PRACTICAL ENVIRONMENTAL SOLUTIONS
1342 Tractor Loop, East Wenatchee, WA 98802
jenkins.p2@gmail.com • 509.846.4965

March 31, 2019

Mr. Bob Warren, Section Manager
Department of Ecology NWRO – Toxics Cleanup Program
3190 – 160th Avenue SE
Bellevue, WA 98008-5452

Dear Bob:

Thank you for speaking with me on the phone Friday. At your request, I am emailing you information on the Go East Landfill (Everett, WA) for review by your staff. Ecology made a determination of No Further Action in 2004 for this site, which, in my opinion, cannot be sustained in light of the site information that has been generated since 2004. Perhaps most significant is the recent discovery in January this year of old drums onsite that may have contained liquid dangerous waste. (See photos on following pages.) This discovery was made after Snohomish Health District issued a solid waste permit for closure of the landfill (May 2018), and its subsequent appeal by two homeowners associations immediately adjacent to the landfill property.

The two neighborhood associations-- King's Ridge HOA and the 108th Street Point HOA-- have had concerns regarding the landfill for many years. Indeed, there are a few long-time residents who suffered through years of smoke when the landfill smoldered in the early 1980s. Snohomish Health District has either not had personnel who were sufficiently trained in addressing contaminated sites or lacked adequate resources to respond to the HOAs' concerns. Clearly, the Health District has not had the resolve to require the landfill owner to properly close the landfill over these past 36 years since the landfill ceased operations in 1983. Moreover, it appears that the Health District currently has no one on staff who is familiar with MTCA or the engineering requirements for landfill closure. It is on behalf of these HOAs that I am sending you this information and requesting your review of my summary report and other related materials listed on a following page. These residents and the environment are at risk if the site is not properly characterized prior to closure or if landfill materials are not handled appropriately.

My request is that you review this information as quickly as possible. If dangerous wastes are confirmed to be present at this site, and/or contaminant levels exceed MTCA cleanup levels, it would be appropriate for closure of the landfill to proceed under MTCA regulations as have many old landfills of this nature.

I sincerely appreciate your consideration of this information and would be happy to speak with you or your staff at any time to answer questions and provide any additional file material that may be of use.

Warm regards,

Pam Jenkins, P.E.

Principal, Practical Environmental Solutions

Attachments

File material regarding the Go East Landfill submitted electronically with this letter:

1. Go East Landfill – Information Summary for Assessment Under MTCA, Pam Jenkins, P.E., Practical Environmental Solutions, 3/29/2019.

   Attachment A Potential Hazardous Waste Site Preliminary Assessment – Summary Memorandum, JRB Associates, 12/4/1984

   Attachment B Site Inspection Report for Reckoway Landfill, Merwin, Washington, Ecology and Environmental, Inc., 6/30/1987

   Attachment C Site Hazard Assessment (incomplete), presumably prepared by Snohomish Health District, 5/14/2004

   Attachment D "Cleanup Site Details" for Go East Landfill contained in the Toxics Cleanup Program Web Reporting database, accessed 3/9/2019

   Attachment E Graphic Summary of Test Pit Information, Pam Jenkins, P.E., Practical Environmental Solutions, 1/21/2019

   Attachment F Landau Go East Landfill Site Visit Report, Kent Wiken, P.E., 2/5/2019

   Attachment G Air Emissions and Noise Abatement Plans for Landfill Closure Operations, excerpt from Go East Landfill Closure Land Disturbance Activity – LDA #1 preliminary plan set, PACE Engineers, Inc., 10/4/2018

   Attachment H Proposed Soil Sampling for Landfill Closure, excerpt from Go East Landfill Closure Land Disturbance Activity – LDA #1 preliminary plan set, PACE Engineers, Inc., 10/4/2018

2. Subsurface Exploration, Geologic Hazards, and Geotechnical Engineering Report, Former Go East Landfill, Jon Sondergaard, L.G., L.E.G., Associated Earth Sciences, Inc., 2/28/2013 (Note: This is Appendix A in the Go East Landfill Closure Plan)

3. Revised Hydrogeology, Ground Water, and Surface Water Quality Report, Former Go East Landfill, Jon Sondergaard, L.G., L.E.G. and David Baumgarten, L.G., L.Hg., Associated Earth Sciences, Inc., 10/26/2011. (Note: This is Appendix B in the Go East Landfill Closure Plan)

4. Go East Landfill Closure Plan, Marty Penhallegon, P.E., PACE Engineers, Inc., for P&GE, LLC, revised January 2018. Complete with appendices.

5. Go East Landfill Closure Land Disturbance Activity – LDA #1 preliminary plan set (complete, Sheets 1-22), PACE Engineers, Inc., 10/4/2018

GO EAST LANDFILL

Everett, Washington

INFORMATION FOR MTCA ASSESSMENT

March 31, 2019

Partially exposed steel drum at toe of steep northeast slope

PRACTICAL ENVIRONMENTAL SOLUTIONS
1342 TRACTOR LOOP, EAST WENATCHEE, WA 98802
jenkins.p2@gmail.com • 509.846.4965

GO EAST LANDFILL – INFORMATION FOR MTCA ASSESSMENT

Table of Contents

List of Figures

List of Attachments

GO EAST LANDFILL – INFORMATION FOR MTCA ASSESSMENT

March 31, 2019

1.0 Executive Summary

Go East Landfill is a dormant landfill in southeast Everett, which operated first as a sand and gravel mine beginning in 1969, then as a "limited purpose landfill" from 1972 to 1983. The landfill was never properly closed. It had an explosion in 1974 due to the deposit of reactive metal wastes, and a history of fires. The landfill is on Ecology's Toxic Cleanup Program Integrated Site Information System and noted as No Further Action (NFA in 2004). This report provides information that counters the NFA status based on site data generated after 2004 that the Toxics Cleanup Program has not previously reviewed, and new evidence that dangerous wastes may have been disposed of at the landfill.

The Site Hazardous Assessment upon which the NFA decision was made is incomplete, and there was little sampling data available in 2004 to support a determination. There is now limited groundwater and surface water sampling data indicating the presence of contaminants above MTCA cleanup levels. No soil or sediment samples have been collected or analyzed for potential contaminants. A single set of landfill gas measurements was taken in 2009, showing that landfill gas is still being generated in the landfill. During a site visit in January 2019, old drums were observed near the toe of the landfill's steep northeast face.

Although this site information does not represent a robust characterization of the site, there is substantial evidence that dangerous wastes may have been disposed in this landfill, and that both human and environmental receptors could be at risk. Additional site investigation work is needed.

2.0 Purpose

The purpose of this report is to provide Ecology with new information regarding the Go East Landfill, located at 2330 108th Street SE, Everett, WA, and request Ecology to consider performing additional site investigation work. The former landfill, which operated from 1972 to 1983, was never closed, and has had minimal site investigation work performed to characterize the landfill and the site and determine impacts on groundwater and surface water. Based on findings from a site visit in February 2019, there is new evidence that dangerous wastes may have been deposited onsite beyond the reactive metals waste that caused an explosion and fire in 1974.

This report summarizes the information currently available about the site, and points out where there are information deficiencies and unanswered questions. Ecology is requested to review this information and proceed with a formal site investigation that includes rigorous sampling of soil, groundwater, and surface water, and non-invasive subsurface investigation such as ground penetrating radar to identify buried drums.

3.0 The Author

I am a professional engineer with over 30 years' experience in contaminated site investigations, development and review of remedial action plans, preparation of technical permit applications for mixed nuclear and dangerous waste treatment and storage facilities, and numerous other areas of environmental investigation, design, and regulatory compliance assessment. I worked for Ecology from 1985 to 1990. During that time, I was part of the team that wrote the regulations for the then new Model Toxics Control Act, developed the Washington Ranking Method (WARM) for contaminated sites, and also spearheaded the effort that resulted in the Legislature's passage of a new rule to limit emissions from residential wood burning.

For over 20 years I have worked for environmental consulting firms, including SAIC, Skillings-Connolly, and Practical Environmental Solutions, where I have been involved in dozens of contaminated site investigations—preparing work plans for groundwater, soil, and surface water sampling; conducting sampling; analyzing the sampling analysis data; and preparing site and remedial investigation reports, remedial action plans, and other documents supporting many toxic site cleanups. For five years, I served Washington Department of Corrections as statewide Environmental Manager, which included the gamut of environmental regulatory compliance, including spill cleanups.

4.0 The Site

The Go East Landfill is a small, dormant landfill located in southeast Everett at 2330 108th St. SE, not far from Silver Lake. The landfill occupies approximately 10 acres of a 41-acre parcel currently owned by PG&E, LLC, co-managed by Gary W. East and Marty Penhallegon.

The site was initially a sand and gravel mine operated from 1969 to approximately 1977. Landfilling began in 1972 and stopped in 1983. The landfill is located in a former ravine that runs west to northeast across the property, on a plateau above the Snohomish River floodplain, and on a northeast-facing slope down into another ravine. Two deep ravines border the landfill on the south and east sides. Steep ravine slopes are classified as landslide hazard areas by Snohomish County. See Figure 1. Access to the property is from 108th Street SE onto the northwest corner of the property. A LiDAR depiction of the site is provided in Figure 2.

Closure of the landfill has been proposed by P&GE in order to place a residential development on the property. A subdivision with ninety-seven lots and a single roadway has been approved by Snohomish County Planning and Development Services, which will be located immediately adjacent to the closed landfill.

P&GE submitted its initial landfill closure plan (LFCP) to Snohomish Health District (SHD) in 2010. SHD approved the plan, but the SEPA threshold determination was challenged by residents near the site, and SHD rescinded the SEPA decision when it learned the landfill closure was connected to a proposed residential development. Since then, the LFCP has been revised numerous times, SEPA has been challenged twice more, a closure permit was issued by SHD in 2018, and the permit has been appealed. A decision on the appeal by the Pollution Control Hearings Board is expected in June 2019.

Despite multiple comment letters from Ecology encouraging SHD to require more characterization data from the applicant, and adherence to the requirements of WAC 173-350 for closure of a limited purpose

landfill, **there is no more site characterization data in 2019 than there was in 2010.** While Ecology did not challenge the local health district's landfill closure permit, Ecology has not made any recent evaluation of MTCA issues. Recent findings suggest that additional dangerous wastes, beyond those identified in 1974, may have been disposed of at the landfill.

5.0 Site History

The first land use on this 41-acre parcel located in southeast Everett was as a sand and gravel mine beginning in 1969. At that time, this property was located at the end of a tiny dirt road in a rural area southeast of Everett. The sand mine was located in and adjacent to a ravine with an intermittent stream that crossed the parcel from west to northeast, estimated to be about 60-80 feet deep. In 1972, a firm called Rekoway, Inc. acquired the property and was issued permits for both sand/gravel mining and disposal of solid wastes. The only wastes permitted for disposal were wood, mineral, and concrete.

In 1974, there was an explosion at the landfill caused by dumping of an estimated 200 cubic yards of scrap metal including magnesium filings, phosphorous, and aluminum dust. This event is documented in an August 23, 1974 Seattle P-I article, attributing the waste to a Seattle firm called Northwest Wire & Rope, which appears to have gone out of its way to dispose of these wastes. Magnesium and aluminum are reactive in contact with acids. The P-I article mentions 200 foot high fireballs and damage to a fire truck. The ensuing fire visibly burned in the landfill for quite a while, and is thought to have burned underground for several years after the incident. The point is, these hazardous materials—and possibly others—were received at the landfill even though they were not permitted for disposal at this location. This is consistent with the expectation of relatively lax compliance in that era and raises the risk that various wastes not authorized for disposal at the site are actually present in the landfill. In the 1970s and 1980s, solid waste rules were far from stringent, and there were many landfills that operated with little or no agency oversight, particularly those that were small and located off the beaten track… like the Go East Landfill.

In 1975, Rekoway obtained a permit for landfilling an extended list of materials including tires, car parts and seats, and bulk packaging material. However, the permit was effectively revoked two months later due to Rekoway's failure to provide fire-fighting water and equipment that was required by the new permit. Later that same year, Rekoway applied for a wood waste landfill permit. Snohomish Health District sought Ecology's input on the application. After reviewing the application, Ecology responded it could not recommend approval of a solid waste disposal permit for this facility.

The landfill was on fire again in 1976, and likely had been smoldering underground since the explosion and fire in 1974, and the subterranean fire probably burned until 1979. Rekoway never succeeded in putting out the fire.

The property was acquired in 1979 by Gary W. East, a Seattle attorney, and David Golden, a Seattle physician, who established the Go East Corp. to own and operate the landfill. They requested the County to reactivate the same conditional use permit held by Rekoway, which it granted (CU 7-72). The fire either burned out or was put out and landfill operations at the Go East Landfill commenced in late 1979 under CU 7-72, which allowed disposal of wood, mineral, and concrete. In 1979, SHD issued a wood waste permit to Go East (apparently ignoring Ecology's earlier recommendation against this).

The conditional use permit expired in 1982. Landfilling operations continued into mid-1983 when the Health District issued Go East a stop work order. The landfill owner agreed to close the landfill by January

1984 in accordance with clear instructions from SHD, but the landfill was on fire again in the fall of 1983, and continued to burn until at least 1986. According to SHD, closure was never completed by the owner nor certified by the Health District.

Housing developments were established adjacent to the landfill property on the north side beginning in the early 1980s, on the west side in the late 1990s, and on the east side in the early 2000s. There are numerous homes whose backyards are adjacent to the formerly active portion of the landfill on the north and west sides.

Gary East has been a primary owner of the landfill property since 1979. In 2009, he partnered with Marty Penhallegon, President of PACE Engineers, Inc. to develop the property, creating P&GE, LLC, which now has several more minor partners. P&GE's plan is to shrink the footprint of the landfill, close the landfill using a geomembrane and soil cover, and then place 97 residential lots immediately adjacent to the closed landfill. Reducing the landfill's footprint involves excavation of 50,000 to 60,000 cubic yards of waste and relocating it on top of the remaining waste pile. All of the site characterization data presented in this report comes from the January 2018 version of the Go East Landfill Closure Plan, prepared by PACE Engineers for P&GE, LLC.

6.0 Previous Reports

Previous dangerous waste assessments of the site include:

(1) *Potential Hazardous Waste Site Preliminary Assessment – Summary Memorandum*, dated 12/4/1984, prepared for EPA Region 10 by JRB Associates (Attachment A);
(2) *Site Inspection Report for Reckoway Landfill, Merwin, Washington*, dated 6/30/1987, prepared by Ecology and Environment, Inc., for EPA Region 10 (Attachment B);
(3) *Site Hazard Assessment* (incomplete), presumably prepared by Snohomish Health District, dated 5/14/2004 (Attachment C).
(4) "Cleanup Site Details" for Go East Landfill contained in the Toxics Cleanup Program Web Reporting database, accessed 3/9/2019 (Attachment D).

The 1984 Preliminary Assessment report (Attachment A) was prepared by JRB Associates for EPA after the Go East Landfill had ceased operations and was again on fire. Under EPA's process, once a potential hazardous waste site was listed in EPA's CERCLIS database, a preliminary assessment (PA) was conducted to determine the probable hazard potential of the site based on existing information. PAs were used as a "first cut" of the list of potential hazardous waste sites used to prioritize federal funding for hazardous waste cleanup. Note that the PA conducted for the Go East Landfill preceded adoption of the Model Toxics Control Act (MTCA) by Ecology.

New housing developments under construction were noted to the west, north, and south of the landfill. The report noted phosphate, magnesium dusts, and aluminum dusts as known hazardous wastes deposited in the landfill. (These were the materials that caused an explosion and fire in 1974.) The landfill was stated as 90 feet deep, and groundwater as 100 feet deep. The report's author found no reported leachate problems, but apparently no new sampling was conducted for this assessment. The nearest known well was noted at 3,000 feet to the southeast. Source of information was Ecology, EPA, and SHD files; personal communication with one Ecology employee and one SHD employee; and standard USGS, soil survey, census, and other reference materials. The priority assessment for the site was low, with these follow-up

recommendations: "Continue ongoing site inspections, air monitoring and leachate monitoring. Further action should be based on the results of this testing."

In sum, the site was rated low for potential environmental hazard, probably because few people were living close to the site, and the nearest well was over ½-mile away. Note that the report confirms this site as having received hazardous wastes, that explosion potential still existed, and that the site was on fire at the time of the site visit.

The second assessment was a Site Inspection report (Attachment B) prepared by Ecology and Environment for EPA Region 10 (1987). This Site Inspection report was the second step in EPA's hazardous waste site cleanup process, specifically aimed at prioritizing sites for remediation using federal funds (Superfund). The effort included a file review, review of sampling data acquired by others, and a 1½ hour site visit. No additional sampling was conducted for this report. Information sources included the EPA site file, property co-owner Gary East, standard reference materials, and sampling data provided by SHD. The report notes that 22 notices of violation were issued in 1983-84 when the landfill was on fire. Primary conclusions include an assumption that the quantity of residual magnesium, phosphate, and aluminum dusts (deposited in 1974) was small; surface water sampling from 1981 to 1986 indicated leachate from the landfill had contaminated a stream, but contaminant levels in the stream were below drinking water standards; a recommendation of no further investigation was needed (for EPA Superfund purposes) and that a state or local agency should continue to regularly monitor the site.

The third report is an incomplete Site Hazard Assessment (Attachment C), presumably prepared by Snohomish Health District (no author or agency is stated), dated 5/14/2004. This four-page document contains a site description, description of the site's vicinity, a brief history of the site, and activities conducted by the Health District in 2003, including a well survey within a one-mile radius of the landfill and a failed sampling attempt on 3/16/2004. No sampling data were provided in this report, and none of the other information required for a site hazard assessment was provided.

The site hazard assessment is one step in Ecology's contaminated site cleanup process. This step is the collection of information required for profiling a site for cleanup prioritization according to the Washington Ranking Method. The information needed for ranking a site includes identifying hazardous substances present onsite; past or current waste or material management practices; quantities, toxicity, and mobility of hazardous substances; evaluation of containment features; information regarding potential migration pathways; potential human and environmental receptors; and evidence of release of hazardous substances.[1] None of this information is included in this anonymous report.

The fourth report is the "Cleanup Site Details" for Go East Landfill (Attachment D) contained in Ecology's Toxics Cleanup Program Web Reporting database (accessed 3/9/2019 from https://fortress.wa.gov/ecy/tcpwebreporting/report.aspx, search entry "Go East Corp Landfill"). This report cites a Site Discovery Report received 3/1/1988, a Site Hazard Assessment completed 5/6/2004, and Site Status Changed to NFA on 5/6/2004.

There are some issues with this Cleanup Site Details report:

[1] Michael J. Spencer, *Site Hazard Assessment Guidance and Procedures for Washington Ranking Method*, Department of Ecology Publication No. 91-73, April 1992.

- The only Site Hazard Assessment prepared for this site is incomplete (four-page report presumably prepared by Snohomish Health District, dated 5/14/2004 and discussed above).
- The Site Hazard Assessment (Attachment C) is dated 5/14/2004, but the NFA date is 5/6/2004.
- The Site Details report indicates both inorganic and organic conventional contaminants have been confirmed above cleanup levels in groundwater and surface water, and are suspected in soil and air.
- Metals are confirmed above cleanup levels in surface water, and metals priority pollutants are confirmed above cleanup levels in surface water and soil, per the Site Details report.
- The Site Details report indicates other reactive wastes are suspected in groundwater, surface water, soil, and air.

With contaminants confirmed above cleanup levels in multiple media, a grossly deficient Site Hazard Assessment, and no other site investigation information evident—particularly sampling data, a **No Further Action determination is in error**.

7.0 Site Characterization - Introduction

Portions of the property are classified by Snohomish County as Landslide Hazard Areas based on both steepness and geologic observations. There are steep slopes on the north and northeast sides of the Go East property, and steep ravines transact the property from west to east near the southern property boundary, and from south to north along the east property boundary. See Figure 1.

The Go East Landfill covers approximately 10 acres. The main portion of the landfill is relatively flat, located in the area of a former ravine where a small stream flowed from the west side of the site across to the east and then northeast to the corner of the property. The stream was redirected during landfill operations and currently flows southward away from the landfill and into the southern ravine. The northeast quadrant of the landfill is a steep slope angling down toward the northeast corner of the property. The upper portion of the slope is 2H:1V (50% slope), becoming steeper on the lower portion of the slope to 1.5H:1V (67% slope) and then to 1H:1V (100% slope). This man-made slope is the result of years of waste disposal over the edge of a natural ravine that runs from south to north along the east boundary of the property. See Figure 2.

Since landfill operations ceased in 1983, the site has become overgrown with weeds, abundant blackberry bushes, spindly alders, and some mature cedars and cottonwoods. The waste pile appears to have been covered with a loose, uneven layer of native soil (sand), but there was no formal closure of the landfill after it stopped operations.

PACE Engineers surveyed the property and provided a limited characterization of the landfill's contents, groundwater characteristics, surface water quality, and geologic hazards in 2009, provided in two reports submitted with this document.[2] Associated Earth Sciences, Inc. (AESI) was contracted by PACE in 2009 to excavate a number of test pits in an effort to determine the boundary of the buried waste, install four groundwater monitoring wells, and prepare reports on the subsurface exploration, geologic hazards onsite,

[2] Associated Earth Sciences, Inc., *Subsurface Exploration, Geologic Hazards, and Geotechnical Engineering Report, Former Go East Landfill*, Oct. 21, 2009, Revised Feb. 28, 2013; and Associated Earth Sciences, Inc., *Revised Hydrogeology, Ground Water, and Surface Water Quality Report, Former Go East Landfill,* Dec. 15, 2009, Revised October 26, 2011.

geotechnical engineering, hydrogeology, groundwater and surface water quality. Previously, Hong West Associates had excavated a number of test pits (2002).

Discussions of waste characterization, geology and hydrogeology, groundwater, surface water quality, and landfill gas are provided in Sections 8 through 12 below.

8.0 Waste and Landfill Characterization

A total of 64 test pits and three monitoring well borings provide information regarding the location, depth, and type of waste disposed of in this landfill, and information regarding soils, geology, and hydrogeology. Forty-seven test pits were excavated in 2002 by Hong West Associates, and 17 by AESI in 2009. Test pit locations are indicated in Figures 2 and 3, and a graphic summary of the test pit information is provided in Attachment E. The test pit logs can be found in AESI's *Subsurface Exploration, Geologic Hazards, and Geotechnical Engineering Report, Former Go East Landfill*, Revised Feb. 28, 2013. The waste was characterized primarily as "demolition waste" and "assorted debris." The deepest excavation was to 27 feet below ground surface (TP-18), but the bottom of the waste at this location was not reached. The actual depth of waste is unknown, but estimated to be 60-90 feet based on the approximate depth of the former ravine that most of the landfill now occupies.

These are the wastes identified in the test pits: bricks, dimensional timber, tree limbs, plastic, tree branches, glass, asphalt, wood, boulders, concrete pipe, steel pipes, concrete, steel, charcoal, partially burnt wood, hoses, tires, carpet, crushed glass, packing foam, cardboard, PVC pipes, plywood, plastic sheeting, burnt wood, carpet, foam rubber insulation, linoleum, insulation, wire, stumps, logs, glass brick, metal fragments, cloth, some wood with creosote odor, railroad ties, fabric, woody debris, general refuse, organics, burn ash, and cinder blocks. Please note again that the landfill was permitted to receive only the following materials during its 11-year operating history: wood, mineral, concrete, wood waste, tires, car parts and seats, and bulk packaging material. Underlined materials in the list above were not permitted for disposal. And tires, car parts and seats, and bulk packaging materials were only permitted for a period of two months of the landfill's operation. Burnt wood and burn ash are evidence of the landfill fires that burned or smoldered underground for years.

Two waste materials in the list above are likely to contain asbestos based on the age of the landfill—concrete pipe and linoleum. Both of these products were probably in use in the 1960s or 1970s when transite pipe (transite is asbestos-cement) was commonly used for water conveyance, and linoleum in that period also typically contained asbestos.

Although the list of *permitted* wastes for this landfill was short, clearly many other solid wastes were accepted, including the reactive metal wastes that caused an explosion and fire in 1974. As with many other landfills in this timeframe, oversight by the permitting agency was probably minimal.

As evident in Figure 3, most of the test pits are located along the southern and western edge of the assumed boundary of buried material. There were two or three test pits excavated in the deepest part of the landfill, but these pits did not extend to the bottom of the waste. Therefore, there is no information regarding the oldest waste materials. There were also no test pits excavated within the northeast quadrant of the landfill, which has a very steep slope angling northeasterly toward a deep ravine. Waste was dumped down this slope for many years. **No characterization of the waste has been performed on this**

slope. The depth of waste is unknown and the type of waste materials disposed of there has not been investigated. The northeast slope represents approximately 30 percent of the landfill's area.

During a two-hour site visit on January 31, 2019, employees of Landau Associates, Inc. observed partially exposed drums and metal debris near the toe of the steep northeast slope. See Figure 4. This is the first evidence that drums and possibly liquid wastes were disposed of at this landfill. The Landau staff also observed a brightly colored sheen and orange mud associated with a spring on the lower portion of the steep northeast slope, Figure 5. They believe the sheen and orange mud are evidence of leachate and the action of iron bacteria and organic material, but not of petroleum products. The Landau site visit report is provided in Attachment F.

9.0 Geology and Hydrogeology

The test pit information generally showed waste/fill material of various thicknesses and composition overlying glacial sediments that were primarily sands with some silt and gravel. These sediments directly below the fill were identified by the AESI geologists to be representative of Vashon advance outwash (Qva), and were described as generally consisting of "medium dense to very dense sand, with silt lenses, interbeds, and variable slit and gravel content."[3] These deposits resulted from the melting of advancing glaciers 12,500 to 15,000 years ago during the Vashon Stade of Fraser Glaciation. The monitoring well borings showed that very stiff to hard pre-Vashon glacial lacustrine silts underlie the Vashon outwash sediments. According to AESI's report, these lake sediment deposits predate the Vashon era glaciation. Glacial ice several thousand feet thick compressed the deep sediment into a very hard, dense layer.[4]

The AESI report and test pit logs identified groundwater seepage in several of the test pits, as well as in all four monitoring well borings. Thus waste is in contact with groundwater.

10.0 Groundwater Characterization

AESI installed four 2-inch diameter monitoring wells very near the assumed boundary of buried waste at the landfill. Well locations are marked on Figures 2 and 3. MW-4, the presumed downgradient well, was dry. Water level measurements in the other three wells were taken on three dates (8/18/2009, 2/21/2011, and 4/15/2011). On 8/19/2009, groundwater samples from MW-1, MW-2, and MW-3 were collected and analyzed in the laboratory for RCRA 8 metals (both total and dissolved), iron, manganese, chloride, sulfate, pH, specific conductivity, and semi-volatile organics. **This is the only instance of groundwater quality sampling and analysis in the landfill's 47-year history.** There was no analysis of volatile organics, PCBs, herbicides, or pesticides (i.e., an incomplete priority pollutant analysis).

Although MW-1 may appear to be upgradient from the landfill, it is located very close to buried waste (see Figure 2). Because the test pit locations were not surveyed, their locations are noted in the legend of Figure 6 (from Appendix D of the Landfill Closure Plan) as "approximate." Indeed, locations of the test pits logged by HWA were noted by hand on a small scale map.[5] There could be a margin of error of 20 to 50 feet in the test pit locations. Thus it is likely that MW-1 is well within the groundwater zone that is

[3] Associated Earth Sciences, Inc., *Subsurface Exploration, Geologic Hazards, and Geotechnical Engineering Report, Former Go East Landfill*, Oct. 21, 2009, Revised Feb. 28, 2013, p. 6.
[4] *Ibid.*
[5] "HWA Exploration Locations," Figure 4, dated 5/11, Appendix B, Go East Landfill Closure Plan.

influenced by buried waste and, therefore, cannot be considered to represent upgradient background groundwater quality. Indeed, sampling results indicate that of the three wells, MW-1 had the highest metal concentrations. In fact, the levels of arsenic, barium, chromium, lead, iron, and manganese in MW-1 were five times higher than the levels in MW-3, located only 375 feet away. It is highly unlikely that these differences in heavy metal concentrations would be attributable to natural occurring minerals, particularly at such close proximity and within this relatively simple geologic formation.

With such a limited suite of analyses and a single sampling event, it's difficult to draw definitive conclusions regarding groundwater contamination. However, the data in hand clearly indicate groundwater in all three wells exceeds groundwater or surface water quality standards for arsenic, chromium, and manganese; and standards are exceeded in two of three wells for lead. See the summary of groundwater sampling results in Figure 7.

More groundwater sampling needs to be done, one or more upgradient *background* wells should be installed, and two or more downgradient wells. The three existing wells cannot provide sufficient data to inform a defensible description of the groundwater flow path across the site, nor support a leachate fate and transport analysis. And one set of groundwater quality samples is wholly insufficient to establish a baseline for groundwater quality prior to landfill closure and provide meaningful compliance data.

11.0 Surface Water Characterization

Surface water is of particular interest at this site because it appears that groundwater expresses through several seeps on the east- and south-facing slopes of the major ravines and a year-round spring (labeled SP-1 on Figures 2 and 3) near the toe of the steep northeast slope of the landfill. All of these seeps/springs flow into small streams that join and flow offsite to the north. Over the years, surface water samples have been taken inconsistently from a variety of locations on the property, some of which were poorly documented or not documented at all. Some surface and spring/seep water samples were taken much earlier than the groundwater samples (2009), and several of these samples indicated the presence of leachate. However, no follow-up sampling was conducted to determine whether water quality standards were being exceeded for priority pollutants. Surface water sampling results are provided in Figures 8 and 9.

There is an assumed connection between groundwater flowing under (and through) the landfill and SP-1, the year-round spring near the toe of the steep northeast slope. The spring exits at an elevation approximately 100 feet below the water table elevations recorded in the monitoring wells. However, lacking consistent rounds of quarterly groundwater monitoring coordinated with sampling of this spring, and without a downgradient well, confirmation of this connection has not been accomplished. SP-1 is clearly not the only point where groundwater and leachate may be expressed from the landfill.

12.0 Landfill Gas Characterization

In 2009, AESI conducted sampling of landfill gas at ten locations in the landfill using temporary gas probes. These probes were driven into the subsurface using a direct-push boring rig, and samples collected every five feet of depth as the boring was advanced into the waste pile. Unfortunately, this method did not employ a sealed probe as a permanent monitoring probe would. Without a bentonite seal, ambient air may also be drawn into the sample, diluting the landfill gas and producing LF gas concentration measurements that are not representative of the actual production of LF gas within the waste mass.

Moreover, an equipment malfunction noted in the report could have allowed ambient air into the samples, as noted in Figure 10, taken from the AESI Subsurface Report. These LF gas measurements were not obtained during worst-case atmospheric conditions, when barometric pressure is falling. LF gas migrates from areas of high pressure to areas of low pressure, driven by both subsurface and atmospheric pressure gradients. In order to design for worst-case (highest concentration) conditions, it is important to sample when atmospheric pressure is falling. The sampling conducted by AESI in 2009 was on dates where atmospheric pressure was rising, thus providing lower concentration measurements than would have been obtained during falling barometric pressure. Results of AESI's LF gas measurements are shown in Figure 10.

AESI's characterization of LF gas did not include collection of LF gas samples for analysis of volatile organic (toxic) gases that are also typical components of landfill gas. These toxic gases are regulated by Puget Sound Clean Air Agency. At certain concentrations, these VOCs (volatile organic compounds) must be treated prior to release and may be subject to permitting. Through modeling gas generation for both methane and VOCs, estimates of the quantities of these gases can be determined to inform both design of the collection and treatment system and the location of vents. This modeling was not performed by AESI.

Based on the test pit data, it appears the landfill contains a large quantity of wood waste. Due to the landfill's age, decomposition of much of this wood may have already occurred. It is interesting to note, however, that the test pit observations do not state "decomposed wood," but identifiable types of wood, such as dimensional lumber, limbs and branches, stumps, wood construction debris, and so on. This indicates that at the time of those observations (2009) the wood waste had not been fully or even primarily decomposed. Therefore, the production of LF gas is still active and must be properly measured and controlled.

13.0 Fuel Storage Tank and Probable Release

A fuel storage tank was recently discovered onsite. The tank is mentioned in preliminary Land Disturbance Activity plans, dated 10/4/2018, that were prepared by PACE Engineers and submitted to Snohomish County Planning and Development Services. This tank has not been mentioned in any other documents previously submitted by P&GE regarding the landfill or landfill closure. The information provided does not identify the tank as underground or aboveground, nor is the size of the tank mentioned. Following is the sole description of this tank, included as Note 14, Sheet 9, under "Landfill Closure Plan (LFCP) Requirements and Recommendations – Notes for Land Disturbing Activity (LDA) Permit":

> ON-SITE REFUELING WILL ACCOMPLISH *(sic)* AT ONE LOCATION ON SITE. NOTE: THAT AN EXISTING TANK AND FACILITY EXISTS ON SITE THAT NEEDS TO BE EVALUATED AND DEALT WITH AS APPROPRIATE AND REMOVED. ANY PAST LEAKAGE AROUND THE UNIT SHALL BE MITIGATED AS DIRECTED BY THE PROJECT GEOTECHNICAL ENGINEER.

Based on the age of the landfill, this tank and fueling facility are probably 40-50 years old. There is a strong possibility that leakage from the tank has occurred, and near certainty that spillage from former fuel delivery operations has impacted soils. If Ecology has not previously been notified of this probable release, this report will serve as that notification.

14.0 Proposed Residential Development

P&GE's plan is to create a new housing development around the closed landfill. In fact, the LFCP clearly states that the objective is to develop the property, and in order to do this the landfill must be closed. Based on a ruling by the Pollution Control Hearings Board (Order on Motions, PCHB No. 19-042, Feb. 13, 2019), the 100-foot setback requirement in WAC 173-350-400(4)(j) is not applicable to the new development, and residential property boundaries are proposed to be directly adjacent to the closed landfill.

Ecology has approved several landfill redevelopment projects where residential and/or commercial development was located adjacent to or even on top of a closed landfill. However, Ecology required these projects to have extremely robust LF gas control systems, pre-construction testing, and continuous monitoring of LF gas. None of that has been proposed for this site.

15.0 Other Insufficiencies in the Landfill Closure Plan

Proposed closure of the Go East Landfill includes excavation and relocation of 50,000 to 60,000 cubic yards of waste. This waste material will be piled on top of the remaining landfill, shrinking the footprint from roughly 9.6 acres to 6 acres. Existing residences are located immediately adjacent to the landfill property where this waste excavation/relocation will take place. The LFCP includes minimal, unenforceable measures for protection of residents from air emissions (which may contain asbestos and other contaminants) and noise. See Attachment G. While the LFCP includes a sampling regime for the material to be excavated, the sampling protocol is not the generally accepted MTCA Method A list of contaminants and a statistically relevant sampling frequency, but a procedure taken from Volume IV of the 2005 Stormwater Manual for sampling street waste solids. See Attachment H.

The LF gas system proposed for the landfill closure is entirely inadequate and will not protect residents of the new subdivision. New homes may be constructed as close as 10 feet from the edge of buried waste. The LF gas system does not account for the accumulation of gas under the geomembrane cover once the landfill is closed (there are no vents within the cover), nor will the collection system function as proposed. A gas collection trench is proposed to circle a portion of the landfill's perimeter, but the trench is not deeper than the buried waste and is not keyed into the dense pre-Vashon glacial lacustrine silts underlying the site. Therefore, LF gas will be able to migrate under the trench and out of the landfill into nearby homes. Because of the future's homes' proximity to the buried waste, and LF gas probes being at 100-foot spacing, LF gas could travel under and into homes before the probes indicate that gas is escaping the landfill. In other words, the LF gas system will not provide an early warning system, putting residents and structures at risk.

16.0 Summary and Conclusion

Much more is known about this old landfill now than was known in 2004 when a No Further Action notification was made. There is ample evidence that dangerous wastes may be present in the landfill, and the presence of contaminants above MTCA cleanup levels has been confirmed in groundwater and springs. However, characterization of the site is substantially incomplete. Following are the major missing pieces of characterization information:

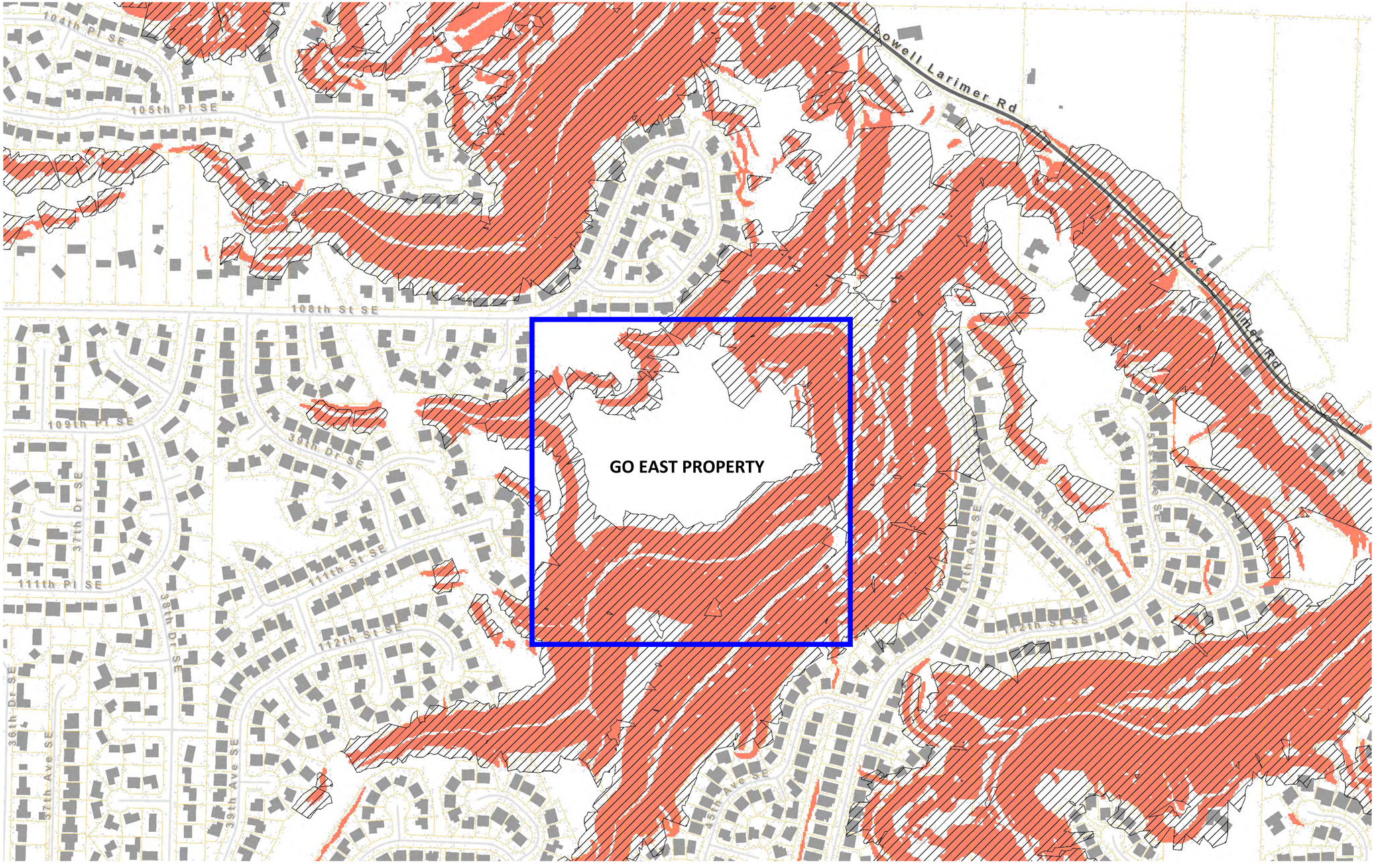
- There has been no characterization whatsoever of waste deposited on the steep northeast slope, where old drums have recently been observed. This slope represents roughly 30 percent of the landfill's total area.
- There has been only one set of groundwater samples collected from the site and analyzed in the –
- laboratory.
- The groundwater sample analysis that was conducted did not include the full suite of priority pollutants.
- Not a single soil sample has been collected from the landfill and analyzed for potential contaminants.
- Surface water sampling has been haphazard, inconsistent, conducted at undocumented locations, and has only rarely included priority pollutant analysis.
- The landfill has a history of fires and one explosion.
- The landfill contains a substantial quantity of wood waste and wooden demolition debris. Decomposition of this material generates methane and other gases, so a fire hazard still exists at the site.
- Landfill gas intrusion into nearby residences may also be a concern.
- Test pit information clearly shows that numerous types of waste were deposited at the landfill that were not permitted. Thus, control of wastes received through the gate was lax. Various types of dangerous wastes could have been received such as drummed material as observed in a site visit 1/31/2019.
- Snohomish Health District failed to require the site owner to properly close the site after it ordered operations to cease in 1983.
- Snohomish Health District failed to prepare a complete Site Hazard Assessment.
- Ecology improperly issued a No Further Action notice for this site.

Ecology Toxics Cleanup Program is hereby formally requested to review the information provided and perform the sampling needed to properly characterize and rank this site under MTCA procedures and cleanup standards. If further file information is needed, I would be happy to provide it. My files on the site's history are extensive.

Pam Jenkins, P.E.

3-31-2019
Date

Figure 1 - Landslide Hazard Areas On and Near the Go East Landfill



800.0 0 400.00 800.0 Feet

Projection: NAD_1983_StatePlane_Washington_North_FIPS_4601_Feet
Planning and Development Services, Snohomish County

Go East Landfill, 4330 108th Street SE, Everett, WA

All maps, data, and information set forth herein ("Data"), are for illustrative purposes only and are not to be considered an official citation to, or representation of, the Snohomish County Code. Amendments and updates to the Data, together with other applicable County Code provisions, may apply which are not depicted herein. Snohomish County makes no representation or warranty concerning the content, accuracy, currency, completeness or quality of the Data contained herein and expressly disclaims any warranty of merchantability or fitness for any particular purpose. All persons accessing or otherwise using this Data assume all responsibility for use thereof and agree to hold Snohomish County harmless from and against any damages, loss, claim or liability arising out of any error, defect or omission contained within said Data. Washington State Law, Ch. 42.56 RCW, prohibits state and local agencies from providing access to lists of individuals intended for use for commercial purposes and, thus, no commercial use may be made of any Data comprising lists of individuals contained herein.

Notes

This map was automatically generated using Geocortex Essentials.

LANDAU ASSOCIATES, INC. | G:\Projects\1780\001\010\011\P CrossSection.dwg | 2/12/2019

Source: http://gismaps.snoco.org/Html5Viewer/Index.html?viewer=pdsmapportal&layertheme=Critical%20Areas

LANDAU ASSOCIATES

LANDSLIDE HAZARD MAP

Legend

- Cone Penetrometer
- Gas Probe
- AESI Test Pit
- AESI Monitoring Well
- Spring
- HWA Test Pit

N

0 50 100 200 Feet

Fig. 2 - Go East LF

LiDAR Topography and Sampling Points

Data Source:
LiDAR: PSLC (2003)

HERRERA

SP-1
EP-16
MW-3
GS-2
EP-5
TP-6
GS-6
TP-24
EP-6
TP-23
TP-7
TP-1A
MW-1
TP-1B
TP-2E
TP-2B
TP-1C
EP-1
TP-2D
TP-2C
GS-10
TP-1D
TP-2A
TP-5
TP-3A
TP-4A
TP-4B
TP-19
TP-16
TP-22
EP-7
GS-7
TP-17
TP-8B
TP-8A
TP-9B
EP-17
GS-9
TP-10B
TP-10C
TP-10A
TP-9A
TP-18
TP-20
TP-21
GS-3
EP-8
CPT 1-6
TP-25
MW-4
EP-14
EP-15
GS-5
TP-26
EP-13
TP-31
EP-2
TP-15
TP-13B
EP-12
EP-11
EP-10
TP-27
TP-30
EP-9
TP-29
GS-4
P-11A
TP-12A
TP-11B
TP-12B
GS-8
TP-11C
TP-13A
EP-3
TP-14A
TP-28
EP-4
GS-1
MW-2
SP-2

Legend

- Cone Penetrometer
- Gas Probe
- AESI Test Pit
- AESI Monitoring Well
- Spring
- HWA Test Pit
- -15' Assumed landfill line
- Applicant's assumed landfill edge

N

0 50 100 200 Feet

Fig. 3 - Go East LF with Prelim. Plat & Sampling Points

with Assumed Landfill Perimeter Lines

Data Source:
LiDAR: PSLC (2014)

HERRERA

P.U.D. NO. 1 EASEMENT
REC. NO. 7603230257
OPEN SPACE TRACT 995
DRIVEWAY EASEMENT
108TH ST SE
ROAD A
ROAD B
PRIVATE ROAD TRACT 991
PRIVATE ROAD TRACT 990
OPEN SPACE TRACT 989
C.A.P.A. TRACT 998
C.A.P.A. TRACT 988
DETENTION TRACT 999
LIFT STATION TRACT 994
OPEN SPACE TRACT 987
EMERGENCY ACCESS TRACT 992
EXISTING ZONING RC 28052100420O
N88°58'15"W 1337.60'
S01°22'58"W 1334.07'
PROPERTY LINE
DRIVEWAY EASEMENT
EMERGENCY ACCESS EASEMENT ACROSS LOTS 46 & 47
15' WATER EASEMENT
EXISTING CULVERT
C.A.P.A. LIMITS PER AFN 199909160523
111TH ST SE
EXISTING LANDSCAPE EASEMENTS
EXISTING WETLANDS TO BE FILLED 8,159 SF
25' SLOPE & STREAM BUFFER AT TOP OF SLOPE (EASEMENT)
OF 9 OF THE TARGETED DRAINAGE PLAN AND SEE CRITICAL AREA STUDY

SP-1 SP-2
MW-1 MW-2 MW-3 MW-4
GS-1 GS-2 GS-3 GS-4 GS-5 GS-6 GS-7 GS-8 GS-9 GS-10
EP-1 EP-2 EP-3 EP-4 EP-5 EP-6 EP-7 EP-8 EP-9 EP-10 EP-11 EP-12 EP-13 EP-14 EP-15 EP-16 EP-17
CPT-1-6
TP-1A TP-1B TP-1C TP-1D TP-2A TP-2B TP-2C TP-2D TP-2E TP-3A TP-4A TP-4B TP-5 TP-6 TP-7 TP-8A TP-8B TP-9A TP-9B TP-10A TP-10B TP-10C TP-11A TP-11B TP-11C TP-12A TP-12B TP-13A TP-13B TP-14A TP-15 TP-16 TP-17 TP-18 TP-19 TP-20 TP-21 TP-22 TP-23 TP-24 TP-25 TP-26 TP-27 TP-28 TP-29 TP-30 TP-31

Exposed deteriorated drums and crushed steel tank in slope

Exposed waste on slope: plastic, plywood, wire, paper debris

2/5/19 P:\1780\001\T\Site Visit 01 31 2019\Figure 5 Site Photos.docx

LANDAU ASSOCIATES

Former Go East Landfill Site Walk Everett, WA	**Photos of Drums and Other Waste 1/31/2019**	Figure 4

Leachate springs at the toe of the Northeast slope.

Rust-colored muck wetlands created by leachate springs.

2/5/19 P:\1780\001\T\Site Visit 01 31 2019\Figure 6 Site Photos.docx

LANDAU ASSOCIATES

Former Go East Landfill Site Walk Everett, WA	**Photos of Leachate Springs and Sheen 1/31/2019**	Figure 5

SE 1/4, SEC 21, T 28 N, R 5 E, W.M.

PROPERTY LINE

10' WIDE GRAVEL PATH

SDMH

EXTEND 12" SD TO PICK UP SWALE

ROCK LINED CHANNEL

HDPE SD OUTFALL

C SEE SHEET 2

EXTEND CULVERT AS REQ'D

EXISTING STREAM 3

N88°58'15"W 1337.60'

EXTEND 8" MAIN ON-SITE AND INSTALL FIRE HYDRANT. (TO BE USED FOR LANDFILL CLOSURE ACTIVITY)

APPROXIMATE ON-SITE BORROW AREA FOR STRUCTURE FILL

CAP

CB CONSTRUCTED AS PART OF PLAT DRAINAGE

MW-3 (213.18)

MW-6 (PROPOSED) (110±)

MW-5 (PROPOSED) (110±)

SP-1 110.5

QUARRY SPALL PLATFORM AS REQ'D FOR DRILLING 2 NEW WELLS

12" DEEP SWALE

FIRE HYDRANT TO BE INSTALLED PRIOR TO LANDFILL CLOSURE WORK

LIMITS OF DYNAMIC COMPACTION 15' WIDE

SEE 4/3

WALK ENTIRE AREA AND REMOVE ANY DEBRIS FOUND AND FILL ANY DEPRESSIONS

OLYMPIC PIPELINE EASEMENT

S01°22'58"W 1334.07'

PROPERTY LINE

N01°16'30"E 1332.52'

BUFFER AVERAGING (TYPICAL)

ROAD A

SLOPE @ 2%

MW-1 (210.28)

1'± WIDE METHANE VENT TRENCH (TYP.) 1/3

IE 227±

STORM DRAIN CULVERT IE 226.5±

10' WIDE GRAVEL PATH

THREADED CAP ENDS, CONCRETE HEADWALL

MW-4

D SEE SHEET 3

SDMH OVERFLOW 48" MANHOLE W/ DEBRIS CAGE

CONTROL STRUCTURE

WETLAND BUFFER RESTORATION AREA

AREA TO BE USED FOR SCREENING AND STOCKPILING RELOCATED LANDFILL MATERIAL

POTENTIAL PLAY AREA

SLEEVED-DOUBLE PIPE

LIMITS OF DYNAMIC COMPACTION (10' BEYOND POND)

POND INLET

WATER QUALITY POND & TEMPORARY SEDIMENT POND

PVC FOR METHANE VENTING MONITORING (TYP.)

EXISTING WETLAND TO REMAIN

SDMH FOR SD SYSTEM OUTSIDE LANDFILL, SEE BAKERVIEW PLAT (PICK UP AND DIRECT DRAINAGE AS REQ'D)

POND OUTLET

WETLAND BUFFER RESTORATION AREA

1'± WIDE METHANE VENT TRENCH (TYP.) 1/3

SLOPE @ 2%

TRAIL

A SEE SHEET 2

GAS PROBE LOCATION, TYP. 3/3

MW-2 (183.39)

ROAD A

RE-ALIGNED STREAM CORRIDOR LOCATED OUTSIDE OF LANDFILL AREA

TEMPORARY DIVERSION PIPE AS REQ'D FOR NEW STREAM CONSTRUCTION

CONSTRUCT NEW STREAM CHANNEL, BUFFER AREAS AND LANDSCAPE IN COMPLIANCE WITH APPROVED PLANS. SEE 5/3

EXISTING STREAM LOCATION SEE RESTORED STREAM CORRIDOR

TEMPORARY INTERCEPTOR SWALES

SP-2 LOCATED JUST UPSTREAM OF PL EASEMENT

EXISTING WETLANDS TO BE FILLED & REPLACED 8,159 SF.

B SEE SHEET 2

ENGINEERED STREAM CHANNEL WITH LOG/BOULDER ENERGY DISSIPATERS

APPROXIMATE ON-SITE BORROW AREA FOR STRUCTURE FILL

EXISTING STREAM 2

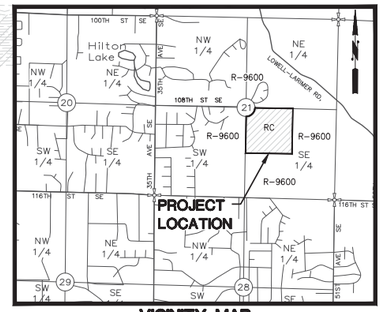
LEGEND:

- APPROX. AREA OF EXISTING LANDFILL TO BE EXCAVATED AND REPLACED WITH STRUCTURAL FILL
- ON-SITE BORROW AREA FOR STRUCTURAL FILL
- COVER SYSTEM 1
- COVER SYSTEM 2
- EXISTING SLOPE TO REMAIN UNDISTURBED
- EXISTING WETLAND AREA (TO REMAIN OR BE REMOVED AS NOTED)
- LIMITS OF CAPPED & CLOSED LANDFILL AREA
- LIMITS OF EXISTING LANDFILL (APPROX.)
- LIMITS OF LANDFILL EXCAVATION (APPROX.)
- APPROX. 1' WIDE METHANE VENT TRENCH
- 245 CONTOUR LINE (5 FOOT INTERVAL SHOWN)
- PVC FOR METHANE VENTING MONITORING
- APPROXIMATE LOCATION OF TEST PIT (AES INC. OR HWA)
- ASSOCIATED EARTH SCIENCES, INC. TEST PIT LOCATION, POTENTIAMETRIC
- ASSOCIATED EARTH SCIENCES, INC. APPROXIMATE LOCATION OF MONITORING WELL, GROUND WATER EL (FT) (6 SHOWN)
- ASSOCIATED EARTH SCIENCES, INC. APPROXIMATE LOCATION OF SURFACE WATER SAMPLE (2 PLACES)
- G GAS MH (4 SHOWN)
- # PROPOSED GAS PROBE MONITORING LOCATION

NOTES:

- EXPLORE EACH LOT OUTSIDE LANDFILL TO VERIFY BURIED DEBRIS IS COMPLETELY REMOVED.
- ANY DEBRIS FROM OUTSIDE THE LANDFILL LIMITS SHALL BE RELOCATED TO THE LANDFILL OR DISPOSED OF OFFSITE AS APPROPRIATE.
- CONSTRUCT TESCP FEATURES AS SHOWN IN FINAL APPROVED LAND DISTURBANCE DRAWINGS AND REQUIREMENTS.
- PROVIDE TEMPORARY DITCHING AND WATER QUALITY FEATURES AS REQUIRED TO DIRECT RUNOFF TO THE DETENTION POND AND MAINTAIN THEM UNTIL PERMANENT PLAT DRAINAGE FEATURES ARE CONSTRUCTED.

0 25 50 100
Scale In Feet



VICINITY MAP
SCALE: 1" = 2000'

NO.	SYM.	REVISION	DATE
		REVISED GRADING	1/26/18
1		REVISED GRADING	12/05/13

PACE
An Engineering Services Company
11255 Kirkland Way, Suite 300
Kirkland, WA 98033
p. 425.827.2014 | f. 425.827.5043
civil | structural | planning | survey
pacenglrs.com

GO EAST
LANDFILL CLOSURE

GRADING & DRAINAGE PLAN

FIGURE 6

SCALE:	DATE:
1"=50'	1/26/2018
DESIGNED BY: SC	CHECKED BY: MP
JOB NUMBER P09382.00	
DWG NAME: P09382_LF-DR	
SHEET 1 OF 3	

FILE NAME: P:\P09\09382.00_GO EAST\CAD\FIGURES\SHEETS\LANDFILL CLOSURE\2018\P09382_LF-DR.DWG
SAVED: 1/26/2018 10:19 AM
PLOT TIME: 1/26/2018 10:19 AM
USER NAME: BEN MONTGOMERY
XREF FILES: X09382_SRV, X09382_WCMAP, X09382_LFBASE, X09382_LF_GR_SCREEN, X09382_LANDFILLBDR

Figure 7 - Groundwater Sampling Results 8/19/2009 (Table 5, Appendix B (10/26/2011), Go East Landfill Closure Plan

KE090231A

Table 5. Ground Water Quality Results
Go East Landfill

Groundwater

		Metals (mg/L)[1]														
		Arsenic		Barium	Cadmium	Chromium		Lead		Selenium	Silver	Mercury	Iron		Manganese	
Well No.	**Date**	Total	Dissolved	Total	Total	Total	Dissolved	Total	Dissolved	Total	Total	Total	Total	Dissolved	Total	Dissolved
MW-1	8/19/2009	**0.045**	**0.021**	0.62	<0.002	**0.23**	<0.002	**0.058**	<0.002	0.003	<0.002	<0.0002	**120**	**0.47**	**3.2**	**0.073**
MW-2	8/19/2009	**0.076**	**0.0096**	0.99	<0.002	**0.6**	<0.002	**0.084**	<0.002	0.0055	<0.002	0.00062	**240**	<0.2	**5.9**	**0.12**
MW-3	8/19/2009	**0.0082**	**0.0064**	0.13	<0.002	**0.054**	<0.002	0.0075	<0.002	<0.002	<0.002	0.00025	**22**	<0.2	**0.51**	**0.064**
SWC[2]		0.00005		1	0.005	0.05		0.05		0.01	0.05	0.002	0.3		0.005	
MCL		0.01		2	0.005	0.1				0.05	0.1	0.002	0.3		0.05	

Well No.	**Date**	Chloride (mg/L)	Sulfate (mg/L)	pH	Spec. Cond. umhos/cm	SVOC (ug/L)[2]
MW-1	8/19/2009	61	27	8.47	470	ND
MW-2	8/19/2009	78	24	8.24	630	ND
MW-3	8/19/2009	170	31	8.25	**780**	ND
SWC		250	250	6.5-8.5	700	
MCL		250	250		700	

Note:
1) mg/L = milligrams per liter
2) ug/L = micrograms per liter
3) SWC = State Groundwater Quality Criteria per WAC 173-200
4) **Bold** = Exceeds SWC
5) MCL = State Drinking Water Standard

Figure 8 - Summary of Surface Water Sampling Data 1981-2004

(Table 3, Appendix B (10/26/2011), Go East Landfill Closure Plan)

Table 3 Summary of Previously Collected Water Quality Data: Leachate Spring/Surface Water

Results presented as a range of measured parameters

Sampling Agency/Event	pH	Specific Concuctance (umhos/cm)	Iron (mg/l)	Manganese (mg/l)	Zinc (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Nitrate (mg/l)	Nitrite (mg/l)	Ammonia Nitrogen (mg/l)	Total organic carbon (mg/l)	Tanins and Lignins (mg/l)	Phosphate (mg.l)	Chemical Oxygen Demand (mg/l)	Sodium (mg/l)	Fluoride (mg/l)	Potassium (mg/l)	Calcium (mg/l)
Ecology Sampling 1981 to 1986																		
"Leachate Spring"	6.5 - 8.3	510 - 979	0.12 - 24[1]	2.0 - 2.8	0.01 - 0.04	23 - 220	85 - 180	0.05 - 0.75	0.05 - 0.25	2.8 - 7.2	13-31	4.1 - 14	NT[3]	NT	NT	NT	NT	NT
Stream No. 3 Samples	6.5 - 7.8	116 - 199	0.02 - 2.1[1]	0.02 - 0.25	0.01 - 0.08	1 - 64	6 - 23	2.6 - 4.2	0.01 - 0.05	0.01 - 0.48	3 - 5	0.41 - 1.0	NT	NT	NT	NT	NT	NT
Snohomish County Sampling 1989 to 1996																		
"Leachate Spring"	6.6 -7.8	200 - 949	<0.01 - 6.5[2]	1.5 - 1.63[2]	<0.002 - 0.013[2]	14 - 20	<4.0 - 34.9	<0.01 - 0.206	<0.01 - 0.036	0.07 - 4.1	34.9 - 65.3	2.9 - 3.2	<0.1 - 0.193	59 - 80.4	33	<0.05	NT	NT
Stream No. 3 Samples	7.6 - 8.0	160 - 450	0.05 - 0.81[2]	0.005 - 0.40[2]	<0.002 - 0.90[2]	3.8 - 5.7	<4.0 - 16.6	2.0 - 2.5	0.002 - 0.01	0.07 - 0.32	3.9 - 12	0.4 - 0.7	0.107 - 0.117	5.8 - 33.9	6.0 - 14.7	<0.5	NT	NT
Robert Bober Single Event (September 1997)																		
Ground Water Seepage Samples (three sampling stations)	7.6 - 7.7	174 - 212	0.198[1]	<0.005[1]	<0.02[1]	4.67 - 6.48	7.30 - 9.57	2.42 - 3.37	<0.05	<0.10	1.05 - 1.78	<0.250	<0.10	<10	6.53 - 7.28	NS	2.05 - 2.39	10.3 - 15.0
HWA GeoSciences Single Event (May 2002)[5]																		
Surface Water Sample	NT	NT	21	1.5	NT	8.95	1.83	<0.200	NT	NT	29.8	NT	NT	NT	NT	NT	NT	NT
Snohomish County Sampling Single Event March 2004[6]																		
Seepage Sample	NT	NT	NT	NT	0.01	NT	5	1.72	NT	NT	9.93	NT	NT	NT	NT	NT	NT	NT
Surface Water Sample	NT	NT	NT	NT	ND[4]	NT	ND	ND	NT	NT	3.63	NT	NT	NT	NT	NT	NT	NT

Notes

(1) Total Metals

(2) Dissolved Metals

(3) Not Tested

(4) Non Detect

(5) HWA sample also analyzed for total dissolved solids, total suspended solids, total coliform, fecal coliform, TPH-G/BETX, TPH-Diesel, Total metals (priority pollutant metals), volatile organic compounds (VOCs), semi-volatile organic compounds SVOCs, Pesticides, and PCBs. Non-detect was reported for TPH-G/BETX and TPH-Diesel. Priority Pollutant Metals were all Non-Detect except for lead which was 0.002 mg/l. VOCs were all Non-Detect, SVOCs were Non-Detect except for acenaphthene which was 0.0011 mg/l, fluorene which was 0.00072 mg/l, flouranthene which was 0.00015 mg/l, benzo(a) anthracene which was 0.00001 mg/l, and chyrsene which was 0.00001 mg/l. Pesticides were all Non-Detect. PCBs were all Nor Fecal coliforms were detected at 11 MPN/100 mg/l, and Total coliforms were detected at 4.0 MPN/mg/l.

(6) Snohomish County 2004 samples were also analyzed for proirity pollutant metals and carcinogenic polyaromatic hydrocarbons (PAHs). PAHs were not detected. Arsenic was detected at a concentration of 0.003mg/l in the seepage sample and 0. in the surface water sample. Chromium was detected at 0.002 mg/l in the seepage sample. Lead was detected at 0.001 in the seepage sample. Nickel was detected at 0.004 mg/l in the seepage sample and 0.002 mg/l in the surface water sample.

Figure 9 - Surface Water Sampling Results - 8/26/2009 (Table 4, Appendix B (10/26/2011, Go East Landfill Closure Plan)

KE090231A
Table 4. Surface Water Quality Results
Go East Landfill

Total Metals (mg/L)[1]

Sample No.	Date	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Iron	Manganese
SP-1	8/26/2009	<0.002	0.42	<0.002	0.0057	<0.002	<0.002	<0.002	<0.0002	110	1.4
SP-2	8/26/2009	<0.002	0.017	<0.002	0.0034	<0.002	<0.002	<0.002	<0.0002	0.43	0.026
SWQ[3]		0.36		0.166[5]	0.015[5]	0.276[5]	0.02	2.3[5]	0.0021		

Sample No.	Date	Chloride (mg/L)	Sulfate (mg/L)	pH	Spec. Cond. umhos/cm	SVOC (ug/L)[2] Fluorene	Acenaphthene
SP-1	8/26/2009	5.8	<1.2	6.49	580	0.68	1.3
SP-2	8/26/2009	6.1	9.6	7.96	280	<0.31	<0.52
SWQ		860					

Note:
1) mg/L = milligrams per liter
2) ug/L = micrograms per liter
3) SWQ = State Surface Water Quality Criteria per WAC 173-201A
4) **Bold** = Exceeds SWC
5) SWQ at hardness = 100

Figure 10 - Landfill Gas Probe Data- 8/7/2009 and 10/5/2009

(Table 1, Appendix A (2/28/2013) - LFCP)

Probe	Date	Sample depth below ground surface (feet)	O_2 (%)	CO_2 (%)	CH_4 (%)
GS-1	8/7/09	5	21.5	0.1	0.0
GS-1	8/7/09	10	8.3	1.8	0.0
GS-1	8/7/09	15	8.2	1.8	0.0
GS-1	8/7/09	20	8.0	1.6	0.0
GS-1	8/7/09	25 (a)	21.3	0.1	0.0
GS-2	8/7/09	5	20.7	0.8	0.0
GS-2	8/7/09	10	20.6	0.9	0.0
GS-2	8/7/09	15	12.8	2.2	0.0
GS-2	8/7/09	20	11.9	2.9	0.0
GS-2	8/7/09	25	11.7	3.1	0.0
GS-3	8/7/09	5	9.8	10.1	0.0
GS-3	8/7/09	10	3.2	14.7	0.0
GS-3	8/7/09	15	0.0	21.0	6.4
GS-3	8/7/09	20	0.0	18.3	4.2
GS-3	8/7/09	25	0.0	19.9	4.8
GS-3	8/7/09	30	0.0	22.8	8.4
GS-4	8/7/09	5	14.6	4.1	0.0
GS-4	8/7/09	10	14.9	4.2	0.0
GS-4	8/7/09	15	14.8	4.0	0.0
GS-4	8/7/09	20	14.8	3.9	0.0
GS-4	8/7/09	25	14.6	3.9	0.0
GS-5	10/5/09	30	0.6	18.2	2.7
GS-5	10/5/09	40	2.2	15.6	2.4
GS-5	10/5/09	50	0.5	18.1	1.7
GS-6	10/5/09	15	0.0	21.4	0.0
GS-6	10/5/09	30	13.1	7.8	0.0
GS-7	10/5/09	10	1.1	19.5	0.0
GS-7	10/5/09	20	5.6	13.3	0.0
GS-8	10/5/09	10	0.0	19.1	0.0
GS-8	10/5/09	20	0.0	17.5	0.2
GS-9	10/5/09	10	19.4	1.6	0.0
GS-9	10/5/09	20	19.7	1.5	0.0
GS-10	10/5/09	5	21.0	0.3	0.0
GS-10	10/5/09	10	21.2	0.1	0.0

a = Purged 5/8-inch, inside-diameter pipe. Concentrations may be diluted with ambient air due to leakage in sampling system.

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

Summary Memorandum

Site ID: WA D980638936

County: Snohomish

Priority Assessment: LOW

Backlog Red. Cat.:

Date/Revised: 12/4/84

Name and Location:

Reckoway (Go East) Landfill
108th St SE and 39th St.
Merwin, WA 98201

Contact: Go East Corp.
Telephone: (206) 367-0600
Site Status: ( ) Active (X) Inactive ( ) Unknown

Site Description/TSD Activities:

Site is a 20-40 acre landfill in a ravine, privately owned and operated 1970-1983. Facility primarily accepted woodwaste and demolition debris although metal dusts taken there in 1974. Site has been burning underground since 1983 and fire cannot seem to be put out by county and owners.

Waste Types/Quantities/Characteristics:

200 cu. yds. of magnesium, aluminum and phosphate dusts dumped at one time in1974. Dusts of magnesium and phosphate known to be explosive and reactive. Explosion occurred following dumping in 1974. Dusts spread out and fire controlled. Current fires are not known to contain airborne hazardous materials.

Physical/Social Environment:

Facility is in fairly rural area, although new housing developments are going up to the W, N, and S. One park and one school within one mile.

Pollutant Mobilization/Pathways/Risk:

Explosion potential may still exist, if ongoing fire or water reach metal dusts, assuming they still exist in that form. Potential thought to be low. Some possibility also exists via GW contamination, but no leachate problems have been documented, and nearest well is >1/2 mi SE.

Priority Assessment/Backlog Reduction Category:

LOW

Followup Recommendations:

Continue ongoing site inspections, air monitoring and leachate monitoring. Further action should be based on the results of this testing.

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
Part 1 - Site Information and Assessment

I. IDENTIFICATION

01 State	02 Site Number
WA	D980638936

II. SITE NAME AND LOCATION

01 Site Name (legal, common, or descriptive name of site)	02 Street, Route No., or Specific Location Identifier
Reckoway Landfill	108th St. SE & 39th St.

03 City	04 State	05 Zip Code	06 County	07 County Code	08 Cong Dist
Merwin	WA	98201	Snohom.	061	07

09 Coordinates	Latitude	Longitude	Section/Township/Range
	475215.0	1220900.0	SE1/4, Sec. 21, T28N, R5E, WM

10 Directions to Site (starting from nearest public road)

Site is at the east end of 108th St. SE.

III. RESPONSIBLE PARTIES

01 Owner (if known)	02 Street (business, mailing, residential)
Go East Corporation	17723 15th NE.

03 City	04 State	05 Zip Code	06 Telephone Number
Seattle	WA	98155	(206) 367-0600

07 Operator (if known and different from owner)	08 Street (business, mailing, residential)
same	

09 City	10 State	11 Zip Code	12 Telephone Number
			( )

13 Type of Ownership (check one)

(X) A. Private ( ) B. Federal: ( ) C. State ( ) D. County ( ) E. Municipal ( ) F. Other: ( ) G. Unknown

14 Owner/Operator Notification on File (check all that apply)

( ) A. RCRA 3001, Date Rec'd: / / (X) B. Uncontrolled Waste Site (CERCLA 103c), Date Rec'd: 06 / 09 / 81 ( ) C. None

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 On Site Inspection

(X) Yes, Date: 74 / -- / 84
( ) No

By (check all that apply):

(X) A. EPA ( ) B. EPA Contractor (X) C. State ( ) D. Other Contractor
(X) E. Local Health Official ( ) F. Other:

Contractors Name(s):

02 Site Status (check one)

( ) A. Active (X) B. Inactive ( ) C. Unknown

03 Years of Operation

beginning year	ending year	
1970	1983	( ) Unknown

04 Description of Substances Possibly Present, Known, or Alleged

Landfill with mostly wood waste and demolition debris. 200 cu. yds. of magnesium, aluminum, and phosphate, dumped in 1974 resulting in explosion and small fire. Site is currently closed, but it is still burning as a result of fire started in 1983; efforts to extinguish it have so far been unsuccessful.

05 Description of Potential Hazard to Environment and/or Population

Very low hazard from metals dumped on site. Unknown how much of metals may have been destroyed in 1974 fire. The remainder are now buried deep in the landfill, and are not thought to pose much threat.

V. PRIORITY ASSESSMENT

01 Priority for Inspection (check one; if high or medium is checked, complete Part 2 and Part 3)

( ) A. High (inspection required promptly) ( ) B. Medium (inspection required) (X) C. Low (inspect on time available basis) ( ) D. None (no further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 Contact	02 Of (agency/organization)	03 Telephone Number
Ned Therien	WDOE	(206) 4596352

04 Person Responsible for Assessment	05 Agency	06 Organization	07 Telephone Number	08 Date
Barbara J. Morson	N/A	JRB Associates	(206)7477899	11 / 15 / 84

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
Part 2 - Waste Information

I. IDENTIFICATION	
01 State	02 Site Number
WA	D980638936

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 Physical States (check all that apply)

( ) A. Solid
( ) E. Slurry
(X) B. Powder, Fines
( ) F. Liquid
( ) C. Sludge
( ) G. Gas
( ) D. Other:

02 Waste Quantity at Site (measures of waste quantities must be independent)

Tons:
Cubic Yards: 200
No. of Drums:

03 Waste Characteristics (check all that apply)

(X) A. Toxic
( ) E. Soluble
( ) I. Highly Volatile
( ) B. Corrosive
( ) F. Infectious
(X) J. Explosive
( ) C. Radioactive
( ) G. Flammable
( ) K. Reactive
(X) D. Persistent
( ) H. Ignitable
( ) L. Incompatible
( ) M. Not Applicable

III. WASTE TYPE

Category	Substance Name	01 Gross Amount	02 Unit of Measure	03 Comments
SLU	Sludge			
OLW	Oily Waste			
SOL	Solvents			
PSD	Pesticides			
OCC	Other Organic Chemicals			
IOC	Inorganic Chemicals	Unknown	N/A	phosphate
ACD	Acids			
BAS	Bases			
MES	Heavy Metals	Unknown	N/A	magnesium, aluminum

IV. HAZARDOUS SUBSTANCES (see Appendix for most frequently cited CAS numbers)

01 Cat.	02 Substance Name	03 CAS Number	04 Storage/Disposal Method	05 Concentration	06 Measure of Concentration
MES	Magnesium dusts	7439954	Landfill	Unknown	N/A
MES	Aluminum dusts	7429905	Landfill	Unknown	N/A

V. FEEDSTOCKS (see Appendix for CAS numbers

Category	01 Feedstock Name	02 CAS Number	Category	01 Feedstock Name	02 CAS Number
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (cite specific references, e.g., state files, etc.)

WDOE Files; Snohomish County Health Department Files
CERCLA 103(c) Notification, 6/9/81

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
Part 3 - Description of Hazardous Conditions & Incidents

I. IDENTIFICATION
01 State: WA | 02 Site Number: D980638936

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 (X) A. Groundwater Contamination | 02 ( ) Observed (Date:) | (X) Potential | ( ) Alleged
03 Population Potentially Affected: 7500
04 Narrative Description
200 cu. yds. of Magnesium, aluminum, and phosphate dumped in early 1970s. Landfill exploded, burning unknown amount of metals. Landfill currently burning. Metals deep in 90 foot deep landfill. Groundwater is at 100 feet in Esperance sand aquifer overlain by Vashon till.

01 (X) B. Surface Water Contamination | 02 ( ) Observed (Date:) | (X) Potential | ( ) Alleged
03 Population Potentially Affected: 0
04 Narrative Description
Nearest down gradient surface water is the Snohomish River, 2 miles NE (3% gradient). Contamination unlikely. Few reported surface leachate problems. Sampling (3/12/84) indicates no high levels of leachate constituents.

01 (X) C. Contamination of Air | 02 (X) Observed (Date: '83-'84) | (X) Potential | ( ) Alleged
03 Population Potentially Affected: 3200
04 Narrative Description
Dump is currently burning. Sampling conducted by WDOE on March 9, 1984, showed no toxic carbon monoxide levels, and therefore did not sample for other toxic constituents. 3,200 residents within one mile.

01 (X) D. Fire/Explosive Conditions | 02 (X) Observed (Date: '74-Pres | ( ) Potential | ( ) Alleged
03 Population Potentially Affected:
04 Narrative Description
Magnesium dust dumped in 1974 exploded, causing fire at site. Fires from woodwaste have burned intermittently and continue to burn. Metal dusts are the only hazard present and are buried deep in the landfill, unlikely to explode (Pers. comm., D. Wright, WDOE, 7/84).

01 (X) E. Direct Contact | 02 ( ) Observed (Date:) | (X) Potential | ( ) Alleged
03 Population Potentially Affected: 3200
04 Narrative Description
None reported. Site is not known to be fenced. Only known hazardous wastes on site are buried deep in the landfill, with very low potential for direct contact.

01 (X) F. Contamination of Soil | 02 ( ) Observed (Date:) | (X) Potential | ( ) Alleged
03 Area Potentially Affected (acres): 20-40
04 Narrative Description
Landfill, unlined, in a ravine. Only known hazardous wastes dumped there were metals, in 1974. No reported leachate problems. Landfill is primarily for woodwaste debris. Soils are Vashon recessional outwash overlying Vashon consolidated till.

01 (X) G. Drinking Water Contamination | 02 ( ) Observed (Date:) | (X) Potential | ( ) Alleged
03 Population Potentially Affected: 7500
04 Narrative Description
None reported. Nearest well is 3,000 feet SE. 7,500 people served by wells within 3 miles. Landfill is 90 feet deep with groundwater at 100 feet.

01 (X) H. Worker Exposure/Injury | 02 ( ) Observed (Date:) | (X) Potential | ( ) Alleged
03 Workers Potentially Affected: < 10
04 Narrative Description
None reported or suspected. Unknown number of workers potentially at risk in 1974 when metals were dumped, but thought to be less than 10.

01 (X) I. Population Exposure/Injury | 02 ( ) Observed (Date:) | (X) Potential | ( ) Alleged
03 Population Potentially Affected: 7500
04 Narrative Description
Only likely route is through drinking water contamination, and this is considered unlikely. Metals now deep within landfill and not thought to be explosive hazard unless fire reaches depth.

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
Part 3 - Description of Hazardous Conditions & Incidents

I. IDENTIFICATION

01 State	02 Site Number
WA	D980638936

II. HAZARDOUS CONDITIONS AND INCIDENTS (continued)

01 (X) J. Damage to Flora 02 ( ) Observed (Date:) ( ) Potential ( ) Alleged

04 Narrative Description
None reported or suspected.

01 (X) K. Damage to Fauna 02 ( ) Observed (Date:) ( ) Potential ( ) Alleged

04 Narrative Description (include name[s] of species)
None reported or suspected.

01 (X) L. Contamination of Food Chain 02 ( ) Observed (Date:) ( ) Potential ( ) Alleged

04 Narrative Description
None reported or suspected.

01 (X) M. Unstable Containment of Wastes (spills/runoff/standing liquids/leaking drums) 02 (X) Observed (Date: 1974) ( ) Potential ( ) Alleged

03 Population Potentially Affected: 3,200 04 Narrative Description
Metal dusts dumped in 1974 uncontained causing explosion and small fire.

01 (X) N. Damage to Offsite Property 02 ( ) Observed (Date:) (X) Potential ( ) Alleged

04 Narrative Description
None reported. Potential exists if the dump continues to burn. Residents in area are complaining of smoke and particulate irritation.

01 (X) O. Contamination of Sewers, Storm Drains, WWTPs 02 ( ) Observed (Date:) ( ) Potential ( ) Alleged

04 Narrative Description
None. Site is not served by municipal sewer system.

01 (X) P. Illegal/Unauthorized Dumping 02 ( ) Observed (Date:) ( ) Potential ( ) Alleged

04 Narrative Description
None reported. Facility operated under Conditional Use Permit issued by the county and an operating permit issued by the Snohomish County Health District until July 1983. Site is now closed.

05 Description of Any Other Known, Potential, or Alleged Hazards
None known.

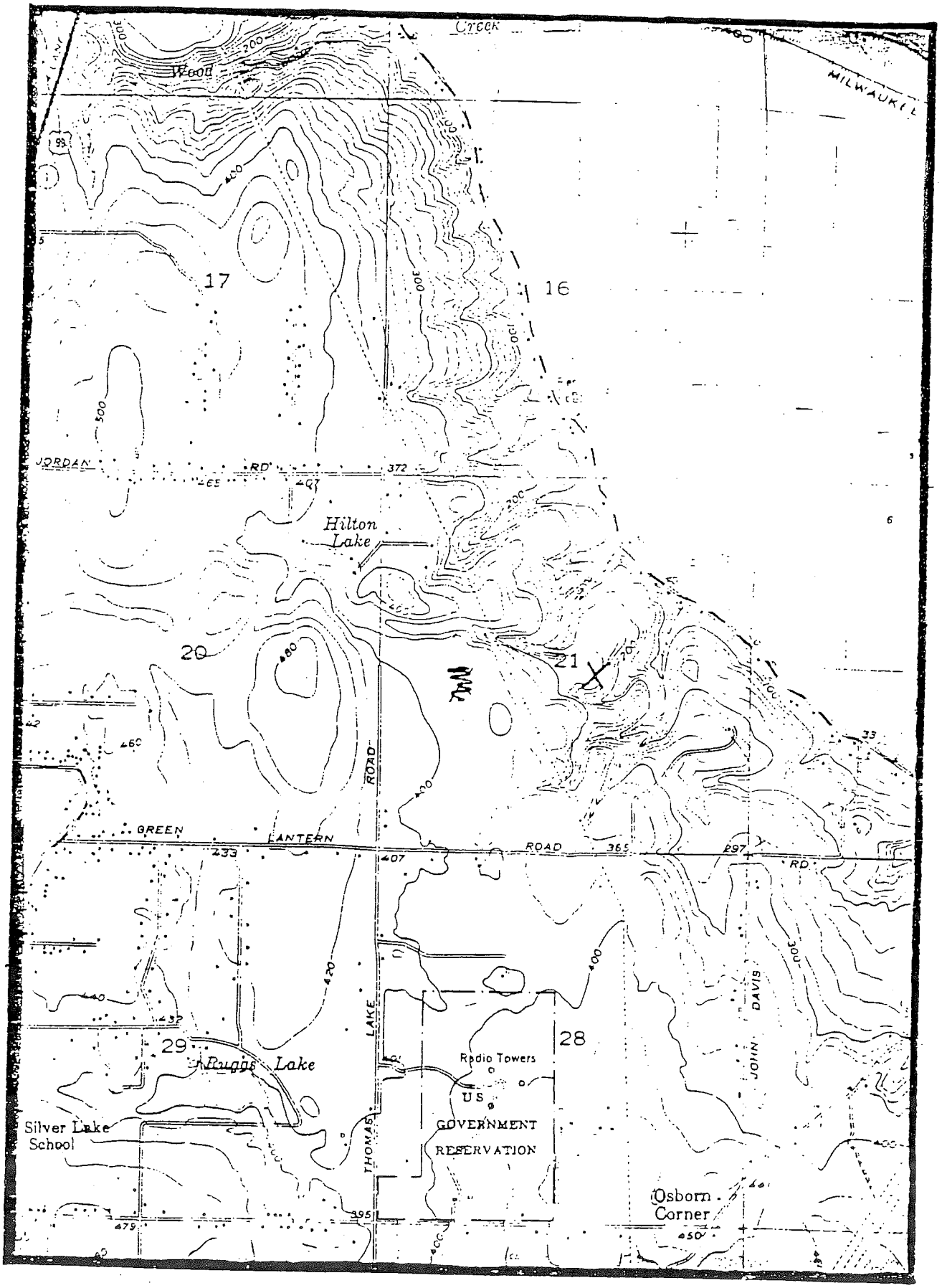
III. TOTAL POPULATION POTENTIALLY AFFECTED: 7,500

IV. COMMENTS

Metals dumped in 1974 are the only known hazardous substances on this site. Fire in 1974 could have destroyed an unknown amount of these wastes. Remainder are now deep in the landfill.

V. SOURCES OF INFORMATION (cite specific references: state files, reports, etc.)

WDOE Files; EPA/ERRIS Files; Snohomish County Health Dept. Files; Pers. comm., D. Wright, WDOE, 7/84; USGS Everett Quad, 1953; DSHS Computer File; SCS Soil Survey, Snohomish County; 1980 Federal Census; PSCOG, 1984; Pers. comm., Karen Hursch, Snohomish Co. Solid Waste, 7/84



X Rockaway landfill

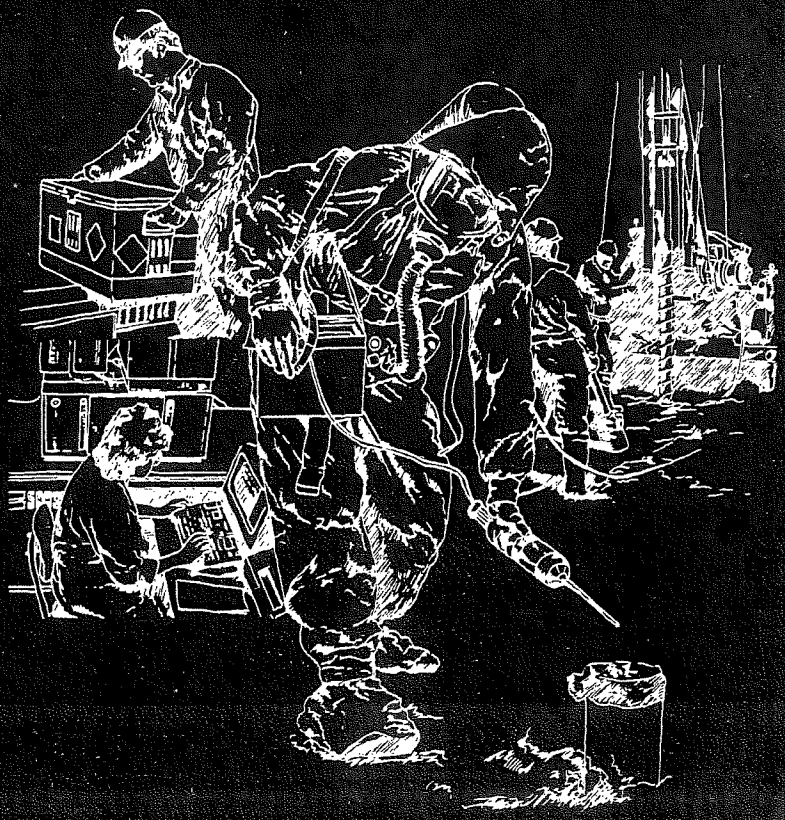
SITE INSPECTION REPORT FOR
RECKOWAY LANDFILL
MERWIN, WASHINGTON

TDD F10-8704-08

EPA

HAZARDOUS
SITE CONTROL
DIVISION

Field Investigation Team Zone II



CONTRACT NO.
68-01-7347

ecology and environment, inc.
International Specialists in the Environment

67

SITE INSPECTION REPORT FOR
RECKOWAY LANDFILL
MERWIN, WASHINGTON

TDD F10-8704-08

Extra copy

Report Prepared by: Ecology and Environment, Inc.
Date: June 1987

Submitted to: J.E. Osborn, Regional Project Officer
Field Operations and Technical Support Branch
U.S. Environmental Protection Agency
Region X
Seattle, Washington

ecology and environment, inc.
101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537
International Specialists in the Environment

recycled paper

I, J

ecology and environment, inc.

101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537

International Specialists in the Environment

MEMORANDUM

DATE: June 30, 1987

TO: John Osborn, FIT-RPO, USEPA, Region X

THRU: David A. Buecker, FIT-OM, E&E, Seattle

FROM: George A. Brooks, FIT-PM, E&E, Seattle

SUBJ: Final Site Inspection Report for
Reckoway Landfill
Merwin, Washington

REF: TDD F10-8704-08

CC: Bill Glasser, HWD-SM, USEPA, Region X
Thomas Tobin, E&E, Seattle (memo only)

Enclosed are the Trip Report, Site Inspection Report Form (2070-13), and Photo Documentation for the site inspection of Reckoway Landfill conducted by Ecology and Environment, Inc. (E&E) under U.S. Environmental Protection Agency (USEPA) Technical Directive Document (TDD) No. F10-8704-08.

In accordance with USEPA Region X Interim Regional Policy of June 1987, a preliminary HRS score was developed for the site. A preliminary score of 20.5 was obtained, based on the following assumptions:

- Leachate samples could be obtained to document a surface water release. Prior sampling by Snohomish County of this leachate indicated a release of certain heavy metals.

- The downstream receiving water is used for irrigation of 100 acres. This surface water is probably used for stock watering (not considered in present HRS or proposed in HRS II) but not irrigation. The calculated score would be greatly reduced if this assumption is not made.

No further action is recommended at the site under Superfund for the following reasons:

- the volume of hazardous waste (200 cubic yards) is relatively small;

- metals concentrations in the leachate are below Primary Drinking Water Standards; and

recycled paper

- o low potential for ground water contamination exists due to the depth (200') to the water table.

Although the Reckoway Landfill appears to pose no threat to public health or to the environment based on the information gathered during the site inspection, it is recommended that the State or local health department continue to monitor the leachate for indications of increased contaminant mobilization and migration.

GB:eck

Enclosures

D2

ecology and environment, inc.

101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537

International Specialists in the Environment

MEMORANDUM

DATE: June 3, 1987

TO: John Osborn, FIT-RPO, USEPA, Region X

THRU: David Buecker, FIT-OM, E&E, Seattle

FROM: George A. Brooks, FIT-PM, E&E, Seattle GB

SUBJ: Trip Report
Reckoway Landfill
Everett, Washington

REF: TDD F10-8704-08

CC: Deborah Flood, HWD-SM, EPA
Thomas Tobin, E&E, Seattle

1. Purpose of the Site Inspection:

Under Technical Directive Document (TDD) F10-8704-08, Ecology & Environment, Inc. (E&E) conducted a file review and an on-site inspection of the now closed Reckoway Landfill to obtain additional information regarding wastes disposed of at the facility, local environmental conditions, and water usage in the area.

2. Persons Conducting the Site Inspection:

George A. Brooks, E&E, Seattle (206) 624-9537
Karl Morgenstern, E&E, Seattle (206) 624-9537
Joseph Hunt, E&E, Seattle (206) 624-9537

3. Date of Inspection:

April 24, 1987 1005 - 1130 hours

4. Persons Contacted for the Site Inspection:

Gary East, Co-owner, Reckoway Landfill (206) 367-0600
Jerry Weed, Director of Public Works, Snohomish County, (206) 259-9488

recycled paper

5. Information Obtained During the File Review and Site Inspection:

- This 20-acre landfill is located in a developing residential area east of Everett, Washington. Between 1969 and 1971, sand reclamation was conducted at this site. In 1972, Reckoway, Inc. received a county permit to operate a landfill accepting wood, mineral, and concrete solid materials. In 1979, the Go-East Corporation purchased the site and conducted landfilling operations until 1983.

- On August 23, 1974, about 200 cubic yards of material containing magnesium, phosphate, and aluminum dusts were deposited in the landfill. This waste was trucked from a Seattle firm named Northwest Wire and Rope. When these wastes were first deposited in the landfill the initial intermixing caused fires and explosions. This danger was eliminated when the different types of waste were separated by a front end loader. The fire soon burned out and the wastes were covered with dirt. No other hazardous wastes are known to be deposited in the landfill.

- A subsurface fire started in 1983, causing significant concern to nearby residents and local health officials. The fire eventually burned itself out in 1984.

- When the landfill was opened, wastes were placed over a stream. This stream was re-routed at a later date (unknown) to flow around the areas where the wastes were placed.

- Representatives of the Snohomish Health District collected several water samples (landfill leachate, upstream point of receiving stream, and downstream point of receiving stream) in 1981, 1983, 1984, and 1986. The Department of Ecology analyzed these samples for certain parameters which varied per sampling event. Generally, the results of these analyses were consistent. The leachate contained elevated levels of specific conductance, chlorides, sulfates, total dissolved solids, total nitrogen, iron, and manganese. The level of these parameters was considerably higher than in the upstream receiving water and had a minor effect on the downstream receiving water. The leachate did not contain elevated levels of pH, zinc, or total organic carbon.

- Site access is partially controlled by a fence and a gate at the entrance. No restrictions exist around the perimeter of the site. In certain areas, there is no restriction adjacent to residences.

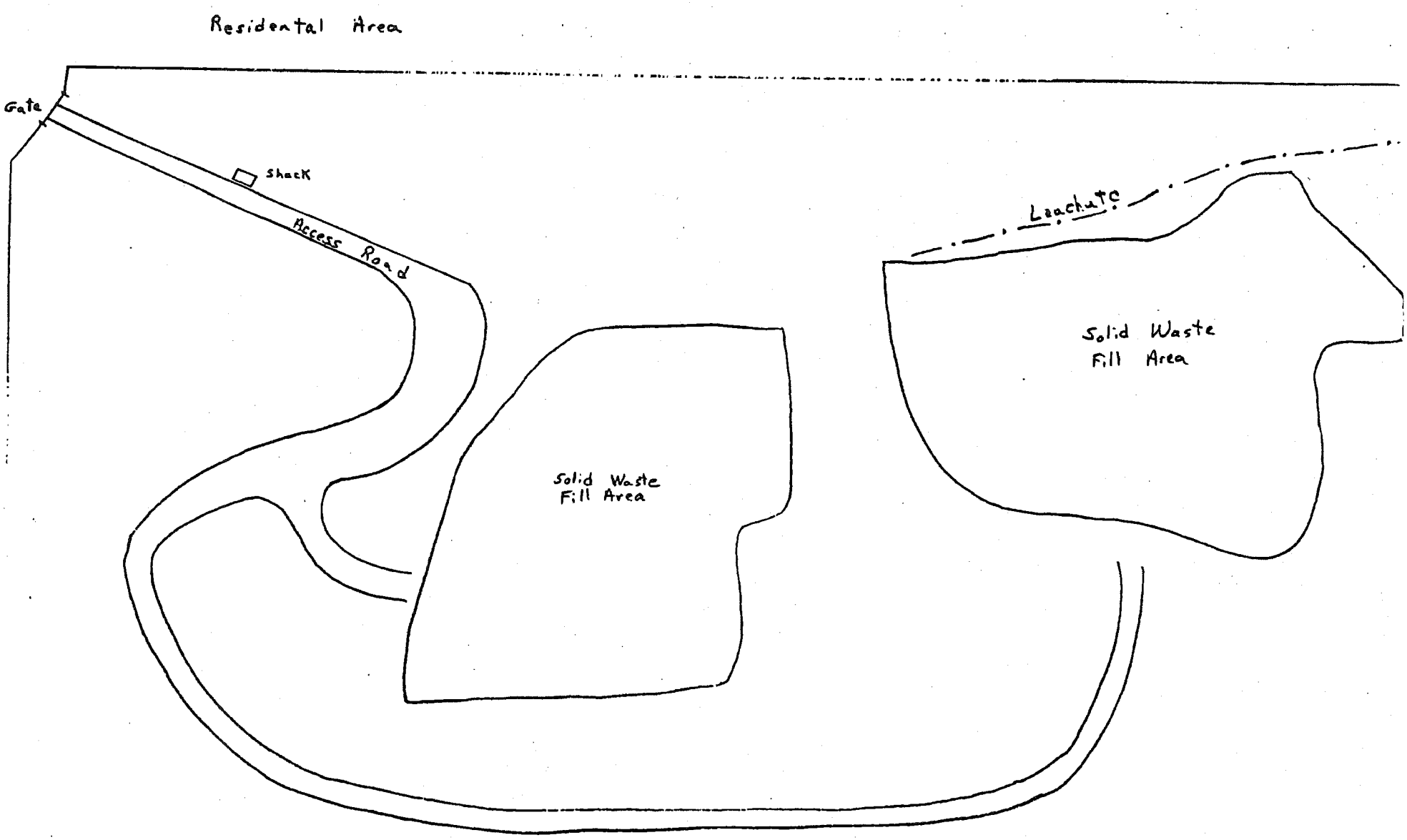
- The site contained various construction debris scattered around. There were slight depressions at several areas throughout the site. Most of the site was covered by vegetation with no signs of any being stressed. Several streams were located around the site, but no leachate was found due to the heavy vegetation and limiting terrain.

- Ground water is used throughout the area by local residents. The uppermost aquifer is approximately 200 feet below land surface in the area of the old landfill.

6. Conclusions and Recommendations:

- The total quantity of the three types of metal dusts remaining in the landfill is relatively small.
- The previous surface water sampling results indicate that the leachate from this landfill has reached a stream and has introduced elevated levels of certain contaminants. These levels are far below the drinking water standards.
- We recommend that no further investigation be conducted at this time. A state or local agency should continue to monitor this site on a regular basis.

GB/ng



RECKOWAY LANDFILL
EVERETT, WA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION	
01 State: WA	02 Site Number: D980638936

II. SITE NAME AND LOCATION

01 Site Name (Legal, common, or descriptive name of site)	02 Street, Route No., or Specific Location Identifier				
Reckoway (Go-East) Landfill	108th Street S.E. & 39th Street				
03 City	**04 State**	**05 Zip Code**	**06 County**	**07 County Code**	**08 Cong Dist**
Merwin	WA	98201	Snohomish	061	02

09 Coordinates Latitude	Longitude	10 Type of Ownership (Check one)
47 52 15.0	122 09 00.0	[X] A. Private [ ] B. Federal _____ [ ] C. State [ ] D. County [ ] E. Municipal [ ] F. Other _____ [ ] G. Unknown

III. INSPECTION INFORMATION

01 Date of Inspection	02 Site Status	03 Years of Operation
04 / 24 / 87 (Month Day Year)	[ ] Active [X] Inactive	1972 (Beginning Year) 1983 (Ending Year) ____ Unknown

04 Agency Performing Inspection (Check all that apply)
[ ] A. EPA [X] B. EPA Contractor Ecology & Environment, Inc (Name of firm) [ ] C. Municipal [ ] D. Municipal Contractor _____ (Name of firm)
[ ] E. State [ ] F. State Contractor _____ (Name of firm) [ ] G. Other _____ (Specify)

05 Chief Inspector	06 Title	07 Organization	08 Telephone No.
George A. Brooks	Environmental Engineer	E&E	(206) 624-9537
			( )
09 Other Inspectors	**10 Title**	**11 Organization**	**12 Telephone No.**
Karl Morgenstern	Soil Scientist	E&E	(206) 624-9537
Joe Hunt	Geologist	E&E	(206) 624-9537
			( )
			( )

13 Site Representatives Interviewed	14 Title	15 Address	16 Telephone No.
Gary East	Co-Owner	17723 - 15th N.E.; Seattle, WA	(206) 367-0600
			( )
			( )
			( )
			( )
			( )

17 Access Gained By (Check one)	18 Time of Inspection	19 Weather Conditions
[X] Permission [ ] Warrant	1005-1130 hrs.	Partly cloudy, cool, calm.

IV. INFORMATION AVAILABLE FROM

01 Contact	02 Of (Agency/Organization)	03 Telephone No.
Deborah Flood	US EPA	(206) 442-2722

04 Person Responsible for Site Inspection Form	05 Agency	06 Organization	07 Telephone No.	08 Date
George A. Brooks	EPA/FIT	E&E	(206)624-9537	06 / 05/ 87 (Month Day Year)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
WA	D980638936

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 Physical States (Check all that apply)

- [ ] A. Solid
- [ ] E. Slurry
- [X] B. Powder, Fines
- [ ] F. Liquid
- [ ] C. Sludge
- [ ] G. Gas
- [ ] D. Other _____ (Specify)

02 Waste Quantity at Site (Measure of waste quantities must be independent)

Tons _____
Cubic Yards 200
No. of Drums _____

03 Waste Characteristics (Check all that apply)

- [X] A. Toxic
- [ ] B. Corrosive
- [ ] C. Radioactive
- [ ] D. Persistent
- [ ] E. Soluble
- [ ] F. Infectious
- [ ] G. Flammable
- [ ] H. Ignitable
- [ ] I. Highly Volatile
- [ ] J. Explosive
- [ ] K. Reactive
- [X] L. Incompatible
- [ ] M. Not Applicable

III. WASTE TYPE

Category	Substance Name	01 Gross Amount	02 Unit of Measure	03 Comments
SLU	Sludge			
OLW	Oily Waste			
SOL	Solvents			
PSD	Pesticides			
OCC	Other Organic Chemicals			
IOC	Inorganic Chemicals			
ACD	Acids			
BAS	Bases			
MES	Heavy Metals	200	Cubic Yards	Baghouse dust from wire reclamation

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 Category	02 Substance Name	03 CAS Number	04 Storage/Disposal Method	05 Concentration	06 Measure of Concentration
MES	Aluminum	7429-90-5	Landfill	Unknown	
MES	Magnesium	7439-95-4	Landfill	Unknown	
MES	Phosphorus	7723-14-0	Landfill	Unknown	

V. FEEDSTOCKS (See Appendix for CAS Numbers)

Category	01 Feedstock Name	02 CAS Number	Category	01 Feedstock Name	02 CAS Number
FDS	N/A		FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

1. EPA Site File.
2. E&E Site Inspection on April 24, 1987.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 State	02 Site Number
WA	D980638936

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. Ground Water Contamination
03 Population Potentially Affected: approx. 8,000
02 [ ] Observed (Date: _____) [X] Potential [ ] Alleged
04 Narrative Description

Low potential due to local terrain and depth to ground water is approximately 200 feet.

01 [X] B. Surface Water Contamination
03 Population Potentially Affected: 0
02 [ ] Observed (Date: _____) [X] Potential [ ] Alleged
04 Narrative Description

Leachate from landfill seasonally entering stream but concentration of detected parameters is less than Primary Drinking Water Standards.

01 [X] C. Contamination of Air
03 Population Potentially Affected: _____
02 [ ] Observed (Date: _____) [X] Potential [ ] Alleged
04 Narrative Description

Very low potential since all wastes are buried in the landfill which had vegetated cover.

01 [X] D. Fire/Explosive Conditions
03 Population Potentially Affected: _____
02 [X] Observed (Date: 1974) [ ] Potential [ ] Alleged
04 Narrative Description

Metals dust ignited upon mixing during initial deposit. Fire extinguished after separation of the different wastes. Underground fire from wood waste in 1983-84. No problems since then.

01 [ ] E. Direct Contact
03 Population Potentially Affected: _____
02 [ ] Observed (Date: _____) [ ] Potential [ ] Alleged
04 Narrative Description

None reported, observed, or documented.

01 [ ] F. Contamination of Soil
03 Area Potentially Affected (Acres: _____)
02 [ ] Observed (Date: _____) [ ] Potential [ ] Alleged
04 Narrative Description

None reported, observed, or documented.

01 [ ] G. Drinking Water Contamination
03 Population Potentially Affected: _____
02 [ ] Observed (Date: _____) [ ] Potential [ ] Alleged
04 Narrative Description

None reported, observed, or documented.

01 [ ] H. Worker Exposure/Injury
03 Workers Potentially Affected: _____
02 [ ] Observed (Date: _____) [ ] Potential [ ] Alleged
04 Narrative Description

None reported, observed, or documented.

01 [ ] I. Population Exposure/Injury
03 Population Potentially Affected: _____
02 [ ] Observed (Date: _____) [ ] Potential [ ] Alleged
04 Narrative Description

None reported, observed, or documented.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 State	02 Site Number
WA	D980638936

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. Damage to Flora — 02 ☐ Observed (Date: _____) ☐ Potential ☐ Alleged
04 Narrative Description

None reported, observed, or documented.

01 ☐ K. Damage to Fauna — 02 ☐ Observed (Date: _____) ☐ Potential ☐ Alleged
04 Narrative Description

None reported, observed, or documented.

01 ☐ L. Contamination of Food Chain — 02 ☐ Observed (Date: _____) ☐ Potential ☐ Alleged
04 Narrative Description

None reported, observed, or documented.

01 ☐ M. Unstable Containment of Wastes (Spills/Runoff/Standing liquids, Leaking drums) — 02 ☐ Observed (Date: _____) ☐ Potential ☐ Alleged
03 Population Potentially Affected: _____ 04 Narrative Description

None reported, observed, or documented.

01 ☐ N. Damage to Offsite Property — 02 ☐ Observed (Date: _____) ☐ Potential ☐ Alleged
04 Narrative Description

None reported, observed, or documented.

01 ☐ O. Contamination of Sewers, Storm/Drains, WWTPs — 02 ☐ Observed (Date: _____) ☐ Potential ☐ Alleged
04 Narrative Description

None reported, observed, or documented.

01 ☐ P. Illegal/Unauthorized Dumping — 02 ☐ Observed (Date: _____) ☐ Potential ☐ Alleged
04 Narrative Description

None reported, observed, or documented.

05 Description of Any Other Known, Potential, or Alleged Hazards

None reported, observed, or documented.

III. TOTAL POPULATION POTENTIALLY AFFECTED:

IV. COMMENTS

Landfill inactive since 1983. Only small amount of hazardous wastes known to be deposited in landfill.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

1. E&E Site Inspection on April 24, 1987.
2. EPA Site File.
3. Newspaper Article, "Landfill fire has cut home values, neighbors complain", March 19, 1984.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
WA	D980638936

II. PERMIT INFORMATION

01 Type of Permit Issued (Check all that apply)	02 Permit Number	03 Date Issued	04 Expiration Date	05 Comments
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☒ H. Local(Specify)County	None	1972	1983	Dumping Permit
☐ I. Other (Specify)				
☐ J. None				

III. SITE DESCRIPTION

01 Storage/Disposal (Check all that apply)	02 Amount	03 Unit of Measure
☐ A. Surface Impoundment		
☐ B. Piles		
☐ C. Drums, Above Ground		
☐ D. Tank, Above Ground		
☐ E. Tank, Below Ground		
☒ F. Landfill	Unknown	
☐ G. Landfarm		
☐ H. Open Dump		
☐ I. Other (Specify)		

04 Treatment (Check all that apply)

- ☐ A. Incineration
- ☐ B. Underground Injection
- ☐ C. Chemical/Physical
- ☐ D. Biological
- ☐ E. Waste Oil Processing
- ☐ F. Solvent Recovery
- ☐ G. Other Recycling/ Recovery
- ☐ H. Other (Specify)

05 Other

☒ A. Buildings On Site

1

06 Area of Site

20 (Acres)

07 Comments

One shack on-site. Area heavily vegetated at this time.

IV. CONTAINMENT

01 Containment of Wastes (Check one)

☐ A. Adequate, Secure ☒ B. Moderate ☐ C. Inadequate, Poor ☐ D. Insecure, Unsound, Dangerous

02 Description of Drums, Diking, Liners, Barriers, etc.

Hazardous wastes buried deep in landfill. The cap of landfill is not compacted clay but has established vegetation.

V. ACCESSIBILITY

01 Waste Easily Accessible: ☐ Yes ☒ No

02 Comments

All hazardous waste buried deep in landfill.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

1. E&E Site Inspection on April 24, 1987.
2. EPA Site File.
3. Notice of Violation Staff Report, March 2, 1984.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 State	02 Site Number
WA	D980638936

II. DRINKING WATER SUPPLY

01 Type of Drinking Supply (Check as applicable)

	SURFACE	WELL
Community	A. ☐	B. ☒
Non-Community	C. ☐	D. ☐

02 Status

	ENDANGERED	AFFECTED	MONITORED
Community	A. ☐	B. ☐	C. ☒
Non-Community	D. ☐	E. ☐	F. ☐

03 Distance to Site

A. < 1/2 (mi)

B. _____ (mi)

III. GROUNDWATER

01 Groundwater Use in Vicinity (Check one)

☐ A. Only Source for Drinking ☒ B. Drinking (Other sources available) Commercial, Industrial, Irrigation (No other water sources available) ☐ C. Commercial, Industrial, Irrigation (Limited other sources available) ☐ D. Not Used, Unusable

02 Population Served by Ground Water approx. 8,000

03 Distance to Nearest Drinking Water Well < 1/2 (mi)

04 Depth to Ground Water	05 Direction of Ground Water Flow	06 Depth to Aquifer of Concern	07 Potential Yield of Aquifer	08 Sole Source Aquifer
90 (ft)	Unknown	90 (ft)	Unknown (gpd)	☐ Yes ☒ No

09 Description of Wells (Including usage, depth, and location relative to population and buildings)

Various private and community wells in the area. All utilize the upper aquifer for drinking water supply.

10 Recharge Area		11 Discharge Area	
☒ Yes	Comments	☐ Yes	Comments
☐ No		☒ No	

IV. SURFACE WATER

01 Surface Water (Check one)

☐ A. Reservior, Recreation Drinking Water Source ☐ B. Irrigation, Economically Important Resources ☐ C. Commercial, Industrial ☒ D. Not Currently Used

02 Affected/Potentially Affected Bodies of Water

Name:	Affected	Distance to Site
Snohomish River	☐	< 2 (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 Total Population Within

One (1) Mile of Site	Two (2) Miles of Site	Three (3) Miles of Site
A. 3,200 No. of Persons	B. > 5,000 No. of Persons	C. > 7,000 No. of Persons

02 Distance to Nearest Population: < 1/4 (mi)

03 Number of Buildings Within Two (2) Miles of Site: > 1,000

04 Distance to Nearest Off-Site Building: < 1/4 (mi)

05 Population Within Vicinity of Site (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

It is a growing rural residential area.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION	
01 State	02 Site Number
WA	D980638936

VI. ENVIRONMENTAL INFORMATION

01 Permeability of Unsaturated Zone (Check one)

☐ A. 10^{-6} - 10^{-8} cm/sec ☒ B. 10^{-4} - 10^{-6} cm/sec assumed ☐ C. 10^{-4} - 10^{-3} cm/sec ☐ D. Greater Than 10^{-3} cm/sec

02 Permeability of Bedrock (Check one)

☐ A. Impermeable (Less than 10^{-6} cm/sec) ☒ B. Relatively Impermeable (10^{-4} - 10^{-6} cm/sec) assumed ☐ C. Relatively Permeable (10^{-2} - 10^{-4} cm/sec) ☐ D. Very Permeable (Greater Than 10^{-2} cm/sec)

03 Depth to Bedrock	04 Depth of Contaminated Soil Zone	05 Soil pH
Unknown (ft)	N/A (ft)	Unkown

06 Net Precipitation	07 One Year 24 Hour Rainfall	08 Slope		
		Site Slope	Direction of Site Slope	Terrain Average Slope
12 (in)	1.3 (in)	Varies %	Southeast	Varies greatly %

09 Flood Potential

Site is in > 100 Year Floodplain

10

☐ Site is on Barrier Island, Coastal High Hazard Area, Riverine Floodway

11 Distance to Wetlands (5 acre minimum)

ESTUARINE	OTHER
A. > 4 (mi)	B. (mi)

12 Distance to Critical Habitat (of endangered species)

> 2 (mi)

Endangered Species: None

13 Land Use in Vicinity

Distance to:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS	
		PRIME AG LAND	AG LAND
A. > 2 (mi)	B. < 1/4 (mi)	C. (mi)	D. 1/2 (mi)

14 Description of Site in Relation to Surrounding Topography

Most of the site is in a rolling terrain with one corner in a deep ravine.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

1. USGS Everett Quandrangle Map, 7.5 Minute Series, 1953.
2. Climatic Atlas of the United States, U.S. Dept. of Commerce, June 1968.
3. Precipitation-Frequency Atlas of the Western United States, Volume IX - Washington, U.S. Dept. of Commerce, 1973.
4. E&E Site Inspection on April 24, 1987.
5. WDOE Well Logs

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 State	02 Site Number
WA	D980638936

II. SAMPLES TAKEN

Sample Type	01 Number of Samples Taken	02 Samples Sent To	03 Estimated Date Results Available
Ground Water	N/A		
Surface Water			
Waste			
Air			
Runoff			
Spill			
Soil			
Vegetation			
Other			

III. FIELD MEASUREMENTS TAKEN

01 Type	02 Comments
N/A	

IV. PHOTOGRAPHS AND MAPS

01 Type [X] Ground [ ] Aerial

02 In Custody of US EPA, Region X
(Name of organization or individual)

03 Maps [X] Yes [ ] No

04 Location of Maps
US EPA, Region X, Hazardous Waste Division

V. OTHER FIELD DATA COLLECTED (provide narrative description of sampling activities)

The Snohomish County Health District has sampled leachate and the receiving stream for several years. Results from these samples show low levels of heavy metals in both the leachate and receiving stream. These levels are below the Federal Primary Drinking Water Standards.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

1. EPA Site File.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
WA	D980638936

II. CURRENT OWNER(S)

01 Name	02 D+B Number	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	05 City	06 State	07 Zip Code
Go-East Corporation		17723 - 15th Avenue, N.E.		Seattle	WA	98155

PARENT COMPANY (If applicable)

08 Name	09 D+B Number	10 Street Address (P.O. Box, RFD #, etc.)	11 SIC Code	12 City	13 State	14 Zip Code

III. PREVIOUS OWNER(S) (List most recent first)

01 Name	02 D+B Number	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	05 City	06 State	07 Zip Code
Reckoway Corporation		Unknown				

IV. REALTY OWNER(S) (If applicable, list most recent first)

01 Name	02 D+B Number	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	05 City	06 State	07 Zip Code
Go-East Corporation		17723 - 15th Avenue, N.E.		Seattle	WA	98155

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

1. EPA Site File.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
WA	D980638936

II. CURRENT OPERATOR (Provide if different from owner)

01 Name	02 D+B Number	04 SIC Code
N/A		
03 Street Address (P.O. Box, RFD #, etc.)		
05 City	**06 State**	**07 Zip Code**
08 Years of Operation	**09 Name of Owner**	

OPERATOR'S PARENT COMPANY (If applicable)

10 Name	11 D+B Number	13 SIC Code
12 Street Address (P.O. Box, RFD #, etc.)		
14 City	**15 State**	**16 Zip Code**

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

01 Name	02 D+B Number	04 SIC Code
Go-East Corporation		
03 Street Address (P.O. Box, RFD #, etc.)		
17723 - 15th Avenue, N.E.		
05 City	**06 State**	**07 Zip Code**
Seattle	WA	98155
08 Years of Operation	**09 Name of Owner During This Period**	
4	Go-East Corporation	

10 Name	11 D+B Number	13 SIC Code
12 Street Address (P.O. Box, RFD #, etc.)		
14 City	**15 State**	**16 Zip Code**

01 Name	02 D+B Number	04 SIC Code
Reckoway Corporation		
03 Street Address (P.O. Box, RFD #, etc.)		
Unknown		
05 City	**06 State**	**07 Zip Code**
08 Years of Operation	**09 Name of Owner During This Period**	
7	Reckoway Corporation	

10 Name	11 D+B Number	13 SIC Code
12 Street Address (P.O. Box, RFD #, etc.)		
14 City	**15 State**	**16 Zip Code**

01 Name	02 D+B Number	04 SIC Code
03 Street Address (P.O. Box, RFD #, etc.)		
05 City	**06 State**	**07 Zip Code**
08 Years of Operation	**09 Name of Owner During This Period**	

10 Name	11 D+B Number	13 SIC Code
12 Street Address (P.O. Box, RFD #, etc.)		
14 City	**15 State**	**16 Zip Code**

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

1. EPA Site File.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
WA	D980638936

II. ON-SITE GENERATOR

01 Name	02 D+B Number	
N/A		
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	
05 City	06 State	07 Zip Code

III. OFF-SITE GENERATOR

01 Name	02 D+B Number	01 Name	02 D+B Number
N/A			
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
05 City	06 State / 07 Zip Code	05 City	06 State / 07 Zip Code
01 Name	02 D+B Number	01 Name	02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
05 City	06 State / 07 Zip Code	05 City	06 State / 07 Zip Code

IV. TRANSPORTER(S)

01 Name	02 D+B Number	01 Name	02 D+B Number
N/A			
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
05 City	06 State / 07 Zip Code	05 City	06 State / 07 Zip Code
01 Name	02 D+B Number	01 Name	02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
05 City	06 State / 07 Zip Code	05 City	06 State / 07 Zip Code

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 State	02 Site Number
WA	D980638936

II. PAST RESPONSE ACTIVITIES

01 ☐ A. Water Supply Closed — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ B. Temporary Water Supply Provided — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ C. Permanent Water Supply Provided — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ D. Spilled Material Removed — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ E. Contaminated Soil Removed — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ F. Waste Repackaged — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ G. Waste Disposed Elsewhere — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ H. On Site Burial — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ I. In Situ Chemical Treatment — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ J. In Situ Biological Treatment — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ K. In Situ Physical Treatment — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ L. Encapsulation — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ M. Emergency Waste Treatment — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ N. Cutoff Walls — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ O. Emergency Diking/Surface Water Diversion — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ P. Cutoff Trenches/Sump — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ Q. Subsurface Cutoff Wall — 02 Date _____ — 03 Agency _____
04 Description
N/A

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 State	02 Site Number
WA	D980638936

II. PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. Barrier Walls Constructed — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ S. Capping/Covering — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ T. Bulk Tankage Repaired — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ U. Grout Curtain Constructed — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ V. Bottom Sealed — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ W. Gas Control — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ X. Fire Control — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ Y. Leachate Treatment — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ Z. Area Evacuated — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ 1. Access to Site Restricted — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ 2. Population Relocated — 02 Date _____ — 03 Agency _____
04 Description
N/A

01 ☐ 3. Other Remedial Activities — 02 Date _____ — 03 Agency _____
04 Description
N/A

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
WA	D980638936

II. ENFORCEMENT INFORMATION

01 Past Regulatory/Enforcement Action [X] Yes [ ] No

02 Description of Federal, State, Local Regulatory/Enforcement Action

Twenty-two Notices of Violation have been issued during the 1983-84 period when a substance fire was causing a smoke hazard in the area.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

1. Notice of Violation Staff Report, March 2, 1984.

PHOTO IDENTIFICATION SHEET

TYPE OF CAMERA: Canon AE-1/3289855
TYPE OF FILM: ED 135-20/KE 135-20

TDD NO.: F10-8704-08
SITE NAME: Reckoway Landfill

Frame No.	Roll No.	Date	Time	Taken By	Witnessed By	Description of Photo
1	1	04/27/87	1100	Karl Morgenstern	George Brooks	Entrance to landfill and guard shack facing east.
2	1	04/27/87	1100	Karl Morgenstern	George Brooks	General landfill area facing east. Old waste placement area.
3	1	04/27/87	1100	Karl Morgenstern	George Brooks	General waste area facing south.
4	1	04/27/87	1100	Karl Morgenstern	George Brooks	General landfill area facing southeast of newer waste placement area.
5	1	04/27/87	1100	Karl Morgenstern	George Brooks	Adjoining residential area facing north.

Site Hazard Assessment
Recommendation for No Further Action

May 14, 2004

Site Name:	Go East Landfill	**Section:** **Township:** **Range:**	21 28N 5E
Site Address:	No site address, South of 108th St SE, East of Silver Lake	Ecology **Facility Site ID:**	2708
City: **County:** **State:** **Zip:**	Everett Snohomish WA 98208	**ERTS**	
Lat:	47 53′ 59.64″		
Long:	122 10′ 45.26″		

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

The Go East Landfill site, hereafter referred to as the landfill or the site, is a closed demolition waste and wood waste landfill which was operated by the Reckoway Corporation and later owned and closed by the Go East Corporation. Waste was hauled to the site in the time frame of 1972 to 1983. The site was placed on the Washington Department of Ecology (Ecology) suspected and confirmed contaminated sites list on March 1, 1988.

The landfill is located east of Silver Lake on 36th Drive SE, north of 116th Street, and south of 108th St SE, near Everett, Snohomish County, WA. The landfill area of the property occupies approximately eight acres of a larger portion of undeveloped land.

Management areas include soil and ground water and surface water in the immediate vicinity of the landfill. For the purposes of this Site Hazard Assessment (SHA) under the Model Toxics Control Act (MTCA) soils and ground water will be considered, since potential contaminants are sub-surface. The substances of concern for this SHA are the priority pollutant metals and carcinogenic polynuclear aromatic hydrocarbons (PAH.)

Site Description/History:

The landfill is surrounded predominantly by residential properties, the Olympic Pipeline easement and open space. Immediately to the northwest and south of the landfill single-family housing exists. Silver Lake is west and south of the landfill at approximately 7000 feet. Silver Lake is up gradient of the landfill for both surface and ground water. Unnamed creeks and springs exist immediately to the north, south and southeast of the site. These surface water features drain directly into the Snohomish River valley and eventually into the Snohomish River. The Snohomish River exists, at its closest, approximately 10,000 feet to the northeast. The south of the site is bounded by the Olympic Pipeline easements.

Soils have been imported to the site to cover and protect the surface of the landfill from wet surface conditions. However, due to fire conditions outlined below in 1983 and 1984, the surface of the landfill remains uneven.

It is unclear if gaps exist in the cover. It is unclear what effect seasonal ground water levels have on the landfill. It is also unclear what effect surface water has on the contents of the landfill.

The site currently exists as an open space nestled in between recently built housing developments. Trails on the property indicate that community members from all sides frequently access the site. The site is heavily vegetated in the summer with various berry vines, grasses, alder trees and scotch broom plants. The vegetation on the site makes visual inspection of soil and surveying of the site difficult. At the time of the March 2004 Snohomish Health District (SHD) site visit, no stressed vegetation was noted on top of the landfill. The toe of the landfill on the eastern side was visited. Red staining of the soil was observed. The staining at this location may be related to iron bacteria that could be activated by recent soil disturbances upstream of the sampling location.

The following is a brief history of the property. In 1969 a Snohomish County Conditional Use (CU) permit was issued for excavation. The permit was for a two-year period and was set to expire in 1971. In 1970 the property owner Vernon Holt enquired regarding the suitability of a solid waste site at the now excavated site. In 1972 Reckoway Inc. became the owner of the property. Snohomish County issued a CU for use of the site as both a sand and gravel excavation and solid waste disposal fill. At that time, solid waste disposal was reported to be limited to wood, mineral, or concrete. From 1972 to 1978, Reckoway operated the site in a similar manner. From time to time the CU was modified to extend the types of waste which could be accepted at the site, including wood waste. In 1974, the SHD adopted the Solid Waste Regulations RCW 173-301. Reckoway eventually submitted an application to the SHD regarding a wood waste landfill at the site. Ecology reviewed the application at that time, and noted that it could not recommend granting a permit for a wood waste landfill at the site. The Board of Health adopted the SHD's Regulations Governing Solid Waste Handling on October 8, 1974.

In the same time frame as the Ecology permit review, community members in the area reported concerns regarding the Reckoway Landfill. These concerns were that the site was not operated in compliance with the SHD solid waste regulations, the CU permits and that the site was generally a nuisance to the nearby neighborhood.

A fire was reported in the landfill in 1974. An article dated 8/23/1974 in the Seattle times indicated that the fire was a result of dumped magnesium, aluminum and phosphate. These products ignited when exposed to water and most likely ignited subterranean fuels. It is unclear when this fire was completely extinguished.

In 1977, the SHD advised that waste could not be accepted at the site beyond the date of 10/1/1977. Further, the SHD advised closure, which included closure under WAC 173-301. Closure requirements were not met.

In 1979 Gary East and David R. Golden of the Go-East Corporation purchased the property with the intent of depositing more fill and eventually developing it for residential use. East, in a letter to the SHD, noted that he would extinguish the existing fire and prevent further fires at the site. In 1979 Snohomish Count issued a CU and on 11/2/1979 the SHD issued a permit for the operation of a wood waste landfill.

SHD files indicate that there was little indication of fire at the site in the year of 1980 though 1982

In 1981 (8/26/81) the SHD received a letter from Ecology concerning the evaluation of the property pursuant to the Federal Resource Conservation Act (RCRA.) Ecology advised that the site not be placed onto the open dump inventory for 1982 because at the time of their evaluation, no significant non-complying situations had been noted.

On 7/29/1983 the site was posted by Snohomish County with a stop work order due to the expiration of the CU permit. On 7/27/1983 the SHD advised Gary East that the CU permit had expired on 9/18/1982 and that East would have to submit written plans to the SHD for compliance and closure. An August 9, 1993 letter from Gary East to the SHD indicated that East and Co planned to complete closure of the site By February 1984. Records indicate that waste continued to be brought to the site. On August 9, 1983, it was learned that a subterranean fire existed in the fill at the site.

Between late October of 1983 and September 1984 the fire continued. The record seems to indicate that the hottest burning of the landfill occurred early in 1984 and appeared to taper out towards the end of the year. Reports in September 1984, indicate that the fire continued to smolder with no open flame. Various legal actions took place to move the site toward closure, compliance, and fire elimination.

Through an inspection dated 1/15/1986, the SHD and Ecology indicated that subterranean fire persisted at the site. Photos taken at the time depict relatively small steam/smoke vents in the ground compared to the large vents depicted in 1984 and 1985.

On September 15, 1986, Go-East submitted a closure proposal to the SHD. It included grading and filling components. However, the plan did not address any of the ground water or landfill gas monitoring components, which were outlined in a SHD correspondence dated August 26, 1983. The record after this point does not indicate that any further action was taken towards closure of the landfill.

An inspection report dated June 21, 1990, indicated that the site was in violation of closure standards. The report indicated that the site was never closed in accordance with solid regulations and was in violation of the then new WAC 173-304 solid waste handling regulations.

Gary East responded to this notice in a July 9, 1990 letter to the SHD, noting that no further closure had occurred, and that none would be completed under the new and more strict 173-304 solid waste regulations. East asserted that the landfill had been closed in late 1983.

Files maintained at the SHD indicate a March 29, 1991 correspondence from Gary East, which indicated a contract with Future Development to complete grading at the site. The contract covered bringing clean inert fill to the site to fill in depressions caused by the 1983 fire. Additionally, the contract called for filling steep hill cuts as the original Go-East closure plan had indicated would happen. The file indicates that trucks were observed entering the site. However, it is unclear if this contract or plan to grade the site was ever completed.

Litigation by Gary East against the SHD in July of 1996 sought relief and a final decision on the matter of whether or not the Go-East landfill site was subject to closure requirements under WAC 173-304. The file does not indicate the outcome of this litigation or if the site was graded as the March 29, 1991 Future Development contract indicates.

Recent Activities:

The SHD conducted a small well survey within a one-mile radius of the landfill on the down gradient side. The well survey was conducted during September of 2003. Responses were received in October of 2003. The survey area was generally to the east and southeast. The purpose of the survey was to locate wells in the area, and determine the water level of the aquifer. The population directly east of the landfill along the Lowell Larimer Road is served by The Everett public water system. Houses along the Lowell Larimer Road between the Spane Dairy and 56th Ave SE were targeted in this survey. No houses were located that used or maintained private wells. Four surveys were sent out to houses suspected of having older wells. None of the responses indicated wells on site.

On March 16, 2004, the SHD visited the site to collect ground water samples from springs on the southeast, east and northeast down gradient sides of the landfill. The SHD planned to sample the springs under the assumption that these shallow sources of water may have been impacted by landfill activity.

The day of the sampling event the weather was poor and significant volumes or rain had fallen the prior night. Rain continued during the sampling. One difficulty of the sampling was surface water interference. The SHD noted significant overland flow. Another difficulty was the soils in the areas where the springs were located were extremely high in clay content. The difficulty this presented to sampling was that the clay clogged the inlet screens on the drive point piezometer. The clogged tip did not allow for sampling with that instrument. The SHD decided to collect two samples from surface water sources. One sample was collected from a seep located to the southeast of the main toe of the landfill. This area was selected because of red iron bacterial like staining observed at the time of sampling. This area was also observed as a spring, and would have been an area sampled by the drive point if clay conditions were not present. The second sample was collected from a stream, which drained the area across the toe of the landfill and property to the southeast of the toe of the landfill. This area was selected because it also showed signs of iron bacteria. The second sample location was selected also because it likely would have contained surfacing ground water drained from the area of the landfill prior to mingling with other surface water drainage areas.

SNOHOMISH COUNTY

SITE ID:	**Go East Corp Landfill**	Cleanup Site ID: 4294	FS ID: 2708
	Alternate Name(s):	Go East Corp Landfill, GO EAST CORP LANDFILL SITE, Rekoway Landfill Site	

LOCATION:		WRIA: 7	Lat/Long:	47.900	-122.179	View Vicinity Map
Address:	108TH ST SE & 39TH ST		Township	Range	Section	Legislative District: 44
	EVERETT 98208		28N	5E	21	Congressional District: 1

STATUS:	**No Further Action**	Rank:	View Site Web Page	View Site Documents
	Responsible Unit: Northwest	Site Manager: Northwest Region	Statute: MTCA	
	Is Brownfield?	Has Environmental Covenant?	Is PSI Site?	
	NFA Received? Yes	NFA Date: 5/6/2004	NFA Reason: NFA-Site Hazard Assessment	

ASSOCIATED CLEANUP UNIT(s)

cuID	Cleanup Unit Name	Unit Type	Process Type	Unit Status	Size (Acres)	ERTS ID
1412	GO EAST CORP LANDFILL SITE	Upland	No Process	No Further Action Required		

SITE ACTIVITIES:

Applies to:	Related ID (Unit-LUST-VCP)	Activity Display Name	Status	Start Date	End Date	Legal Mechanism	Performed By	Project Manager
CleanupSite		Site Discovery/Release Report Received	Completed	3/1/1988	3/1/1988			Local Government-NW
CleanupSite		Site Hazard Assessment/Federal Site Inspection	Completed	4/25/2003	5/6/2004		Local Government	County Health-NW
CleanupSite		Site Status Changed to NFA	Completed	5/6/2004	5/6/2004			

AFFECTED MEDIA & CONTAMINANTS:

Contaminant:	Media: Ground Water	Surface Water	Soil	Sediment	Air	Bedrock
Conventional Contaminants, Inorganic	C	C	S		S	
Conventional Contaminants, Organic	C	C	S		S	
Metals - Other		C				
Metals Priority Pollutants	S	C	C		S	
Other Reactive Wastes	S	S	S		S	

Key:
B - Below Cleanup Level
C - Confirmed Above Cleanup Level
S - Suspected
R - Remediated
RA - Remediated-Above
RB - Remediated-Below

CleanupSiteDetails2014

SUMMARY OF TEST PIT INFORMATION

Information from test pit logs in Go East LFCP (01/2018), Appendix A

Practical Environmental Solutions / 2019-01-21

Depth ft bgs	1-A	1-B	1-C	1-D	2-A	2-B	2-C	2-D	2-E	3-A	4-A	4-B
0												
0.5	SAND, poorly graded, w/some silt, loose, dry (earthen fill)	SAND, poorly graded, med. dense, dry (glacial outwash)	SAND, poorly graded, med. dense, dry (glacial outwash)	GRAVELLY SAND (earthen fill)	SAND, poorly graded, loose, some roots (earthen fill)	SAND w/some gravel (earthen fill)	SAND WITH PLASTIC, BRICKS, AND TREE BRANCHES (earthen fill)	SAND WITH SOME ROOTS earthen fill	SAND WITH SOME ROOTS (earthen fill - topsoil)	GRAVELLY SAND, med. dense (earthen fill)	SILTY SAND, med dense (earthen fill)	SILTY SAND, med dense (earthen fill)
1				SAND WITH INTERMIXED BRICKS & DIMEN. TIMBER (demolition waste)								
1.5									SAND WITH INTERMIXED TREE BRANCHES, LOOSE (earthen fill)	GRAVELLY SAND WITH GLASS, ASPHALT, AND BRICKS, dry, loose (demolition waste)		SAND (loose, dry to moist) WITH INTERMIXED WOOD, STEEL ,& CONCRETE PIPE (demoltion waste)
2												
2.5												
3									SEEPAGE AT 3'			
3.5	1" horison of black ORGANIC SOIL at 3.5'			SAND, loose, moist WITH INTERMIXED TREE LIMBS (earthen fill)								
4	Well graded SAND, some gravel, med. dense (glacial outwash)								SAND, WET (glacial outwash)			SAND poorly graded, med dense (glacial outwash)
4.5												
5												
5.5	GRAVELLY SAND (glacial outwash)											
6												
6.5.				SAND, poorly graded, moist to wet, w/trace roots (glacial outwash)		Poorly graded SAND with silt & gravel, moist, with INTERMIXED TREE BRANCHES (earthen fill)	SAND WITH INTERMIXED TREE BRANCHES (earthen fill)	SAND WITH INTERMIXED WOOD AND BRANCHES (earthen fill)				
7												
7.5								WET BELOW 5'				
8												
8.5												
9								STRONG SEEPAGE AT 9'				
9.5					Poorly graded SAND with SOME WOOD AND PLASTIC (earthen fill)	Poorly graded SAND (glacial outwash)						
10												
10.5							NB	Yellowish brown SAND, WET				
11												
11.5										INCREASING AMOUNTS OF PLASTIC AND CONCRETE AT 12'	Poorly graded SAND with gray silt laminations (glacial outwash)	
12												
12.5												
13												
13.5												
14												
14.5												
15												
15.5												
16										BECOMING MOIST BELOW 16'		
16.5					NB							
17												

NB = No Bottom of buried watse material was reached.
B @ xx' = Bottom of buried waste and fill at xx depth.

SUMMARY OF TEST PIT INFORMATION
Information from test pit logs in Go East LFCP (01/2018), Appendix A

NB = No Bottom of buried watse material was reached.
B @ xx' = Bottom of buried waste and fill at xx depth.

SUMMAR
Information from test p

NB = No Bottom of buried watse material was reached.
B @ xx' = Bottom of buried waste and fill at xx depth.

SUMMARY OF TEST PIT INFORMATION

Information from test pit logs in Go East LFCP (01/2018), Appendix A

Depth ft bgs	5-A	6	7	8-A	8-B	9-A	9-B	10-A	10-B	10-C	11-A	11-B
0												
0.5	Loose SAND, some roots (earthen fill - topsoil)	GRAVELLY SAND, loose, fine to coarse (earthen fill)	SAND, loose, dry to moist, med (earthen fill)	SAND, loose,med (earthen fill)	SAND, loose, dry to moist, med (earthen fill)	SAND (topsoil - fill)	GRAVELLY SAND earthen fill	SILTY SAND, loose (topsoil - fill)	GRAVELLY SILT, med dense, moist (fill)	GRAVELLY SAND, med dense, dry (fill)	SAND, moist (topsoil - fill)	SAND loose, moist (topsoil - fill)
1	SILTY SAND WITH INTERMIXED WOOD AND GLASS (demolition waste)			Poorly graded SAND, MOIST TO WET (glacial outwash)		Poorly graded SAND, WET (glacial outwash)	GRAVELLY SAND WITH INTERMIXED GLASS, BRICKS AND SOME STEEL (demolition waste)	Poorly graded SAND, loose, moist (glacial outwash)			Brown SAND, poorly graded, dry, loose WITH SOME INTERMIXED WOOD (earthen fill)	Poorly graded SAND, loose, moist to wet glacial outwash
1.5												
2												
2.5	SAND poorly graded (glacial outwash)	SAND, ORGANIC, WITH DIMENSIONAL TIMBER (demolition waste)										Poorly graded SAND, loose, moist to wet (glacial outwash)
3			SAND with some gravel, WITH INTERMIXED WOOD (earthen fill)									
3.5				STRONG SEEPAGE AT 3'			LOOSE SAND, slightly moist, WITH INTERMIXED WOOD (earthen fill)				Gray SAND, poorly graded, moist WITH INTERMIXED WOOD (earthen fill)	SEEPAGE AT 3.5'
4												
4.5		SAND (glacial outwash)	SAND (glacial outwash)									
5					Loose SAND WITH INTERMIXED WOOD (earthen fill)	Poorly graded SAND, WET (glacial outwash)						
5.5												
6												
6.5.											SAND (glacial outwash)	
7						STRONG SEEPAGE AT 5'	SAND, poorly graded (glacial outwash)					
7.5											Gray SILT, dry, med plasticity, dense	
8					SAND, poorly graded, moist to wet (glacial outwash)							
8.5												
9												
9.5												
10					WET BELOW 8'				SILTY SAND, loose, moist, WITH INTERMIXED GLASS, DIMENSIONAL TIMBER, STEEL, AND SOME PLASTIC (demolition waste)	SILTY SAND (loose, dry) WITH INTERMIxED DIMENSIONAL TIMBER (demolition waste)		
10.5					STRONG SEEPAGE AT 10'					Poorly graded SAND, moist (glacial outwash)		
11												
11.5												
12												
12.5												
13												
13.5												
14												
14.5												
15									Poorly graded SAND (glacial outwash)			
15.5												
16												
16.5												
17												

NB = No Bottom of buried watse material was reached.
B @ xx' = Bottom of buried waste and fill at xx depth.

SUMMARY OF TEST PIT INFORMATION

Information from test pit logs in Go East LFCP (01/2018), Appendix A

SUMMARY OF TEST PIT INFORMATION

Information from test pit logs in Go East LFCP (01/2018), Appendix A

Depth ft bgs	11-C	12-A	12-B	13-A	13-B	14-A	15	16	17	18	19	20
0												
0.5	GRAVELLY SAND, loose (fill)	GRAVELLY SAND loose, dry to moist, some roots (fill)	GRAVELLY SAND, loose, moist to dry (fill)	GRAVELLY SAND loose (fill)	GRAVELLY SAND loose, moist to dry (fill)	GRAVELLY SAND poorly graded, dry (fill)	GRAVELLY SAND, poorly graded, dry, med dense, WITH SOME STEEL AND POCKETS OF CRUSHED GLASS (fill)	GRAVELLY SAND, loose, moist to dry, WITH SOME WOOD (earthen fill)	SILTY SAND WITH INTERMIXED WOOD, SOME STEEL AND PLASTIC (demolition waste)	SANDY SILT, some gravel, dry, med plasticity (earthen fill)	GRAVELLY SAND, dry, med dense (earthen fill)	SILTY SAND, some gravel, moist (earthen fill)
1	Poorly graded SAND, moist (glacial outwash)			SAND, poorly graded, loose, dry, WITH INTERMIXED WOOD, TIRES, METAL, CARPET, & STEEL PIPES (refuse)							GRAVELLY SAND (dry, loose) WITH GLASS, ASPHALT, & BRICKS (fill)	
1.5												
2												
2.5												
3											CRUSHED GLASS	
3.5		CHARCOAL & PART. BURNT WOOD							GRAVELLY SAND WITH INTERMIXED WOOD, BRICKS, STEEL, AND CARDBOARD (demolition waste)			
4												
4.5		SAND, poorly graded, dry, loose WITH INTERMIXED BRICKS (demolition waste)	Poorly graded SAND (moist, loose) INTERMIXED WITH WOOD (demolition waste)			Poorly graded SAND, loose, dry to moist, WITH INTERMIXED DIMENSIONAL LUMBER (demolition waste)		SAND (dry to moist) WITH INTERMIXED WOOD AND PLASTIC (demolition waste)	CRUSHED GLASS	SILTY SAND (moist, loose) INTERMIXED WITH TIRES, BRICKS, PLASTIC AND LARGE PIECES OF WOOD (demolition waste)	SAND, dry, loose, WITH INTERMIXED PLASTIC AND PVC PIPES AND SOME STEEL (demolition waste)	SILTY SAND, dry to moist, loose, WITH INTERMIXED PLYWOOD, BRICKS, PLASTIC SHEETING, STEEL, AND OCCASIONAL TIRES (demolition waste)
5												
5.5												
6												
6.5.									Poorly graded SAND, dry, loose (earthen fill)			
7												
7.5												
8								POCKET OF PINK PACKING FOAM AND PLASTIC AT 8'				
8.5												
9												
9.5			NB			NB	SAND (loose, moist) WITH INTERMIXED DIMENSIONAL TIMBER (demolition waste)					
10								POCKET OF CRUSHED GLASS AT 10'				
10.5												
11												
11.5												
12								NO PLASTIC IN DEMOLITION WASTE BELOW 13'				
12.5												
13												
13.5												
14												
14.5												
15												
15.5												
16												
16.5								17-20' SAND (glacial outwash-fill)			NB	
17												
		NB		NB	NB		To 25' NB	To 20 ft, B @ 17 ft	To 18.5 ft, B @ 17 ft	To 27 ft NB		NB = No Bottom of buried wats B @ xx' = Bottom of buried wa

SUMMARY OF TEST PIT INFORMATION

formation from test pit logs in Go East LFCP (01/2018), Appendix A

Depth ft bgs	21	22	23	24
0				
0.5	SILTY SAND with some gravel, moist (earthen fill)	SANDY SILT, moist (earthen fill)	SILTY SAND with gravel (earthen fill)	Poorly graded SAND
1				
1.5		**SILTY SAND (dry, loose) with GLASS AND STEEL (demolition waste)**		SILTY SAND WITH INTERMIXED BRICKS, LINOLEUM, INSULATION, AND SOME STEEL AND WIRE (demolition waste)
2				
2.5	SILTY SAND, moist, loose (demolition waste) SOME PLASTIC @ 3' BURNT WOOD AT 4'	BURNT WOOD AND CHARCOAL	SILTY SAND WITH INTERMIXED PLASTIC SHEETING, PLYWOOD, FOAM RUBBER INSUL. & GLASS (demolition waste)	
3				
3.5				
4				
4.5			BURNT WOOD AND CHARCOAL	CRUSHED GLASS
5				
5.5		SILTY SAND (dry to moist, loose) INTERMIXED WITH CONCRETE, DIMENSIONAL TIMBER, AND SOME CARPET (demolition waste)		
6				
6.5.	TIRES AND PVC PIPING AT 6' - 8'		BRANCHES AND PINE NEEDLES (wood waste)	
7				
7.5				
8				
8.5	Loose SAND with INTERMIXED PLYWOOD & DIMENSIONAL TIMBER (demolition waste)		SILTY SAND WITH INTERMIXED DIMENSIONAL TIMBER & CONCRETE (demolition waste)	SILTY SAND, dry to moist, WITH INTERMIXED BRICKS, INSULATION,AND SOME STEEL AND WIRE (demolition waste)
9				
9.5				
10				
10.5		NB		
11				
11.5				
12	PLYWOOD, TIRES, AND CONCRETE (demolition waste)			
12.5				
13				
13.5			NB	
14				
14.5	NB			
15				
15.5				NB
16				
16.5				
17				

e material was reached.
te and fill at xx depth.

SUMMARY OF TEST PIT INFORMATION

Information from test pit logs in Go East LFCP (01/2018), Appendix A

Depth ft bgs	25	26	27	28	29
0					
0.5	SILTY SAND	SILTY SAND (earthen fill)	SILTY SAND WITH INTERMIXED BRICKS, GLASS, PLYWOOD, AND STEEL (demolition waste)	**SAND w/ WOOD, GLASS, CONCRETE**	**SAND w/ WOOD, GLASS, CONCRETE**
1				**Moist SAND and veins of SILTY SAND**	**Moist SAND and SILTY SAND**
1.5	SILTY SAND WITH SOME STEEL AND BRICKS (demolition waste)	GRAVELLY SAND WITH SOME STEEL AND PLASTIC (demolition waste)			
2					
2.5			SILTY SAND, moist to dry, WITH SOME WOOD (earthen fill)		
3					
3.5	BURNT WOOD AND CHARCOAL				
4					
4.5		CHARCOAL			
5			SAND (glacial outwash)		
5.5					
6					
6.5.					
7					
7.5					
8					
8.5	SILTY SAND, dry to moist, WITH INTERMIXED DIMENSIONAL TIMBER, STEEL, CONCRETE, CARPET, AND SOME PLASTIC (demolition waste) POCKET OF CRUSHED GLASS AT 7' LARGE STUMPS FROM 8' TO 12'	SILTY SAND WITH INTERMIXED PLYWOOD, DIMENSIONAL TIMBER, TRACE CONCRETE (demolition waste) LARGE PIECES OF DIMENSIONAL TIMBER AT 8'			
9					
9.5					
10					
10.5					
11					
11.5					
12					
12.5		NB			
13					
13.5					
14					
14.5					
15					
15.5	NB				
16					
16.5					
17					

NB = No Bottom of buried watse material was reached.
B @ xx' = Bottom of buried waste and fill at xx depth.

SUMMARY OF TEST PIT INFO

Information from test pit logs in Go East LFCP

Depth ft bgs	30	31	EP-1
0			
0.5	SILTY SAND (loose) WITH INTERMIXED WOOD, STEEL, BRICKS, CONCRETE, AND PLASTIC (demolition waste)	SILTY SAND, loose, WITH INTERMIXED BRICKS, CONCRETE, LOGS, AND SOME CARPET (demolition waste)	Loose, moist SILTY SAND with ROOTS, WOODY DEBRIS, PLASTIC, & BRICK (fill)
1			
1.5			
2			
2.5			
3			
3.5			
4			
4.5			
5			
5.5			
6			
6.5.	SILTY SAND, dry to moist (glacial outwash)	NB	Loose, moist SAND with ORGANICS AND WOODY DEBRIS AND DIMENSIONAL LUMBER (fill)
7			
7.5			
8			
8.5			
9			
9.5			
10			
10.5			SILTY SAND, med dense, moist to wet (Vashon Advance Outwash) SLIGHT SEEPAGE AT 11'
11			
11.5			
12			
12.5			
13			
13.5			
14			
14.5			
15			
15.5			
16			
16.5			
17			

NB = No Bottom of buried watse material was reached.
B @ xx' = Bottom of buried waste and fill at xx depth.

SUMMARY OF TEST PIT INFORMATION

Information from test pit logs in Go East LFCP (01/2018), Appendix A

Depth ft bgs	EP-2	EP-3	EP-4	EP-5	EP-6	EP-7	EP-8
0	Loose, moist SILTY SAND with GRAVEL, WOODY DEBRIS, PLASTIC, AND OXIDE FRAGMENT GLASS BRICK (fill)	Loose, moist SILTY SAND with gravel, CONCRETE, WIRE, AND WOODY DEBRIS (fill)	Loose, moist SILTY SAND with GRAVEL, ROOTS, AND BRICK FRAGMENT (fill)	Loose, moist SILTY SAND with ROOTS, GRAVEL, ORGANICS, CONCRETE, WOODY DEBRIS, AND BRICK FRAGMENTS (fill)	SILTY SAND with GRAVEL, ROOTS, WOOD DEBRIS, METAL, GLASS, PLASTIC, FABRIC, BRICK, TIRE, STUMPS, i.e., GENERAL REFUSE (fill)	Loose, moist SILTY SAND with GRAVEL, ORGANICS, WOODY DEBRIS, DIMENSIONAL LUMBER, BRICK, GLASS, PLASTIC, STUMPS, BURNED WOOD, ASPHALT, CONCRETE, METAL, BURN ASH, AND CARPET (fill)	SILTY SAND with GRAVEL, ORGANICS, WOODY DEBRIS, METAL, CONCRETE, ASPHALT, PLASTIC, BURNED WOOD, BROWNISH ASH, WIRE, BRICK, STUMPS, DIMENSIONAL LUMBER, CINDER BLOCKS (fill)
0.5							
1							
1.5							
2							
2.5							
3							
3.5		SLIGHT SEEPAGE AT 5'	SAND med dense to dense (Vashon Advance Outwash) SEEPAGE AT 5'	SAND med dense, moist (Vashon Advance Outwash)			
4							
4.5							
5							
5.5							
6							
6.5.							
7							
7.5							
8							
8.5	Loose, moist SILTY SAND with ORGANIC, WOODY DEBRIS, WIRE, BURNED WOOD FRAGMENTS, BRICK, METAL FRAGMENTS AND PIPE, CLOTH, SOME WOOD WITH CREOSOTE ODOR, CONCRETE, & CARPET (fill)	Loose, moise SILTY SAND with ORGANICS AND WOODY DEBRIS, METAL, PLASTIC, CONCRETE, TIRE, RAILROAD TIES, FABRIC, AND BRICK (fill)					
9							
9.5							
10							
10.5							
11							
11.5							
12							
12.5							
13							
13.5					Dense, silty fine to med SAND with GRAVEL, ASPHALT, AND PLASTIC PIPE (fill) BRICKS AND WOODY DEBRIS BELOW 18'		
14							
14.5						Med dense to dense SAND with lenses of SILT @ 14-15' (Vashon Advance Outwash)	
15							
15.5							
16							
16.5		Moist to wet SAND (Vashon Adv. Outwash)					
17							
	To 19 ft NB				to 21 ft NB	To 20 ft	To 19 ft NB

SUMMARY OF TEST PIT INFORMATION

Information from test pit logs in Go East LFCP (01/2018), Appendix A

Depth ft bgs	EP-9	EP-10	EP-11	EP-12	EP-13
0	Hard, moist, bedded SILT (Vashon Advance Outwash)	Loose, moist SILTY SAND with gravel & roots	Silty SAND with ASSORTED DEBRIS (fill)	Loose SILTY SAND with GRAVEL, ORGANICS, AND ASSORTED DEBRIS (fill)	Loose, moist SILTY SAND with GRAVEL, ORGANICS, AND ASSORTED DEBRIS (fill)
0.5					
1					
1.5		Hard, moist SILT (Vashon Adv. Outwash)	DENSE MOIST SAND (Vashon Advance Outwash)		
2					
2.5					
3					
3.5		Dense, moist, fine to med SAND (Vashon Advance Outwash)			
4	Dense, moist, fine to med SAND (Vashon Advance Outwash)				
4.5					
5					
5.5				Loose, moist SILTY SAND with GRAVEL (fill)	
6					
6.5.					
7					
7.5					
8					
8.5				Loose, moist SILTY SAND with GRAVEL, ORGANICS, AND ASSORTED DEBRIS (fill)	
9					
9.5					
10					
10.5					
11					
11.5					
12					
12.5					
13					
13.5				Dense, moist, fine to med SAND (Vashon Advance Outwash)	
14					
14.5					
15					
15.5					
16					
16.5					AT 17' REFUSAL ON DEBRIS
17					
					NB

NB = No Bottom of buried watse material was reached.
B @ xx' = Bottom of buried waste and fill at xx depth.

SUMMARY OF TEST PIT INFORMATION

Information from test pit logs in Go East LFCP (01/2018), Appendix A

Depth ft bgs	EP-14	EP-15	EP-16	EP-17
0	Loose, moist SILTY SAND with GRAVEL, ORGANICS, ASSORTED DEBRIS, AND ABUNDANT BURNED WOODY DEBRIS (fill)	Loose, moist SILTY SAND with GRAVEL, ORGANICS, AND ASSORTED DEBRIS (fill)	LOOSE, MOIST, SILTY SAND WITH GRAVEL, TRACE ORGANICS, AND WOODY DEBRIS	Loose, moist SILTY SAND with GRAVEL, ORGANICS, ASSORTED DEBRIS, AND ABUNDANT GLASS SHARDS (fill)
0.5				
1				
1.5				
2				
2.5				
3				
3.5				
4				
4.5				
5				
5.5				
6				
6.5.				
7				
7.5				
8				
8.5				
9				
9.5		Dense, moist, fine to med SAND (Vashon Advance Outwash)		
10				
10.5				
11				
11.5				
12				
12.5				
13			Loose, moist, SILTY SAND, with GRAVEL, WOODY DEBRIS, AND ASPHALT (fill)	
13.5				
14				
14.5				
15				
15.5				
16				
16.5			18-20': Dense SAND (Vashon Adv. Outwash)	
17				
	To 18 ft NB		To 20 ft, B @ 18 ft	To 19.5 ft NB

Site Visit Memorandum

TO: Project File

FROM: Kent Wiken, PE

DATE: February 5, 2019

RE: **Site Visit**
Former Go East Landfill Site
4330 108th Street SE , Everett WA
Project No. 1780001.010.011

As allowed by the Pollution Control Hearing Board (PCHB), Jeremy Davis and I with Landau Associates, Inc. (LAI) and Ginny Stern, independent hydrogeologist, conducted a site visit to the former Go East Landfill in Everett, Washington for the purpose of observing existing surface conditions and topography of the site. We were escorted into the site by Steve Calhoon, ASLA, Principal Planner with Pace Engineers. The site visit was conducted on January 31, 2019 from Noon until 2:00 PM, on a clear, sunny day with no wind, approximately 50°F.

Western Plateau Area

We entered the property through a large hole in the fence on 108th Street SE, which is on the Northwest corner of the Site, and walked easterly along a dozer-wide trail that had been cut through the site (Figure 1) onto a plateau evidenced in the topographic contours shown on Figure 1. This area was identified as the proposed area for the new residences. A deep ravine separates this plateau from the residences to the north (Photo 1, Figure 2). The slope to the ravine was very steep and inferring that this edge of plateau itself was created with fill or cut to a steep angle from past mining operations. We then walked to the east side of the plateau, and looked eastward to the relatively flat area identified as the landfill area, approximately 30 to 40 feet below the elevation of our path (Photo 2, Figure 2).

Landfill Area

We continued walking through the site, and down to the area identified in documents as the location of the former landfill. Several recent excavations had been made in this area and loosely backfilled with a sand and, in some areas, chunks of clay (Photo 3, Figure 3). The ridges of the soil in the backfill had not yet been weathered by rain, and trees that were disturbed by excavation looked freshly cut (less than a few days). Due to time limitations and dense vegetation, we did not walk over the entire surface of the landfill area, but were able to observe the surface of the landfill along the dozer path we followed. The former landfill area was densely vegetated with alder trees, blackberries, swordferns, and other underbrush (Photo 4, Figure 3) and appeared to have a hummocky surface, with some water-filled depressions.

Northeast Steep Area

We proceeded to the east end of the dozer trail, where the ground surface sloped away precipitously on all sides. The end of trail was also near the location of Monitoring Well 4 (Photo 5, Figure 4). From this vantage point ,we could see clearly that trees were bent at the base, indicating slope movement while the trees were growing (Photo cluster 6, Figure 4) Jeremy and I then carefully made our way down the steep slope (1 to 2 horizontal to 1 vertical) to springs at the bottom of the slope. On our way down, we observed numerous fallen trees, and the steep break in slope. The bottom approximately 1/3 of the slope had steel drums and crumpled steel tanks (Photo cluster 7, Figure 5), and numerous locations of exposed trash such as plastics, glass, wire, and other miscellaneous debris (Photo cluster 8, Figure 5). We understand the presence of steel containers indicates unauthorized disposal of metal. These steel containers may have held liquid waste, which also would have been prohibited for disposal. The bottom of the slope had numerous liquid springs or seeps coming out from the waste mass. These areas had heavy rust-colored iron-stained muck and a rainbow sheen on the surface of the water (photo cluster 9, Figure 6), indicating the presence of leachate (organics in the water coming from contact with waste). The flow of water was steadily emanating from the slope, and spread out into a wetland and pools that were thickly coated with the rust-colored muck (Photo cluster 10, Figure 6).

We then climbed up out of the ravine and walked back across the landfill to exit on the same path we came in on, observing the stream on the west side of the property, which is proposed to be relocated. Back up on the plateau, we noticed a freshly disturbed area near to the southeast of the entrance. This area had a large steel prism approximately 2 feet thick, by 5 feet wide by 20 feet long, which seemed hollow with some steel plates bolted onto it. It looked like a large door or deck, but we were unable to determine its past purpose.

Conclusions

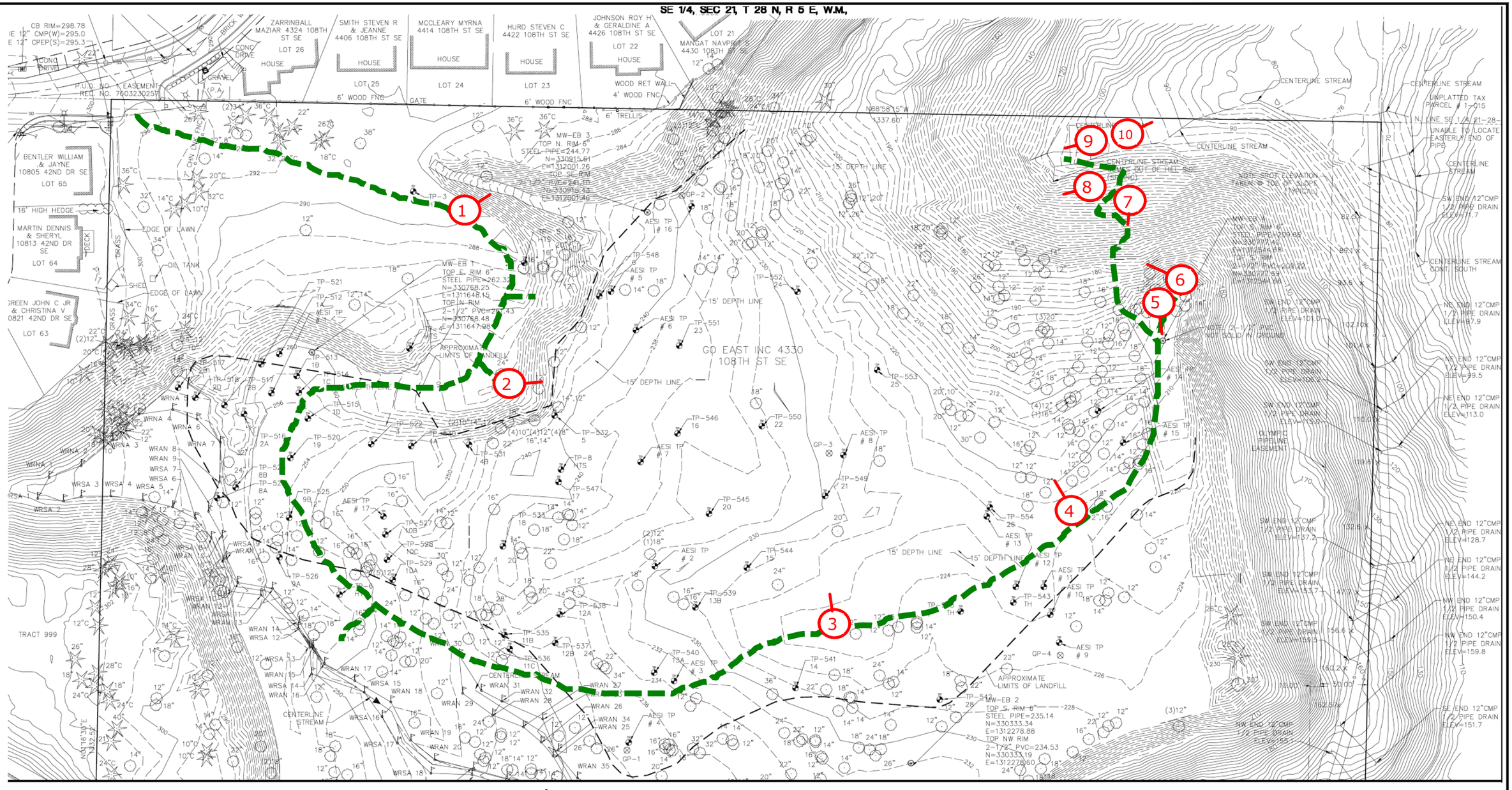
The landfill closure plans indicate that the site will be brought up to final development grades by relocating the existing waste to the central area of the landfill. The site observations led us to realize the great thickness of relocated solid waste, which would be need to be placed to bring this area up to the proposed common area and pond grades. We proposed to create figures representing graphical cross sections of this area, based on the existing and proposed grading plans in this area, to better understand the scale of the earthwork and landfill relocation project, and to review the potential settlement of that waste once it is relocated. We are not aware of any such cross sections presented in other existing reports. The observed presence of steel drums in the lower portion of the steep slope at the northeast portion of the property may suggest that future waste excavations will likely encounter unexpected, un-authorized, or even dangerous wastes that will need to be carefully managed and disposed of separately as part of the closure construction plan.

The landfill closure plan proposes that approximately 1-acre area in the northeast corner of the property (below the elevation 190-foot contour) should be left as is, due to stated stabilization

provided by the existing trees and vegetation. However, the observations indicating steep slope is unstable, observations of exposed waste, and observations of leachate seeps discharging from the slope clearly indicate an engineered closure over this area is needed, and a leachate collection and treatment system should be a part of the overall closure plan. Furthermore, there are no provisions in the limited purpose landfill regulations that would allow portions of the landfill to remain uncovered and waste exposed as part of the long-term final closure design proposed.

KWW/jmd/tam
[P:\1780\001\T\SITE VISIT 01 31 2019\GO EAST LF 013119 SITE VISIT_TM 020519.DOCX]

SE 1/4, SEC 21, T 28 N, R 5 E, W.M.



Legend:

- Approximate walking path
- Approximate limits of landfill waste (Pace, 2018)
- Existing contours
- (1) Approximate photo location and direction (Figures 2 through 6)

LANDAU ASSOCIATES, INC.

LANDAU ASSOCIATES

Former Go East Landfill Site Walk Everett, WA	Site Walk Plan 1/31/2019	Figure 1

1. Ravine on North Side toward residences. Looking Northeast.

2. Looking east from the plateau over the landfilled area.

2/5/19 P:\1780\001\T\Site Visit 01 31 2019\Figure 2 Site Photos.docx

LANDAU ASSOCIATES

Former Go East Landfill Site Walk Everett, WA	**Selected Site Photographs 01/31/2019**	Figure 2

3. One of several apparent recently backfilled test pit areas

4. Landfill Surface, densely vegetated

2/5/19 P:\1780\001\T\Site Visit 01 31 2019\Figure 3 Site Photos.docx

LANDAU ASSOCIATES

Former Go East Landfill Site Walk Everett, WA	**Selected Site Photographs 01/31/2019**	Figure 3

5. Monitor Well 4.

6. Trees in the northeast slope area, showing bends at the base indicative of slope movement.

2/5/19 P:\1780\001\T\Site Visit 01 31 2019\Figure 4 Site Photos.docx

LANDAU ASSOCIATES

Former Go East Landfill Site Walk Everett, WA	**Selected Site Photographs 01/31/2019**	Figure 4

7. Exposed deteriorated drums and crushed steel tank in slope

8. Exposed waste on slope- plastic, plywood, wire, paper debris

2/5/19 P:\1780\001\T\Site Visit 01 31 2019\Figure 5 Site Photos.docx

LANDAU ASSOCIATES

Former Go East Landfill Site Walk Everett, WA	**Selected Site Photographs 01/31/2019**	Figure 5

9. Leachate springs at the toe of the Northeast slope.

10 Rust-colored muck wetlands created by leachate springs.

2/5/19 P:\1780\001\T\Site Visit 01 31 2019\Figure 6 Site Photos.docx

LANDAU ASSOCIATES

Former Go East Landfill Site Walk Everett, WA	**Selected Site Photographs 01/31/2019**	Figure 6

GO EAST LANDFILL - AIR EMISSIONS AND NOISE CONTROL PLANS

Following are the air emissions and noise control instructions provided by PACE in the draft Land Disturbing Activity (LDA) preliminary drawings dated Oct. 4, 2018 and submitted to Snohomish County Planning and Development Services. These are instructions that would be provided to a future contractor doing the initial grading, waste excavation and relocation, filling, and compaction work for landfill closure. These instructions are provided on Sheet 9 of the LDA preliminary plan set and shown verbatim below.

6. IMPLEMENT A NOISE CONTROL PLAN (NCP) AS DESCRIBED BELOW:
    a. MEASURING NOISE LEVELS AT THE PROPOERTY BOUNDARY TO DETERMINE THE ACTUAL EFFECTS OF THE CONSTRUCTION EQIPMENT AND OPERATING SCHEDULE IF COMPLAINTS ARE RECEIVED.
    b. USING EQUIPMENT SUITABLE FOR THE JOB THAT ISN'T OVER OR UNDER POWERED.
    c. WHENEVER POSSIBLE, USING THE QUIETEST EQUIPMENT ALTERNATIVE.
    d. SCHEDULING LOUDER OR IMPULSIVE NOISE SURCES DURING MID-DAY HOURS ONLY.
    e. LOCATING EQUIPMENT TO POSITION PROMINENT NOISE SOURCES AWAY FROM THE PROPERTY BOUNDARY TO THE EXTENT PRACTICAL.
    f. LIMITING THE USE OF BACK UP BEEPERS THROUGH TRUCK/EQUIPMENT ROUTING OR THE USE OF FLAGMEN.
    g. USING A SOUND LEVEL METER TO DETERMINE IF THE PROJECT NOISE LEVELS (FOR THE LANDFILL CLOSURE ACTIVITIES) ARE APPROACHING LIMITS, IF CONSTRUCTION ACTIVITIES NEED TO BE PERFORMED IN CLOSE PROXIMITY TO RESIDENCES.
    h. USING BEST MANAGEMENT PRACTICES SUCH AS ENHANCED MUFFLER SYSTEMS AND SOUND BARRIERS TO PREVENT EXCEEDANCES IF CONSTRUCTION NOISE IS APPROACHING UNACCEPTABLE LEVELS.
7. AS ADDITIONAL MITIGATION ENFORCE REDUCED VEHICLE SPEED REQUIREMENTS OF 15 MPH, AND HIGH WIND SPEED CLOSURES, REQUIREMENTS DURING HANDING *(sic)* AND RELOCATING THE LANDFILL MATERIALS. THE CONSTRUCTION MANAGER SHALL PROVIDE TRAINING AND REGULAR DEBRIEFINGS FROM CREWS ON THE IMPORTANCE OF IMPLEMENTING AND MAINTAINING FUGITIVE DUST CONTROL MEASURES. THIS INCLUDES THE IMPORTANCE OF ONGOING OBSERVATIONS TO DETERMINE IF CONDITIONS HAVE DETERIORIATED OR A MITIGATION MEASURES *(sic)* IS INEFFECTIVE OR NOT BEING USED PROPERLY. ONSITE WORKERS SHOULD CONDUCT A DAILY INSPECTION TO ENSURE THAT MITIGATION MEASURES ARE REMAINING EFFECTIVE AND THAT THERE ARE NO AREAS OF INADEQUATE DUST CONTROL. MAINTAIN BEST MANAGEMENT PRACTICES RELATED DUST CONTROL.

Comments:

The primary issue with these instructions is the lack of specific action levels for change in procedures or operations, and the general lack of commitment to specific actions. For example, Item 6a says that measuring noise levels will be done "if complaints are received." Acceptable noise limits are not stated anywhere in these instructions, making this plan unenforceable. Item 6b states that equipment will be used "that isn't over or under powered." Without any specific information regarding what "over-powered" or" under-powered means" or how it will be determined, this is a meaningless statement. Item 6h states that additional measures will be used "to prevent exceedances if construction noise is approaching unacceptable levels," but actual decibel levels are not stated that define what "unacceptable levels" are or the limits that should not be exceeded.

Likewise, regarding air emissions, Note 7 mentions "high wind speed closures" but offers no windspeed at which those measures would be implemented. Thus, this is a non-enforceable requirement. This note mentions "the importance of ongoing observations to determine if conditions have deteriorated or a mitigation measure is ineffective." But nowhere is maintenance of a daily log book mentioned, for example, where windspeed and weather conditions could be noted, and what mitigation measures are being used. Likewise, no air quality measurement is proposed on the property boundary to determine whether measures ARE being effective.

In sum, these instructions would provide no protection whatsoever to the residents living in close proximity to the landfill.

Proposed Soil Sampling for Landfill Closure

Following is an excerpt from Section 3.6.2 of Go East Landfill Closure Plan (p. 29-30).

As previously discussed prior to construction, materials proposed to be relocated from the wedge area will be tested for contamination (see Table G-4 below, taken from Volume IV of the Department's 2005 SWMMWW) and pH levels. These materials will be sampled and analyzed at the frequency of 1 sample for every 500 cubic yards for the first 2,500 cubic yards, and then one sample taken approximately every 2,500 cubic yards thereafter. In the event that change is encountered, texture or other characteristics area observed by the onsite monitoring professional that indicate a possible different source of the materials and soil, a sample we will be collected even when the frequency exceeds 1 sample per 2,500 cubic yards. More sampling may be required if field testing indicates that additional assessment is needed due to high levels of one or more of potential contaminants.

Table G.4 – Recommended Parameters and Suggested Values for Determining Reuse and Disposal Options

Parameter	Suggested Maximum Value (MTCA) (1)	TCLP Maximum Value (2)
Arsenic, Total	20.0 mg/kg	5.0 mg/l
Cadmium, Total	2.0 mg/kg	1.0 mg/l
Chromium, Total	42 mg/kg	5.0 mg/l
Lead, total	250 mg/kg	5.0 mg/l
Nickel	100 mg/kg	Na (3)
Zinc	270 mg/kg	Na
Mercury (Inorganic)	2.0 mg/kg	0.2 mg/l
PAHs (Carcinogenic)	0.1 – 2.0 mg/kg	
TPH (Heavy Fuel Oil)	200 - 460 mg/kg	Na
TPH (Diesel)	200 – 460 mg/kg	Na
TPH (Gasoline)	100 mg/kg	Na
Benzene	0.03 mg/kg	0.5 mg/l
Ethylbenzene	6 mg/kg	Na
Toluene	7 mg/kg	Na
Xylenes (Total)	9 mg/kg	Na
pH (4)	6.5-8.5	6.5-8.5

Notes: Model Toxics Control Act Method A values for unrestricted site use or protection of terrestrial organisms.
Maximum Concentrations of Contaminants for the Toxicity Characteristic per WAC 173-303-090.
Na = No value given
pH range considered to be neutral

Results of the testing will be compared to the MTCA (Model Toxics Control Act) values listed in Table G-4 to allow the contractor to determine the level of worker protection required. Additional air monitoring may be required to determine respiratory protection if fugitive dust becomes an issue. The results of TCLP (Toxicity Characteristic Leaching Procedure) analyses will be compared to the Table G-4 limits to determine and document that dangerous is not present and

not being relocated onto or into the landfill area. Should TCLP's values exceed the dangerous waste criteria listed in Table G-4, special handling and disposal requirements will be implemented. Furthermore, the contractor shall look to Labor and Industry and worker health and safety regulation should any hazardous material be encountered.

_____

Comments:

There are three basic problems with this approach.

(1) This proposed sampling is actually characterization of 50,000 to 60,000 cubic yards of buried waste, which should be accomplished long before construction equipment is onsite. Test pit observations indicate there is a high likelihood that asbestos-containing material is in the landfill. We know that reactive metal dust was deposited in this landfill in 1974. It is entirely possible that other dangerous wastes were disposed of here. However, waiting until waste material is pulled out of the ground before testing it means that asbestos- or dangerous waste-containing dust will have already been released. Characterization of the waste needs to be conducted long before excavation begins, and appropriate worker protection and residential protection measures put in place.

(2) The sampling protocol from the 2005 Stormwater Manual (Table G-4) is meant to be used for evaluating street waste solids for potential reuse. It has nothing to do with landfills. This is not a protocol that will determine what dangerous waste constituents are present in the waste material being relocated. Although MTCA levels are used in this table, the list of constituents is specific to the evaluation of street waste solids for potential reuse, and is not broad enough to cover the contaminants commonly found in abandoned landfills, which include petroleum constituents, volatile organics, semi-volatile organics, PCBs, pesticides, and herbicides. A priority pollutant scan would be far more appropriate.

(3) This sampling protocol uses an outdated sampling frequency, even for its intended use (street waste solids), and this frequency is completely inadequate to characterize a non-homogeneous landfill waste. The 2005 Stormwater Manual street waste solids protocol states that one sample will be taken every 500 cubic yards (cy) for the first 2,500 cy, and one sample every 2,500 cy following. That sampling frequency was changed in later editions of the Stormwater Manual. The 2014 Manual (Vol. IV) provides a more frequent sampling routine as shown below.

Table IV-G.5 Recommended Sampling Frequency for Street Waste Solids

Cubic Yards of Solids	Minimum Number of Samples
0 - 100	3
101 - 500	5
501 - 1000	7
1001 - 2000	10
>2000	10 + 1 for each additional 500 cubic yards
Modified from Ecology's Interim Compost Guidelines (no longer in effect)	

2014 Stormwater Management Manual for Western Washington, Vol. IV, Appendix G, p. 751.

Characterization of the 50,000 to 50,000 cy of waste that is proposed to be excavated and relocated on this landfill requires a sampling frequency and list of analytes that will provide a reasonable understanding of the dangerous waste content of the material. Then, an appropriate determination of where that waste should be disposed of, and measures to protect onsite workers and nearby residents can be specified.