yards long by 75 yards wide, and approximately 2 to 3 yards deep (according to boring logs). This would amount to over 15,000 cubic yards of material apparently deposited in the landfill.

A truck wash-out impoundment used by Kenmore Pre-Mix is also situated in the vicinity of the former landfill. Muriatic acid was used at this pond to wash the outside of the cement trucks. Ponded runoff from other areas on the site is also collected and transported to this impoundment area. Samples of the impoundment water collected during the SHA field investigation identified elevated concentrations of acetone, chromium, and copper in solution. The impoundment covers an estimated 1,700 square foot area, and is estimated to contain about 40,000 gallons of liquid.

An estimated 20,000 square foot area of surface soils at the Kenmore Industrial Park have also been impacted by painting activities conducted at the site by Pacific Ventures. Pacific Ventures has been refurbishing the Ballard Lock doors on-site using materials including coal tar epoxy (containing benzene and toluene, among other constituents), zinc-rich epoxy paint (also containing toluene and alcohols), and curing agents. In addition, paint chips sand-blasted from the lock doors were released to the soil. A sediment sample collected from a drainage ditch adjacent to this area was found to contain elevated concentrations of lubricating oil. The drainage ditch flows into Lake Washington.

Other management areas on the site include various waste piles maintained by Sterling Asphalt, Kenmore Pre-Mix, and Waterfront Construction; various drum storage areas (containing primarily empty drums); and above-ground storage tank (AST) locations. A follow-up inspection conducted by Ecology personnel on February 10, 1992 identified that the piles of petroleum-contaminated soil (PCS) maintained on the site by the Sterling Asphalt Company were only partially covered. Sterling Asphalt representatives indicate that shipments of PCS were arriving at the site on that date, and that the piles were re-covered at the end of the day.

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): A release of lubricating oil to a drainage ditch flowing to Lake Washington was confirmed by the SHA. The lubricating oil apparently originated from adjacent activities by Pacific Ventures. However, there is limited toxicity data readily available for lubricating oil. Therefore, the impacted soil area at Pacific Ventures was not used as a management area for scoring purposes.

Although it is thought that the pH of the Kenmore Pre-Mix waste piles on the site is probably elevated, a sample was not collected during the SHA to confirm this. The concentrations of other contaminants within these waste piles were not sufficiently elevated to consider them as management units for WARM scoring purposes.

The on-site drums also were not used as a management unit for WARM scoring purposes because many of the drums were empty, and the contents of those drums containing product was unknown.

The ASTs were not used as a management unit for WARM scoring purposes because they are primarily contained. However, note should be made that run-off water from the AST locations is collected and transported to the truck-out impoundment on the site.

ROUTE SCORES:

Surface Water/Human Health:	27.7	Surface Water/Environ.:	34.8
Air/Human Health:	40.6	Air/Environmental:	31.9
Ground Water/Human Health:	31.2		

OVERALL RANK: 1

Rev. 6/03/91

WORKSHEET 2
ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE

List substances to be considered for scoring: Source: 1,2

Arsenic, cadmium, chromium, copper, lead, mercury, acetone, benzene, ethylbenzene, xylene, toluene.

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

Monitoring wells installed by GeoTech Consultants in the vicinity of the former landfill on the site found arsenic, cadmium, chromium, lead, and mercury concentrations in groundwater. In addition, sampling during the SHA detected elevated concentrations of acetone, chromium, and copper in an on-site truck wash-out surface impoundment. A follow-up inspection conducted by Ecology on February 10, 1992 also determined that the cover on the petroleum-contaminated waste piles at Sterling Asphalt were not maintained. When considering this combination of management units and contaminants, the waste pile/BETX combination gave the highest subscore (see Worksheet 3). Therefore, this combination was used for scoring the surface water route.

List management units to be considered in scoring: Source: 1,2

Landfill, surface impoundment, waste pile.

Explain basis for choice of unit used in scoring. Source: 2

When considering the available combinations in choosing substances and management units to be used in scoring, the waste pile/BETX combination gave the highest subscore (see Worksheet 3). Therefore, this combination was used for scoring the surface water route.

WORKSHEET 2 (CONTINUED)
ROUTE DOCUMENTATION

2. AIR ROUTE

List substances to be considered for scoring: Source: 1,2

Arsenic, cadmium, chromium, copper, lead, mercury, acetone, benzene, ethylbenzene, toluene, xylene.

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

Monitoring wells installed by GeoTech Consultants in the vicinity of the former landfill on the site found arsenic, cadmium, chromium, lead, and mercury concentrations in groundwater. In addition, sampling during the SHA detected elevated concentrations of acetone, chromium, and copper in an on-site truck wash-out surface impoundment. In addition, a follow-up inspection conducted by Ecology on February 10, 1992 determined that the cover on the petroleum-contaminated soil waste piles at Sterling Asphalt was not being maintained. When considering this combination of management units and contaminants, the waste pile/BETX combination gave the highest subscore (see Worksheet 3). Therefore, this combination was used for scoring the air route.

List management units to be considered in scoring: Source: 1,2

Surface impoundment, landfill, waste pile.

Explain basis for choice of unit used in scoring.

When considering the available combinations in choosing substances and management units to be used in scoring, the waste pile /BETX combination gave the highest subscore (see Worksheet 3). Therefore, this combination was used for scoring the air route

WORKSHEET 2 (CONTINUED)
ROUTE DOCUMENTATION

3. GROUND WATER ROUTE

List substances to be considered for scoring: Source: 1,2

Arsenic, cadmium, chromium, copper, lead, mercury, acetone, benzene, ethylbenzene, toluene, xylene.

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

Monitoring wells installed by GeoTech Consultants in the vicinity of the former landfill on the site found arsenic, cadmium, chromium, lead, and mercury concentrations in groundwater. In addition, sampling during the SHA detected elevated concentrations of acetone, chromium, and copper in an on-site truck wash-out surface impoundment. A follow-up inspection by Ecology on February 10, 1992 also determined that the cover over the petroleum-contaminated soil waste piles on Sterling Asphalt was not being maintained. When considering this combination of management units and contaminants, the waste pile/BETX combination gave the highest subscore (see Worksheet 3). Therefore, this combination was used for scoring the groundwater route.

List management units to be considered in scoring: Source: 1,2

Landfill, surface impoundment, waste pile.

Explain basis for choice of unit used in scoring.

When considering the available combinations in choosing substances and management units to be used in scoring, the waste pile/BETX combination gave the highest subscore (see Worksheet 3). Therefore, this combination was used for scoring the ground water route.

WORKSHEET 3
SUBSTANCE CHARACTERISTICS WORKSHEET
FOR MULTIPLE UNIT/SUBSTANCE SITES

	Combination 1	Corbination 2	Combination 3
Unit:	Landfill	Surface impound.	Waste pile
Substance:	As,Cd,Cr,Pb,Hg	Acetone, Cr, Cu	BETX
SURFACE WATER ROUTE			
Human Toxicity Value:	10 + 3	6 + 3	12 + 3
Environ. Toxicity Value:	10 + 3	8 + 3	4 + 3
Containment Value:	5 + 1	4 + 1	10 + 1
Surface Water Human Subscore:	78	45	165
Surface Water Environ. Subscore:	78	55	77
AIR ROUTE			
Human Toxicity/Mobility Value:	18 + 3	24 + 3	24 + 3
Environ. Toxicity/ Mobility Value:	10 + 3	3 + 3	10 + 3
Containment Value:	0 + 1	8 + 1	8 + 1
Air Human Subscore:	21	243	243
Air Environ. Subscore:	13	54	117
GROUND WATER ROUTE			
Human Toxicity/ Mobility Value:	10 + 3	6 + 3	12 + 3
Containment Value:	8 + 1	7 + 1	9 + 1
Ground Water Subscore:	117	72	150

WORKSHEET 4
SURFACE WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard (ug/l)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Acute Toxicity (mg/kg-bw)	Val.	Carcinogenicity WOE	PF*	Val.
1. Benzene	5	8	-	-	3,306	3	1	5	5
2. Ethylbenzene	700	4	0.1	1	3,500	3	-	-	-
3. Toluene	2,000	2	0.2	1	5,000	3	-	-	-
4. Xylene	10,000	2	2	1	50	10	-	-	-
5.									
6.									

*Potency Factor

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

1.2 Environmental Toxicity

Substance	Freshwater Acute Criteria (ug/l)	Value	Non-human Mammalian Acute Toxicity (mg/kg)	Value
1. Benzene	5,300	2		
2. Ethyl-benzene	32,000	2		
3. Toluene	17,500	2		
4. Xylene	-	-	5,000	3
5.				
6.				

Source: 3 **Value:** 3

1.3 Substance Quantity: <600 cu. yds. Source: 2 **Value:** 6
Explain basis: The estimated quantity of material staged in the Sterling Asphalt waste pile on-site is <600 cubic yards.

WORKSHEET 4 (CONTINUED)
SURFACE WATER ROUTE

2.0 MIGRATION POTENTIAL

2.1 Containment — Source: 1 — Value: 10
Explain basis: No run-on/runoff control; waste pile located outdoors.

2.2 Surface Soil Permeability: high (gravel and sand) — Source: 2 — Value: 1

2.3 Total Annual Precipitation: 39.5 inches — Source: 4 — Value: 3

2.4 Max. 2-Yr/24-hour Precipitation: 2 inches — Source: 4 — Value: 2

2.5 Flood Plain: 100 year — Source: 5 — Value: 2

2.6 Terrain Slope: <2 % — Source: 1 — Value: 1

3.0 TARGETS

3.1 Distance to Surface Water: adjacent (Lake Washington and the Sammamish River) — Source: 1 — Value: 10

3.2 Population Served within 2 miles: ✓pop.= 0 — Source: 6 — Value: 0

3.3 Area Irrigated within 2 miles: 0.75✓no. acres= 0 — Source: 6 — Value: 0

3.4 Distance to Nearest Fishery Resource: adjacent (Lake Washington) ?? Sammamish — Source: 7 — Value: 12

3.5 Distance to, and Name(s) of, Nearest Sensitive Environment(s) Lake Washington (fishery) - adj. Saint Edward State Park - @7,000 feet Sammamish — Source: 7,8 — Value: 12

4.0 RELEASE

Explain basis for scoring a release to surface water: The analysis of samples collected during the site hazard assessment field investigation identified total petroleum hydrocarbons (lube oil) at elevated concentrations in sediments of a drainage ditch adjacent to Pacific Ventures activities on the site. The drainage ditch flows to Lake Washington. — 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 (ug/m³)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Acute Toxicity (mg/m3)	Val.	Carcinogenicity WOE	PF*	Val.
1. Benzene	0.12	10	-	-	31,947	3	A	.03	5
2. Ethylbenzene	1,448.6	1	-	-	-	-	-	-	-
3. Toluene	1,248.8	1	0.57	1	-	-	-	-	-
4. Xylene	1,448.6	1	0.085	1	21,714	3	-	-	-
5.									
6.									

*Potency Factor

Source: 3
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=4 Source: 3
4=3 ; 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. Benzene	31,947	3		
2. Ethylbenzene	-	-		
3. Toluene	-	-		
4. Xylene	21,714	3		
5.				
6.				

Environmental Toxicity/Mobility Matrix Source: 3,9 **Value: 6**

WORKSHEET 5 (CONTINUED)
AIR ROUTE

1.6 Substance Quantity: <600 cubic yards Source: 1 Value: 6
Explain basis: It is estimated that less than 600 cubic yards of petroleum-contaminated soil are at the Sterling Asphalt staging area.

2.0 MIGRATION POTENTIAL

2.1 Containment: Waste pile outdoors; partial cover Source: 1 Value: 8

3.0 TARGETS

3.1 Nearest Population: <1,000 feet Source: 10 Value: 10

3.2 Distance to, and Name(s) of, Nearest Sensitive Environment(s) Lake Washington (fishery) - adj. Saint Edward State Park - @7,000 feet Source: 7,8 Value: 7

3.3 Population within 0.5 miles: √population= @1,150 Source: 10,11 Value: 34

where is the Sammamish River

4.0 RELEASE

Explain basis for scoring a release to air: Source: 12 Value: 5
A March 1991 inspection by the King County Fire Marshal's Office identified the release of paint overspray during Ballard Locks refurbishing operations by Pacific Ventures (visual from process knowledge).

WORKSHEET 6
GROUND WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard (ug/l)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Acute Toxicity (mg/kg-bw)	Val.	Carcinogenicity WOE	PF*	Val.
1. Benzene	5	8	-	-	3,306	3	1	5	5
2. Ethylbenzene	700	4	0.1	1	3,500	3	-	-	-
3. Toluene	2,000	2	0.2	1	5,000	3	-	-	-
4. Xylene	10,000	2	2	1	50	10	-	-	-
5.									
6.									

*Potency Factor

Source: 1,3
Highest Value: 10
+2 Bonus Points? 2

Final Toxicity Value 12

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

Cations/Anions _____ Source: 3,9 **Value:** 3

OR

Solubility(mg/l) 1=3; 2=2; 3=2; 4=2

1.3 Substance Quantity: <600 cu.yds. Source: 2,9 **Value:** 6

Explain basis: The estimated quantity of material stored at Sterling Asphalt is <600 cubic yards.

2.0 MIGRATION POTENTIAL

2.1 Containment Source: 1,2 **Value:** 9

Explain basis: No known liner; unmaintained cover; no leachate collection; no run-on/runoff control.

2.2 Net Precipitation: 21.9 inches Source: 4 **Value:** 3

2.3 Subsurface Hydraulic Conductivity: >10E-5 to 10E-3 Source: 2,9 **Value:** 3

2.4 Vertical Depth to Ground Water: <15 feet Source: 2 **Value:** 8

WORKSHEET 6 (CONTINUED)
GROUND WATER ROUTE

3.0 TARGETS

3.1 Ground Water Usage: not used, but useable Source: 13 Value: 2

3.2 Distance to Nearest Drinking Water Well: NA Source: 13 Value: 0

3.3 Population Served within 2 Miles: NA Source: 13 Value: 0

3.4 Area Irrigated by (Groundwater) Wells within 2 miles: 0.75✓no.acres= 0 Source: 6 Value: 0

4.0 RELEASE

Explain basis for scoring a release to ground water: Recent re-sampling of the groundwater monitoring wells at the site did not detect contaminants in groundwater above MTCA standards. Source: 2 Value: 0

SOURCES USED IN SCORING

1. Field Site Hazard Assessment Investigation, conducted by Elaine Atkinson (Washington Department of Ecology, Northwest Regional Office) and Jeff LaFlam (King County Fire Marshal's Office), November 1, 1991; follow-up inspection February 10, 1992.

2. SEACOR, Groundwater Monitoring Report, Kenmore Site, January 7, 1992; GeoTech Consultants, Phase II Environmental Study, Kenmore Pre-Mix Site, November 1990; and GeoTech Consultants, Phase I Environmental Audit, Kenmore Pre-Mix, September 1990.

3. Science Applications International Corporation, Toxicology Database for Use in Warm Scoring, January 1992.

4. Precipitation-Frequency Atlas of the Western United States. NOAA Atlas 2, Volume IX-Washington. J.F. Miller, R.H. Frederick, and R.J. Tracey. Silver Spring, MD. 1973. 43p.

5. King County Assessors Office plat maps (used for flood plain info.)

6. Water Rights Information System (WRIS) database. Washington Department of Ecology.

7. A Catalog of Streams and Salmon Utilization, Volumes 1 and 2. Washington Department of Fisheries, 1975.

8. Washington Atlas and Gazateer. Delorme Mapping Company, Freeport, ME, 1988.

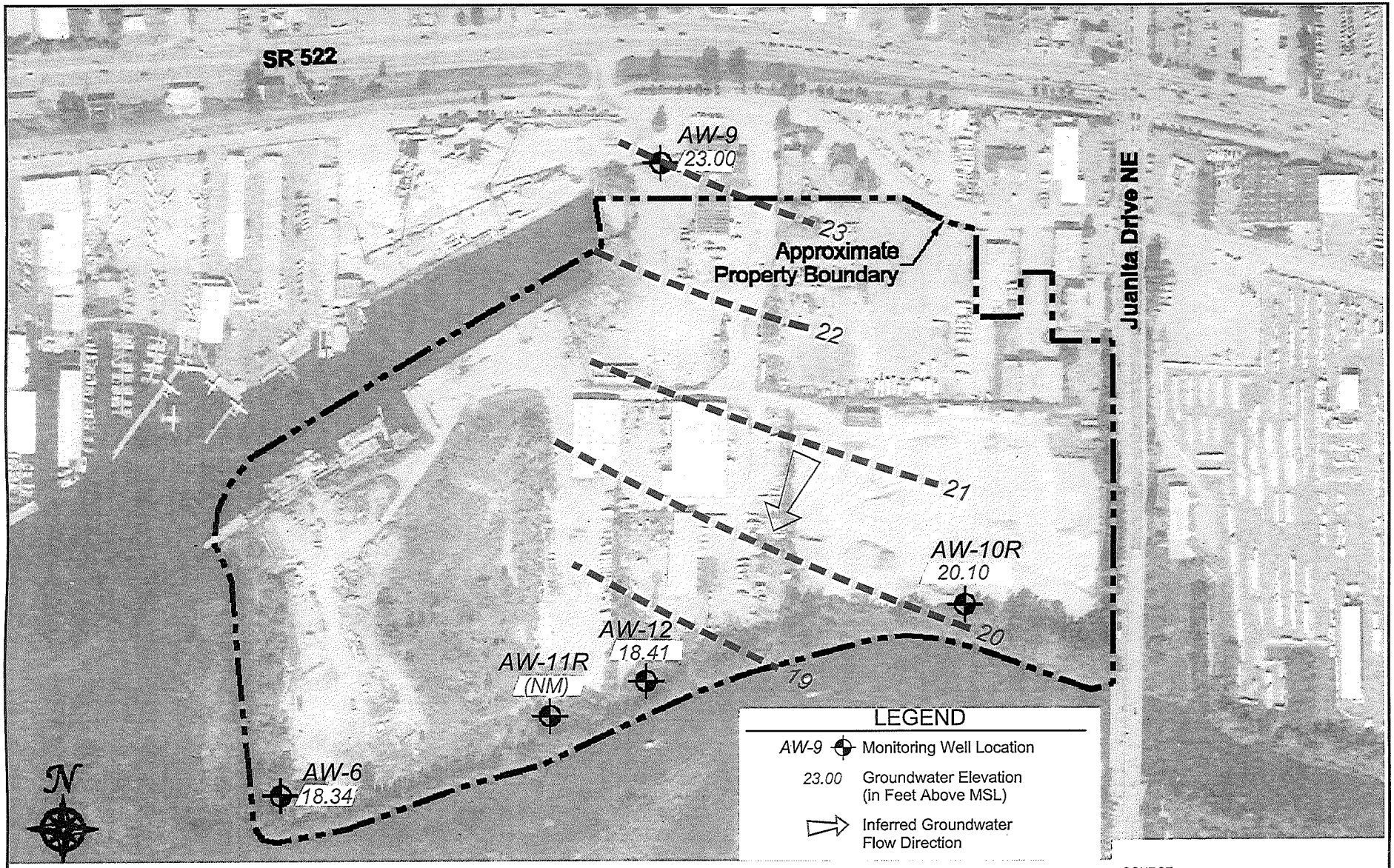
9. Washington Ranking Method Scoring Manual, Hazardous Waste Investigations and Cleanup Program, April 1990.

10. Topographic Map, Edmonds East Quadrangle, photorevised 1968.

11. 1991 Population Trends for Washington State, Forecasting Division, Washington State Office of Financial Management.

12. Inspection conducted by Jeff LaFlam, King County Fire Marshal's Office, March 1991.

13. State of Washington Public Water Supply Systems Listing. Washington Department of Social and Health Services.



SOURCE:

SCS ENGINEERS
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0 600
Scale in Feet

PROJECT NO.	DES BY
04209040.00	S.A.
SCALE	CHK BY
AS SHOWN	E.S.
CAD FILE	APP BY
FIGURE 3	K.L.

WATER LEVEL MAP
APRIL 3, 2012

KENMORE INDUSTRIAL PARK
KENMORE, WASHINGTON

DATE JUNE 2012

FIGURE 3