



MA 6011

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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March 21, 2011

Mr. Dee McGonigle
SRMK, LLC
111 N. Post, Suite 200
Spokane, Washington 99201

Re: No Further Action at the following Site:

- **Site Name:** Mowhawk Flush Doors (also, Seattle Door, SEEDORCO, Sauder Door, Premdor)
- **Site Address:** 747, 777, and 787 - 6th Street South (formerly 733 and 815), Kirkland, Washington
- **Facility/Site No.:** 98437118
- **VCP Project No.:** NW 1543

Dear Mr. McGonigle:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Mowhawk Flush Doors facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

Issue Presented and Opinion

Is further remedial action necessary to clean up contamination at the Site?

NO. Ecology has determined that no further remedial action is necessary to clean up contamination at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:



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- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs), petroleum hydrocarbons (diesel/oil-range(TPH-d/TPH-o), ethylbenzene, xylenes), metals (cadmium, mercury), chlorinated solvents (tetrachloroethene), painting solvents (methyl ethyl ketone, toluene), and pentachlorophenol (PCP) into Soil
- Tetrachloroethene (PCE), trichloroethene (TCE), and cis-1,2 dichloroethene (DCE) into Ground Water.

The contaminants listed above were present at various, widely-spread locations across the former Mowhawk Flush Doors property (the Property). The Site therefore covers most of the Property, as discussed in **Enclosure A**, which includes a detailed description and diagram of the Site.

Please note that an additional site also affects parcel(s) of real property associated with this Site. The separate site is composed of pentachlorophenol-impacted soil and ground water in the extreme southwestern corner of the Property ("the PCP site"). This opinion does not apply to any contamination associated with the PCP site.

Please also note that an adjoining property, Western Pneumatic Tube, includes a VCP site and is undergoing remediation for mainly tetrachloroethene contamination. At this time, we have no information that the parcel(s) associated with this Site are affected by the Western Pneumatic site.

Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. December 8, 2010, *Subject: Site Investigation Report and Request for No Further Action Determination, Former Seattle Door Site – North Site/Phase I, 787 6th Street South, Kirkland, Washington*, letter report by Kleinfelder.
2. April 9, 2010, *Remedial Investigation and Feasibility Study Addendum, Western Pneumatic Tube Company*, WSP Environment & Energy
3. February 23, 2010, email from John Morrow, City of Kirkland, to Maureen Sanchez, Kleinfelder, regarding the another UST in the Interior Central Area
4. September 10, 2009, *Re: Further Action at the following Site: Mowhawk Flush Doors*, letter from Mark Adams, Department of Ecology

Those documents are kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. You can make an appointment by calling the NWRO resource contact, Sally Perkins, at 425 649-7190.

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This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis of the Cleanup

Ecology has concluded that **no further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. Characterization of the Site.

Ecology has determined your characterization of the Site is sufficient to establish cleanup standards and select a cleanup action. The Site is described above and in **Enclosure A**.

Several characterization data gaps were outlined in Ecology's September 10, 2010 letter. These issues were addressed in Kleinfelder's December 8, 2010 report and in the February 23, 2010 email as follows:

- Exterior Parking Lot: Further characterization was requested regarding the extent of cPAHs and oil-range hydrocarbon contamination in the South Driveway portion of this area. Six soil samples were obtained from this area in 2010 per Ecology's request and showed no contaminant concentrations exceeding cleanup levels. In fact, only cPAHs were detected at .012 mg/kg and in only one sample (the cleanup level is .100 mg/kg). Ecology accepts that cPAHs exist sporadically in this area, but at concentrations that do not require cleanup.
- Ground Water: Further ground water sampling was requested to confirm contaminants were not present beneath the Site and migrating off-Property. Sampling from at least three monitoring wells or probes was requested. This additional work was completed in 2010 with the installation and one-time sampling of three wells constructed in the uppermost perched zone at the western Property line. The wells were analyzed for an appropriate suite of compounds and metals (including volatiles by EPA Method 8260 and semi-volatiles by EPA Method 8270). The sampling results showed no detectable contamination attributable to the Site, except for TCE and DCE at .32 ug/l and 1.3 ug/l, respectively. These compounds are breakdown products of the PCE found in Site soils and likely reflect dissolution and migration in ground water. However, the concentrations detected in ground water were less than the applicable cleanup level indicating no need to continue monitoring for confirmation purposes or to evaluate seasonal variation.

Chloroform was also detected in ground water as part of the Method 8260 analytical suite. The chloroform detection was likely due to laboratory

contamination, as this is commonly the source of chloroform detections, and because it was detected in each of the three wells at similar concentrations (between 0.3 and 0.6 ug/l). Even if real, these concentrations would be well below the 7.2 ug/l cleanup level. Ecology does not consider these detections as related to Site contamination.

Ground water samples were also analyzed for arsenic, and this metal was also detected in every sample at concentrations ranging from 4 to 10 ug/l (the cleanup level is 5 ug/L). These detection almost certainly reflect actual arsenic concentrations in ground water, but are unlikely to be representative of contamination from the Site. There is no indication that soils at the Site contained elevated arsenic or that arsenic-bearing materials were disposed of at the Property. There is also no indication that substantial amounts of organic matter or other degradable material was placed as artificial fill at the Property – this is important because decomposing organic matter typically results in anoxic, reducing conditions, which in turn produces elevated arsenic concentrations in ground water. In sum, Ecology does not consider the arsenic detections as being related to the Site, but to general conditions within perched ground water at the Property and in the area.

2. Establishment of cleanup standards.

Ecology has determined the cleanup levels and points of compliance you established for the Site meet the substantive requirements of MTCA.

Cleanup levels and points of compliance for soil have already been established as outlined in Ecology's September 10, 2009 letter. These remain in effect.

The only change is the addition of ground water cleanup levels and points of compliance for the two compounds detected – TCE and DCE. The derivation of cleanup standards for these two is described in the following paragraphs.

Ground water cleanup levels are based initially on an assumed use of the water for potable purposes, unless otherwise indicated. For this Site it might be argued that the shallow ground water is not potable by virtue of limited yield. However, the necessary analyses have not been completed to demonstrate that yield is low. Potable use is therefore assumed. Either Method A or Method B cleanup levels can be used for this purpose, and the most stringent of either these cleanup levels or other applicable standards (e.g., drinking water standards, MCLs) must be chosen. Method A values are not available, so the default is Method B. The Method B cleanup levels for TCE and DCE are 0.5 and 80 ug/L, respectively. However, the Washington primary drinking water standard is lower for DCE at 70 ug/l.

Ground water cleanup levels must also be based on an analysis of other exposure pathways, and the most stringent of the cleanup levels for the various pathways chosen as the final cleanup level. For this Site, there is a potential for ground water to discharge into Houghton Creek (see Attachment A). However, Ecology has concluded it is unlikely contaminants from the Site will reach the creek because the one well with TCE and DCE detections is on the north side of the Site 1,000 or more feet from the creek, and because the shallow perched ground water near the well is more likely to flow straight downhill to the west, rather than across the hillside to the southwest.

The final cleanup levels for ground water are therefore:

TCE 0.5 ug/l
DCE 70 ug/l

The point of compliance for ground water is throughout the Site.

3. Selection of cleanup action.

Ecology has determined the cleanup action you selected for the Site meets the substantive requirements of MTCA.

The selected action consisted of complete removal of all impacted soil with off-Property disposal.

4. Cleanup.

Ecology has determined the cleanup you performed meets the cleanup standards established for the Site.

Site cleanup occurred in four phases, with the first in 1989 and the second in 1996 involving underground tank and sump removals. A more extensive and final cleanup occurred from 2006 - 2007 during the latest episode of construction at the Property. Some final confirmatory sampling was completed in 2010.

It should be noted that investigation and cleanup of PCP-contaminated soil and ground water in the southern area also occurred during this period of time, and the PCP contamination was considered part of the Site until recently.

1989

Two 2,000 gallon underground storage tanks (UST) and one 700-gallon UST were reportedly removed from the Property, as described in the Phase I report from Geotech Consultants in 1994. The tanks contained heating oil, diesel, and gasoline. Confirmation

soil samples collected at the edges and from the base of the two UST excavations reportedly contained total petroleum hydrocarbons at less than 200 ppm. The disposition of soil removed from the tank excavations is not clear.

1996

An area of oil-contaminated soil within the main building associated with "Interior Central Area – Sumps" (see Site Description) was excavated and disposed of off-Property. Two concrete-lined hydraulic press pits were also removed at the time. The final excavation measured approximately 32 feet by 30 feet in plan dimension, with the final depth of excavation ranging from 7 to 12 feet below the floor slab. The excavated soil was initially treated on the Property in a "bioremediation cell", but the treatment proved unsuccessful. The soil was ultimately transported off-Property to the Taneum Recovery facility in Kittitas County.

2006 - 2007

Extensive soil excavation and removal occurred from various areas of the Property (see Attachment A, Site Description), as outlined below. Contaminated soil was taken to Waste Management's Columbia Ridge landfill for disposal.

- Interior Central Area: Approximately 643 tons of contaminated soil were removed from beneath the main building floor slab. The contaminated soil was associated with former hydraulic lifts and sumps that formerly contained hydraulic presses. Confirmation soil samples taken from the base and sides of the excavation showed no detectable contamination. A 1,500 gallon-heating oil tank was also found inside a concrete vault and removed; there was no detectable soil contamination associated with this tank.
- Exterior Northern Area: Two to three feet of soil were removed from this former drainage channel, and 643 tons of contaminated soil were disposed off-Property. Confirmation soil samples showed no residual contamination above cleanup levels.
- Exterior Parking Lot Area: Twelve to fourteen inches of surface soil were scraped from this area and 675 tons of contaminated soil were disposed off-Property. Confirmation soil samples showed no residual contamination above cleanup levels.

2010

Two outstanding issues were identified in Ecology's September 10, 2009 letter, and additional confirmation sampling or evaluation was completed as follows:

- Interior Central Area – Another UST: It appeared that an undocumented UST had been removed during construction work at the Site in 2008, and no

confirmation samples obtained. The City of Kirkland indicated in their February 23 email that this UST was likely the 1,500 gallon heating oil tank that was documented and around which confirmation soil samples had been obtained. Ecology accepts this explanation.

- **Exterior Northern Area:** Additional confirmation sampling was requested in this area to confirm that soils at the western edge of the 2006 excavation met cleanup levels. The number of samples obtained from this area during the remedial action was inadequate, and the depth of collection had not been consistent with the depth of contamination (i.e., the confirmation samples were collected at a depth of 2 to 3 feet whereas the contamination was within the upper foot of soil). An additional three confirmation samples were therefore collected from this area in 2010. The sample results showed both pentachlorophenol and diesel-range hydrocarbons in all of the samples at concentrations below cleanup levels. Ecology concludes that cleanup standards were met in this area.

Listing of the Site

Based on this opinion, Ecology will remove the Site from our Confirmed and Suspected Contaminated Sites List

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you

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performed is substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

3. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70.105D.030(1)(i).

Termination of Agreement

Thank you for cleaning up the Site under the Voluntary Cleanup Program (VCP). This opinion terminates the VCP Agreement governing this project (# NW 1543).

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion or the termination of the Agreement, please contact me at 425 649-7107.

Sincerely,



Mark Adams
NWRO Toxics Cleanup Program

ma/kh

Enclosures (1): A – Description and Diagram of the Site

cc: Maureen Sanchez, Kleinfelder
Dolores Mitchell, VCP FINANCIAL MANAGER (without enclosures)

Enclosure A

Description and Diagram of the Site

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Site Definition and Location: The Site is associated with a variety of contaminant releases at a door manufacturing facility formerly located at 733 and 815 - 6th Street South in Kirkland, Washington (the Property). The Property is currently occupied by new office buildings with the addresses: 747, 777, and 787 - 6th Street South. Diesel- and oil-range hydrocarbons, ethylbenzene, carcinogenic polycyclic aromatic hydrocarbons (cPAHs), metals (mercury, cadmium), pentachlorophenol, painting solvents (xylenes, toluene, methyl ethyl ketone), and a chlorinated solvent (tetrachloroethylene) were released to soil at the Property and comprise the Site, as shown on the attached figures.

A separate site, associated with the release of pentachlorophenol from a specific source (a dip tank), also exists in the extreme southwestern corner of the Property (the PCP site).

Area Description: The approximately 7-acre Property is located near downtown Kirkland in an area of mixed industrial, commercial, retail, and residential land use. The businesses are located along 6th St. S., and are backed by residential housing. An elementary school is located about 200 feet southwest of the Property. The area west of 6th St. S. has historically been used for industrial purposes, but is changing. Only a few industrial operations are still present. One of them, Western Pneumatic, adjoins the Property to the south. Western Pneumatic is conducting cleanup actions in the VCP. An active BNRR rail line also bounds the Property to the west. Across the railroad tracks to the west is the Pace National property, a former chemical mixing and packaging business. Pace National is being cleaned up under an Order with Ecology.

Property History and Current Use: The Property was initially developed in the 1940s, and was reported to have been used variously as a depot for the U.S. Navy and a cabinet factory. In the 1950s, a lumber mill operated at the Property. Seattle Door (SEDORCO) purchased the Property in 1956 and began door manufacturing operations. These operations continued under various names (Sauder Door, Premdoor, and Mowhawk Flush Door) until about 2005. Numerous buildings were constructed on the Property, but the main structures were a large manufacturing facility (the main building) and a much smaller office building (the office). Asphalt pavement surrounded these structures. The buildings were demolished in 2006, as part of constructing new office buildings from 2007 through 2009. The former and new buildings are shown on the attached figures.

Physiographic Setting: The Site is situated on a hillside above the eastern edge of Lake Washington. The land surface at the Property slopes down gently to the west, from about Elevation 195 feet along 6th St. S. to about Elevation 165 feet along the BNRR railroad tracks. The railroad tracks are relatively level with the Property and the former Pace National facility where it passes between the two. Further south, near the elementary school, the land surface drops off steeply down to the school grounds. East of 6th St. S., the hillside slopes upward reaching an Elevation of over 500 feet at the crest of an upland separating Lake Washington from the Sammamish River valley.

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Surface/Storm Water System: Most of the Property and surrounding area is paved or covered with buildings, except for the railroad right-of-way, a wooded area to the southwest, and the elementary school grounds. Storm water in these non-covered areas infiltrates or flows down slope. In the covered areas, storm water is captured in storm drains and discharged to Lake Washington either directly or via urban creeks.

One of these creeks, Houghton Creek, passes a few hundred feet south of the Property. The upper portion of the creek is mostly buried in pipes, but daylights on the elementary school property. A small tributary to the creek originates at a culvert opening closer to the Property just below the railroad tracks on the eastern edge of the elementary school property. Storm water from Western Pneumatic discharges directly into this culvert.

Storm water runoff from the Property, by contrast, currently enters a different storm drain system further north and discharges separately into Lake Washington. It is not clear where surface water runoff historically discharged from the Property, although a map from 1990 shows at least one drainage ditch at the north end of the main building. The ditch appeared to drain onto railroad right-of-way. Surface water runoff from that point is less clear given the lack of clearly defined drainage channels or ditches in this portion of the right-of-way. Some of the runoff may have drained southward towards Houghton Creek.

Ecological Setting: The City of Kirkland has mapped a small wetland area at the culvert discharge point mentioned above, and a larger wetland has been constructed on Houghton Creek further downstream on school property. A small wooded area of about 3-acres in size occurs west of the Property across the railroad tracks. Otherwise the area is developed with limited areas of landscaped yard.

Geology: Shallow geologic conditions at the Property consist of a few feet of fill overlying hard glaciolacustrine clayey silts and fine sandy silts. These deposits extend to about 30 feet, the depth explored at the Property. Geologic investigations on the adjoining Western Pneumatic property were slightly deeper (extending to 38 feet) and showed a glacial outwash sand underlying the hard silts.

Ground Water: The uppermost ground water at the Property occurs as a thin, seasonally absent, water-bearing zone perched within the fill on top of the silts. This water bearing zone is recharged by infiltrating rainfall and lateral flow from higher areas to the east. The depth to water is a few feet or less, and the thickness of the zone is on the order of five feet or less. Sparse water-bearing zones also occur beneath the fill within fine sandy layers in the hard silts. These water bearing zones are likely confined, but do not appear to be under much pressure. At the extreme southern edge of the Property, year-round ground water seepage was detected in several subsurface drain lines. These lines were installed beneath the former main building, and were likely put there to drain the perched zone.

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Ground water also occurs under confined conditions within the glacial outwash sands underlying the hard silts. Wells completed in this zone exhibit flowing artesian conditions, with heads as high as 11 feet above land surface. Ground water flow in this aquifer is generally down-slope to the west. The aquifer likely daylights on the hillside a not-too-great distance to the west.

Release and Extent of Contamination: The Site is defined by diesel- and oil-range hydrocarbons, polycyclic aromatic hydrocarbon (PAHs), metals (mercury, cadmium), pentachlorophenol, and other assorted chemicals, as mentioned above. The contamination at the Property appears to have resulted from a combination of point source leaks (e.g., leaks from underground tanks) and more widespread dispersal (e.g., oiling parking lots). Because of the geologic conditions at the Property, the contamination was retained in near-surface soils, specifically within the fill and upper part of the hard silts. The fill was relatively permeable allowing vertical migration, whereas the underlying silts were not, thus proving an effective barrier to downward contaminant migration. The relative lack of shallow ground water in the zone where contaminated soils were present also helped to prevent both ground water contamination itself, and off-Property migration in ground water.

In the following sections, the nature and extent of contamination is discussed as they relate to specific sources and areas of the Site:

Interior Central Area - Hydraulic Lift: Oil-contaminated soils were located beneath the southern portion of the main building associated with a hydraulic lift sump. The sump was apparently unlined and opened directly to soil. Up to 29,000 mg/kg of oil-range hydrocarbons were initially detected in soil in this area (testing via Method 418.1). The full nature and extent of contamination had not been determined before the start of remediation.

One ground water monitoring well (MW3) installed in an area generally downgradient from the soil contamination showed no detectable diesel/oil-range hydrocarbons.

Interior Central Area - Sumps:

This area has been variously referred to as the marole sumps, hydraulic pits, hydraulic lift pits, hydraulic press sumps, and the press pits. Hydraulic oils and other contaminants were released to soil in this area via cracks and leaks in two concrete sumps within the central portion of the former main building. The two sumps served as the foundation for door fabrication equipment (i.e., the presses), and were about 4.5 feet deep relative to floor slab grade. In an early 1990 investigation, one of the sumps contained spent hydraulic fluid and the other contained some kind of resin.

The soil contamination was concentrated in the upper 10 feet of soil over an area of approximately 70' by 80'. Soil samples in this area were analyzed primarily for diesel- and/or oil-range hydrocarbons, although the earliest investigation (Weston, 1991) also reportedly checked for semi-volatiles, volatiles, PCBs, and metals. The PCBs, volatiles, and semi-volatiles analyses resulted in no reportable detections. Metals may or may not have been analyzed; the

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report is unclear. TPH, as oil-range hydrocarbons, was detected in the Weston investigation and in later investigations up to a maximum of 25,000 mg/kg.

One ground water monitoring well (MW2) installed in an area generally downgradient from the soil contamination showed no detectable diesel/oil-range hydrocarbons.

Interior Central Area - UST: A 1500-gallon heating oil tank, located within a concrete vault below the main building, was removed in 2007 during construction of the new buildings. There was no release to soil from this tank, based on visual observations and confirmatory sidewall and base sampling after the surrounding vault had been removed. Strictly speaking, this area is not part of the Site since no release occurred.

Glue Tank: The 1994 report by Geotech Consultants notes the existence of a 3000-gallon glue tank located somewhere beneath the main building. This tank was reportedly closed in place by filling it with concrete, in consultation with Ecology. Presumably this tank was removed in 2006 during construction of the new buildings, and there must not have been any observed releases given that it was not mentioned in the final 2009 remediation report.

Exterior Area - Underground Storage Tanks: A 2,000-gallon heating oil tank and a 700-gallon diesel tank were removed in 1989 from one excavation in front of the eastern entrance to the main building, and a 2,000-gallon gasoline tank was removed at the same time from the northern end of the building. Confirmatory base and sidewall soil samples contained low or non-detectable concentrations of TPH as described in a 1989 report by Weston (as reported in the 1994 Phase 1 report by Geotech Consultants).

Exterior Northern Area: This area comprises a former drainage ditch at the north end of the property, just outside the former maintenance building. Sediment in the ditch and surrounding surface soils were contaminated with pentachlorophenol, PAHs, fuel hydrocarbons (gasoline- and diesel-range TPH, ethylbenzene, xylenes), metals (cadmium, mercury), chlorinated solvents (tetrachloroethene), and painting solvents (methyl ethyl ketone, and toluene). Of these, only cadmium and mercury exceeded an applicable cleanup level. The vertical and lateral extent of contamination within and off the property had not been fully determined prior to the start of remediation.

Exterior Parking Lot Area: Widespread contamination was detected in the parking lots and yard areas surrounding the main building and the office building. Initial sampling showed a variety of contaminants, but mostly PAHs and pentachlorophenol at concentrations below cleanup levels, except possibly at one location at the south driveway where total PAH concentrations were relatively high (3.2 mg/Kg). Anecdotal reports indicated that oil was spread in just a portion of the parking areas - the main parking lot in the central eastern portion of the Property. Additional sampling was therefore undertaken in the main parking lot and showed elevated concentrations of cPAHs and oil-range hydrocarbons in shallow soils. The maximum vertical extent of contamination was about three feet.

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Ground water monitoring wells MW2 and MW3, and a dewatering well in the railroad right-of-way (see next bullet) are generally down gradient of the former parking lot areas. Samples from MW2 and MW3 were only analyzed for diesel/oil-range hydrocarbons; none were detected. The sample from the dewatering well was analyzed for chlorinated solvents, metals, semi-volatile organics, and TPPO (see next bullet); only pentachlorophenol was detected at 3.3 ug/L. Note that the dewatering well was essentially open to surface water, and was not properly constructed for monitoring purposes. The pentachlorophenol detection may therefore not have been reflective of ground water conditions.

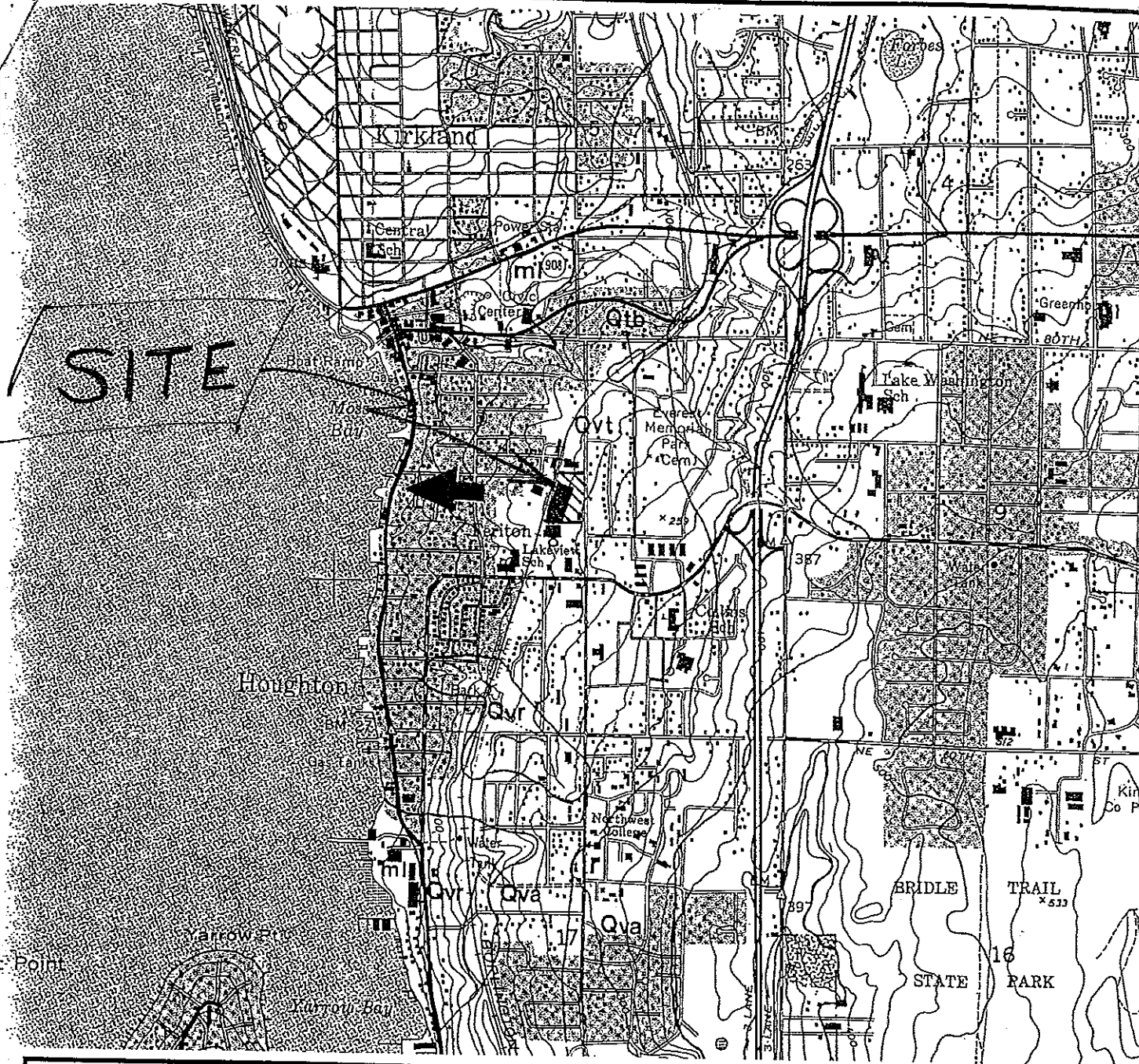
Off-Property Manhole: A new sanitary sewer manhole was constructed in 2008 in the railroad right-of-way between the Property and the former Pace facility. A City of Kirkland employee working in this manhole in mid-September 2008 became ill. Exposure to an unknown chemical compound was suspected. City personnel proceeded to sample a crystalline solid on the interior of the manhole, and the laboratory reported the detection of triphenylphosphine oxide (TPPO). Additional samples of water and/or sediment were subsequently obtained by the City from a catch basin on Western Pneumatic property, the new storm water detention vault on the Seattle Door property, and a dewatering well next to the sewer manhole. TPPO was also detected in all these samples. Ecology staff from the Manchester Laboratory looked at the raw analytical data for some of the samples and concluded that the detections were possible, but could not be verified or quantified. Resampling by both the City and Geotech Consultants a short time after the initial sampling round showed no TPPO. Ecology therefore concluded that no further investigation into the issue was warranted.

The City of Kirkland several months later retained an environmental consultant to conduct another round of sampling following strict field and laboratory protocols. This more rigorous study did confirm TPPO presence in the crystalline solid in the sewer manhole, but not in the other locations where TPPO had previously been detected. The consultant reported that the crystalline solid appeared to have been derived from ground water seepage into the manhole. Ecology also viewed the manhole and does not agree with this observation.

TPPO is an industrial chemical used in fire retardants, epoxy cure catalysts, and polymer bases. It does not have sufficient human health toxicity data or ecological toxicity data to readily establish cleanup levels under MTCA, according to Ecology toxicologists. However, Material Safety Data Sheets for TPPO indicate it can be irritating to the eyes, skin, respiratory system, and gastrointestinal tract, among other potential hazards.

No source for the TPPO has been established, although there are anecdotal reports of fire retardant use in the former door manufacturing process. Other possible sources in the area include accidental releases associated with railroad operations and the Pace facility.

Ecology has concluded the TPPO detection is not part of the Site based the lack of any plausible transport pathway between the Property and the sewer manhole, and on the lack of any direct evidence that the door manufacturing facility used TPPO.



LEGEND:



SITE



PROBABLE DIRECTION OF REGIONAL SHALLOW GROUNDWATER FLOW



Quaternary Vashon Recessional Outwash



Quaternary Vashon Till



Quaternary Transitional Beds

(SOURCE: USGS GEOLOGIC MAP, KIRKLAND, WA. QUADRANGLE 1983)



CONTOUR INTERVAL: 25 FEET
SCALE: 1" = 2,000'



GEOTECH
CONSULTANTS, INC.

SITE VICINITY MAP
SAUDER DOOR PROPERTY
815 - 6th STREET SOUTH
KIRKLAND, WASHINGTON

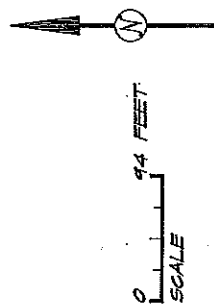
Job No:
98416E

Date:
July 1987

Plate:
1

LEGEND	
SYMBOL	EXPLANATION
---	PROPERTY BOUNDARY
x-x-x-x-x	FENCE LINE
MM-1	MONITORING WELL LOCATION

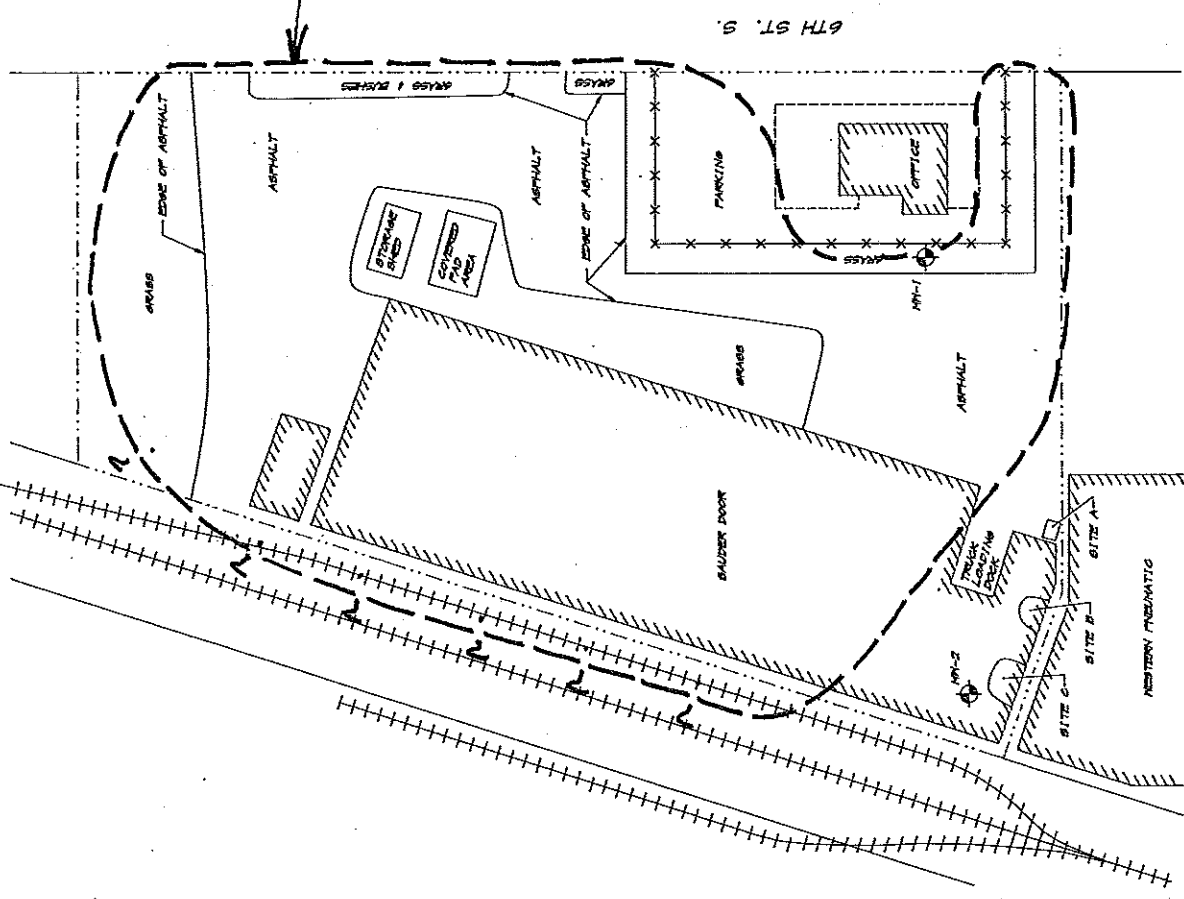
APPROXIMATE BOUNDARY
OF SITE
M. ADAMS, ECOLOGY
SEPT, 2009

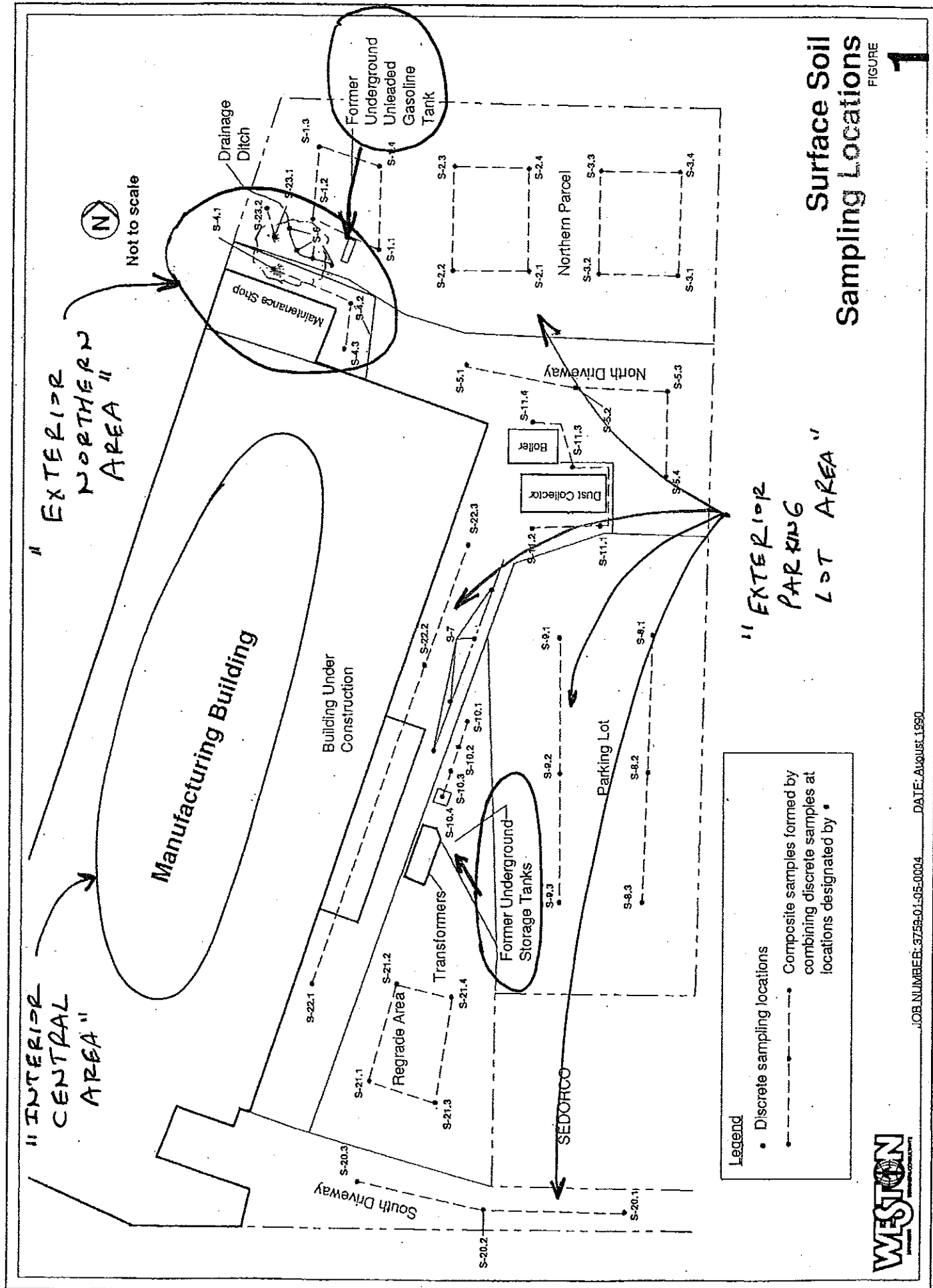


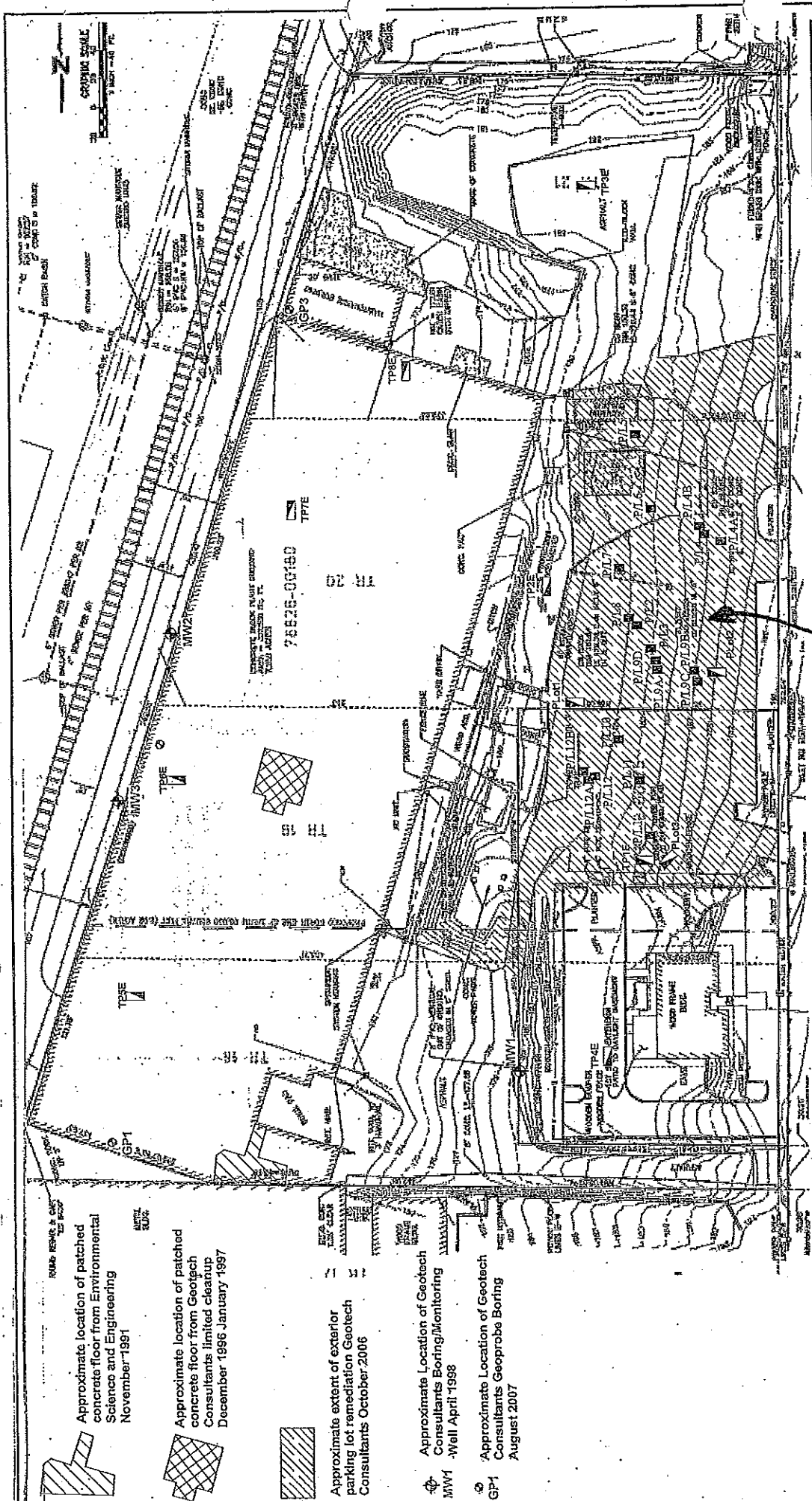
SAUDER DOOR COMPANY
815 6TH. ST. S.
KIRKLAND, WASH.

BASE MAP

DATE	PROJECT NO.	FIG#
1-19-91	0-91-7104	2
SCALE	DWG NO.	SHEET
1"=94'	SDC01E--	B
DRAWN BY	APPROVED BY	REV
M. ARNSTRONG	J. DAISLE	-







EXTERIOR PARKING LOT CONFIRMATION
 FORMER SEATTLE DOOR PROPERTY
 733 - 6th STREET SOUTH
 KIRKLAND, WASHINGTON

Job No:	05122E	Date:	Revised Sept 2009	Plate:	7
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TP1E Approximate location of test pit excavated September 2006.
 PL1 Approximate location of confirmation sample (refer to text and Table 5 for specific details)
 GP1 Approximate location of test pit excavated September 2006.

GEOTECH
 CONSULTANTS, INC.

" EXTERIOR PARKING LOT AREA "

Adapted: DR Strong Company at Kirkland Record Drawings

Approximate location of patched concrete floor from Environmental Science and Engineering November 1991

Approximate location of patched concrete floor from Geotech Consultants limited cleanup December 1996 January 1997

Approximate extent of exterior parking lot remediation Geotech Consultants October 2006

Approximate Location of Geotech Consultants Boring/Monitoring MW1 -Wall April 1998

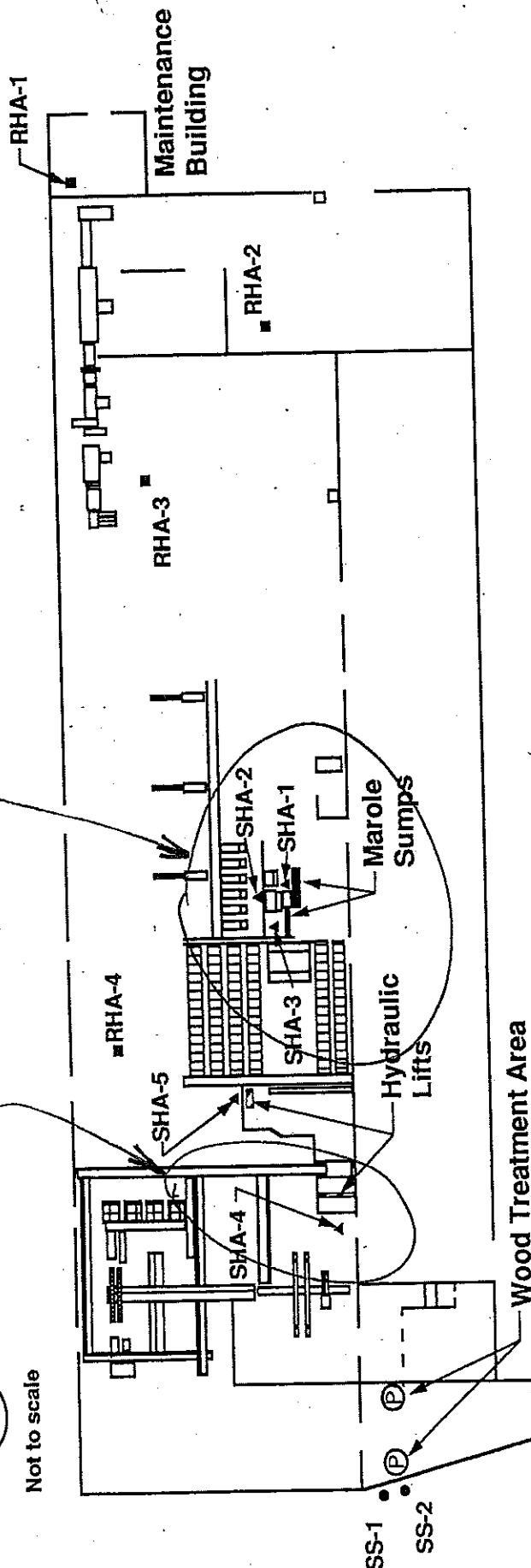
Approximate Location of Geotech Consultants Geoprobe Boring GP1 August 2007

"INTERIOR CENTRAL AREA - SUMPS"

"INTERIOR CENTRAL AREA - HYDRAULIC LIFT"



Not to scale



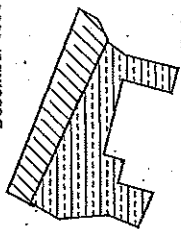
Explanation

- RHA-3 ■ Random Hand Auger Number and Location
- SHA-3 ▲ Sump Hand Auger Number and Location
- SS-1 ● Soil Sample Number and Location

Exploration and Sampling Plan for Sauder Door Company

Figure 1

Approximate location of patched concrete floor from Geotech Consultants limited cleanup December 1996 January 1997



Approximate limits of excavated soil from Geotech Consultants cleanup September - October 2006

Approximate limits of excavated soil from Geotech Consultants cleanup September 2006

Approximate limits of additional excavated soil from Geotech Consultants cleanup October 2006

Approximate location of heating oil underground storage tank discovered June 2007

Approximate Location of Geotech Consultants Boring/Monitoring Well April 1998

Approximate Location of Geotech Consultants Geoprobe Boring August 2007

0 40

Scale



GEOTECH CONSULTANTS, INC.



TP1E Approximate location of test pit excavated September 2006.

TP2E Approximate location of wall confirmation sample

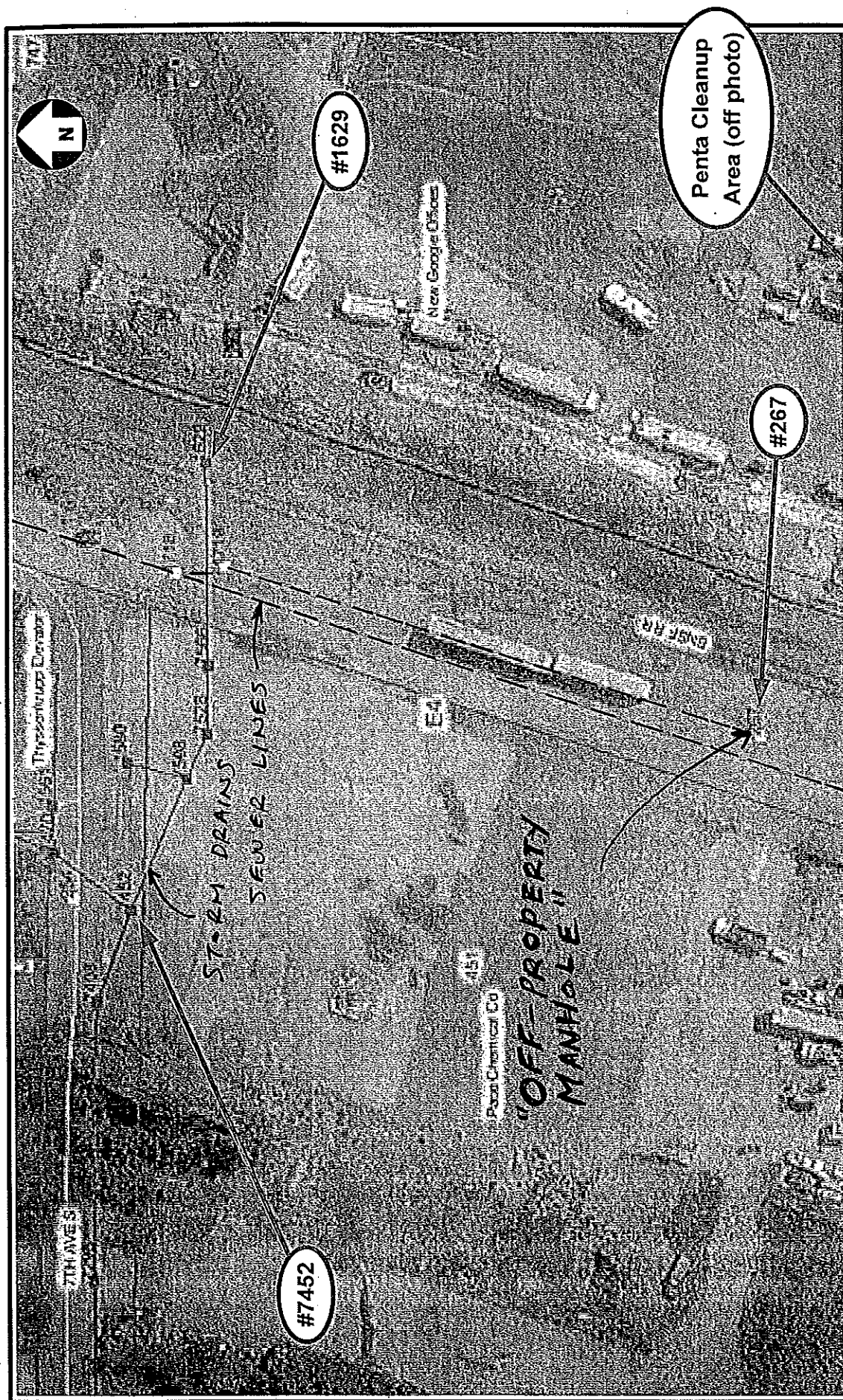
TP7E Approximate location of bottom confirmation sample

INTERIOR CENTRAL CONFIRMATION
FORMER SEATTLE DOOR PROPERTY
733 - 6th STREET SOUTH
KIRKLAND, WASHINGTON

Job No: 05192E

Date: Revised Sept. 2008

Page: 5



Mapping Reference:
City of Kirkland, No
Scale

g_eologics

Sampling Locations
City of Kirkland Utilities
5th Place South and 7th Ave. South
Kirkland, Washington

Figure
2