

Letter Health Consultation

MASTERPARK SITE (AKA SEATAC DEVELOPMENT SITE)

SEATAC, KING COUNTY, WASHINGTON

**Prepared by the
Washington State Department of Health**

AUGUST 6, 2009

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

A health consultation is a verbal or written response from ATSDR or ATSDR's Cooperative Agreement Partners to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR or ATSDR's Cooperative Agreement Partner which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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Health Consultation Memorandum

June 2, 2009

TO: Jerome Cruz
Washington Department of Ecology

FROM: Barbara Trejo
Washington Department of Health

SUBJECT: Health Consultation – Agreed Order Review
SeaTac Development Site (aka MasterPark Site)
SeaTac, King County, Washington

Background and Statement of Issues

The Washington Department of Health (DOH) has completed its review of the draft Agreed Order for the SeaTac Development site (aka MasterPark site).¹ The draft Agreed Order requires the potentially liable parties (PLPs) to complete a site remedial investigation and feasibility study (RI/FS) and draft cleanup action plan pursuant to the Model Toxics Control Act (MTCA). This work will be done under Washington Department of Ecology (Ecology) oversight. A RI/FS work plan (WP), sampling and analysis plan (SAP), quality assurance project plan (QAPP), and Health and Safety plan (HASP) are integral parts of the Agreed Order. DOH reviewed all but the HASP, which was prepared to address health and safety issues for the PLPs' consultants.

The draft Agreed Order and associated plans were made available to DOH during the Ecology public comment period, which runs from May 8, 2009 through June 8, 2009. DOH reviewed these documents as a follow-up to its January 2006 health consultation, which recommended that the following actions be taken at the site:

- Determine the nature and extent of the groundwater contamination.
- Conduct a well survey to identify whether nearby private or public water supply wells are potentially affected by the contaminated groundwater.

¹ Washington Department of Ecology, Draft Agreed Order No. DE [to be assigned], Sea-Tac Investments LLC, a Washington limited liability company; ANSCO Properties, LLC, a Washington limited liability company; and Scarsella Bros. Inc., a Washington corporation, May 2009.

- Evaluate the groundwater to indoor air pathway to ensure that no one is being exposed to harmful levels of groundwater contaminants via indoor air.
- Ensure that no drinking water wells are installed at or immediately downgradient of the site.²

The SeaTac Development property, which is approximately seven acres, is located at 16025 International Boulevard, SeaTac, King County, Washington. The site overlies the regional, unconfined Vashon Advance Outwash (QVA) aquifer, which is a potable drinking water source. The WP indicates that only one well is located immediately downgradient of the site. That well, which is reportedly used for irrigation, is owned by the Washington Memorial Park Cemetery. The City of Seattle reportedly has a backup water supply well located about 0.5 miles east of the site, which appears to be upgradient of the site. The work plan also indicates that there are no water supply wells located within a mile downgradient of the site. However, there is no information provided in the report explaining how that was determined.

Most of the SeaTac Development property is paved except for the southern portion, which is undeveloped. The property is currently occupied by a public valet parking facility, known as MasterPark Lot C, which serves as a parking area for airline passengers. Two buildings are located near the east central portion of the property. How those buildings are constructed or are being used is unknown. In the past, the property was reportedly used as a base for construction and heavy equipment operations. It is also reported that small industrial and manufacturing activities and some residential and commercial uses occurred at the property in the past.¹

Soil and groundwater below the SeaTac Development property is contaminated with gasoline components. The extent of soil contamination at the property has reportedly been defined but no information has been provided in the Agreed Order to support this conclusion. Most of the northern third of the property is underlain by gasoline contaminated groundwater. The southern boundary of the gasoline contaminated groundwater on the SeaTac Development property has not been determined (i.e., MW-5, the southern most monitoring well contains 1,600 ug/l, which exceeds the 800 ug/l MTCA Method A cleanup level for gasoline). Releases at the SeaTac Development property have affected other properties to the north and west, which are also underlain by gasoline contaminated groundwater and potentially contaminated soil gas, which poses an indoor air health threat. The properties to the east may also be affected by contaminated soil gas. The extent of that groundwater and soil gas contamination associated with the site, however, is unknown.¹

According to the WP, the purpose of the RI is to “collect, develop and evaluate sufficient information regarding [s]ite releases to define the extent and magnitude of the contamination and evaluate the risk to human health and the environment.” It is also noted that “[b]ecause many investigations and data have been obtained regarding the Facility, the RI will focus on data gaps that exist for completing the RI/FS Report. The data gaps will be identified with respect to the major potential exposure pathways for the [s]ite releases and groundwater.” The SAP indicates

² Washington Department of Health, Health Consultation, Master Park Site (Near Intersection of South 160 Street and International Boulevard) SeaTac, King County, Washington, January 6, 2006.

that “Phase I will be the primary information gathering phase of the RI. Phase 2 will only be conducted if additional data gaps are identified after the completion of Phase I.”¹

Two groups of objectives are proposed for RI – Phase 1. The first objective group includes compiling existing information including:

- Historical uses and operations at the site and surrounding area.
- Classification of the types of materials stored and used at the site and surrounding area.
- Evaluation of previous investigations and cleanup actions conducted at the site and surrounding area.
- Characterization of the nature, extent, and potential sources of hazardous substance releases at the site and surrounding area that have impacted or have the potential to impact groundwater.

The second objective group includes conducting:

- A regional and site specific geologic and hydrogeologic investigation to help characterize groundwater flow at the site.
- An assessment of the groundwater impacts from the site releases, including the lateral and vertical extent of the dissolved contaminant plume.
- An evaluation of the potential routes of exposure and risks to human and ecological receptors associated with releases or threatened releases of hazardous substances.¹

Only limited field work is proposed to be conducted during RI – Phase 1. One additional monitoring well will be installed to the west of the SeaTac Development property to help determine the western extent of the plume. According to the SAP, that new monitoring well along with the existing monitoring wells will be sampled for four quarters. Four soil vapor probes are proposed to be installed adjacent to the residence located northwest of the property. The work plan indicates that “[i]f the results of the soil vapor analyses shows groundwater contaminants at potential levels of concern for indoor air impacts (consultation with Ecology), an air sample of the crawl space will be considered.”¹

The information collected during the RI will be used to support the FS, where cleanup alternatives are evaluated.

Discussion

Soil and groundwater at the SeaTac Development site are contaminated with gasoline components, including benzene, and pose a threat to the regional aquifer, which is a current and potential future drinking water source. The contaminated soil and contamination in the upper portion of the aquifer also pose a potential indoor air health threat to buildings on the SeaTac Development property as well as on adjacent properties.

Typically, when planning a RI for such a site, existing site information of acceptable quality (i.e., collected and analyzed used acceptable methods and procedures) is compiled, analyzed, and interpreted; a site conceptual model is developed; and data gaps are identified before proceeding

with plans for additional investigation work. However, such an approach was not taken for this site. Instead, according to the work plan, these steps will occur during the RI – Phase I. It is unclear why such an approach was taken when, as noted above, the focus of the RI is to address data gaps.

Information provided in the work plan suggests that the soil contamination has been defined (see page 5). So, no soil investigation work is planned for the RI. However, no data (e.g., tables, maps, laboratory data sheets) are provided in the work plan to support that conclusion. Given this lack of information about the nature and extent of soil contamination, DOH cannot verify this conclusion nor determine possible health threats. However, the cross section presented in Figure 3 in the work plan does suggest that a potential health threat is possible if a construction or utility worker encountered the gasoline and benzene contaminated soil shown on that figure.

The contaminated groundwater associated with this site lies within the regional aquifer, which is a current and potential future drinking water source. Neither the lateral nor the vertical extent of the site groundwater contamination in the regional aquifer has been determined. This is clearly depicted for the upper portion of the regional aquifer in work plan Figure 4, which shows that the extent of the groundwater contamination associated with the site has not been defined to the northeast, north, northwest, west, or south.¹ One well (MW-10), which was installed in the past in the deeper portion of the regional aquifer at the site, at one time contained 1,600 ug/l gasoline suggesting that the deeper portion of the aquifer is also contaminated.² Neither the horizontal nor vertical extent of the deeper contamination can be determined with one monitoring well. These are significant data gaps not mentioned in the work plan.

Only one additional downgradient monitoring well is planned to be installed to the west of the SeaTac Development property during the RI. However, additional monitoring wells also need to be installed to the northeast, north, northwest, and south to define the lateral extent of the plume in the shallow portion of the regional aquifer. Some deeper monitoring wells are necessary to assess the vertical extent of the contamination.

There is no information provided in the WP that indicates whether a well survey was done to determine whether private or public wells exist in the area. If a well survey has already been done, that information should be added to the work plan. If not done, DOH considers this a data gap that needs to be filled.

There was also no information included in the work plan that suggests that steps have been taken to prevent the installation of new public or private water supply wells at or near the site. This should be done as soon as possible to prevent potential exposures. If not already done, the City of SeaTac - Public Works and utility companies should also be notified about the contamination particularly since it has migrated off the SeaTac Development property and appears to underlie S. 160th Street to the north. This would be done to prevent potential exposures to subsurface vapors.

Four temporary soil gas probe installations are planned along the outside of the single family residence located to the northwest on the Washington Memorial Park Cemetery property. The

rationale for temporary soil probes is unclear given that it is known that gasoline and benzene levels near this residence exceed MTCA cleanup levels and that additional soil gas testing might be necessary in the future.

As noted above, the work plan indicates that “[i]f the results of the soil vapor analyses shows groundwater contaminants at potential levels of concern for indoor air impacts (consultation with Ecology), an air sample of the crawl space will be considered.”¹ The rationale for only considering air sampling rather than taking samples is unclear. However, it is not an approach acceptable to DOH when there is a potential health concern. If soil gas levels exceed levels of concern, DOH strongly suggests that Ecology require the PLPs to collect air samples from the crawlspace and living space.

Other buildings, including SeaTac Development buildings and buildings on adjacent properties (e.g., Loudon) may also be at risk from vapor intrusion. This fact and how it will be addressed is not mentioned in the WP or the SAP. DOH considers this a significant omission that needs to be addressed.

In addition to the issues just discussed, DOH has specific comments and recommendations regarding the work plan, sampling and analysis plan, and QAPP, which are summarized in the following numbered items:

Agreed Order

1. Item 7, Page 6 – It is noted that “[t]he [DOH] Health Consultation identified a general class of historic activities at the Site that used or handled petroleum products or generated wastes containing petroleum, but concluded that none of the environmental investigations done at or near the ‘Master Park properties indicate they are the source of petroleum contamination discovered in the regional aquifer.’ ” The sentence segment "at or" was incorrectly included in the health consultation report. The Agreed Order should be revised to say instead ". . . none of the environmental investigations done near the site indicates they are the source of petroleum contamination discovered in the regional aquifer."

Work Plan

1. **Section 1.2, Objectives for an RI/FS, last paragraph** – WAC 173-340-360(2)(b)(iii) indicates that public concerns should be considered. This requirement was omitted from the work plan but should be added.
2. **Section 3, RI Investigation Approach, first bullet** – The cross section on Figure 3 indicates that some shallow contaminated soils exist at the site; contaminated soil gas also exists. As a result, the site or utility worker receptor should be addressed during the RI.
3. **Section 3, RI Investigation Approach, second bullet** – It is noted in the work plan that “The Facility and neighbors to the east, north, and south are also commercial/industrial land uses.” However, it appears that none of the nearby properties would be considered industrial,

as defined under the MTCA cleanup regulation. The work plan should be revised appropriately.

4. **Section 3, RI Investigation Approach, page 6, last paragraph** - DOH recommends that all the existing and new monitoring wells be tested for naphthalene, ethylene dibromide (EDB), 1,2-dichloroethane (EDC) and methyl tertiary-butyl ether (MTBE) as well as gasoline and BETX (i.e., benzene, ethylbenzene, toluene, and xylenes) compounds for four quarters to determine if there are seasonal changes in contaminant concentrations.
5. **Section 4.1.1, Soil Vapor Sampling** – It is noted that “The [soil gas] probes will extend to a depth below land surface to be specified at a later time.” However, those details need to be worked out and included in the plan to ensure that they are placed appropriately.
6. **Section 4.1.1, Soil Vapor Sampling** – It is noted that “[t]he crawl space will be inspected for possible storage of chemicals, paints, solvents and fuels. If no storage is evident of volatile organic materials, an atmospheric sample of the crawl space at an appropriate access location will be obtained in a SUMMA canister for analysis.” Storage of chemicals in a building alone should not prevent air testing if those chemicals can be removed by the owner or tenant. The crawl space should be allowed to air out before crawl space samples are collected.
7. **Section 4.1.1, Soil Vapor Sampling** – A background air sample is planned to be collected 20 feet west of the residence and four feet above ground. This is not an appropriate location because it could be influenced by the plume. The background sample should be collected upwind and outside the plume boundary instead.
8. **Section 4.2.4, Groundwater Quality Sampling** – The work plan indicates that a “down-hole impeller driven pump (GrunFos pump)” will be used to collect groundwater samples. If this is one of the GrunFos low volume submersible pumps that is water cooled, it could result in heating of samples when used during low flow sampling. This could drive off some of the volatile components. An appropriate pump should be selected to collect groundwater samples.
9. **Section 4.2.4, Groundwater Quality Sampling** – The work plan indicates that a log of repeated field test data recorded during the purge process for each well are maintained in the project files. These results should also be provided in the RI to support the use of the data for making site decisions.

Sampling and Analysis Plan

1. **Section 3, Remedial Investigation Tasks** - None of the technical or sampling procedures or methods mentioned in the SAP are provided. These are critical pieces of information that need to be reviewed and added to the SAP.

2. **Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses** – A photo-ionization detector (PID) will be used along with other field screening methods to check for the presence of petroleum at the soil vapor locations. The results of this field screening should be documented and provided along with the soil gas results.
3. **Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses** – Soil gas samples are planned to be collected for 6 to 8 hours. The rationale for this sampling interval should be provided.
4. **Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses** – Isopropyl alcohol is planned to be used for leak testing during soil vapor testing. However, Columbia Analytical Lab reports that isopropyl alcohol can interfere with the T015 method and notes that helium is a better choice (<http://www.caslab.com/News/tag/isopropyl-alcohol>). This issue needs to be addressed before sampling occurs.
5. **Section 3.1.2, Collection of Soil Vapor Samples for Chemical Analyses** – Only EPA Method TO-15 is planned for testing soil vapor. However, this analytical method will not measure the gasoline range petroleum fractions. Given that this site contains high levels of gasoline in soil and groundwater and that there are nearby buildings at potential risk, DOH recommends that Ecology require the PLPs to also use the Massachusetts APH method when testing soil vapors.
6. **Section 3.2.2, Groundwater Quality Sampling** – It is noted in the SAP that “[s]everal of the wells historically have had seasonal low groundwater levels that were below the well screen preventing the collection of groundwater samples. If this condition is observed in any of the wells during the next four groundwater sampling events, groundwater samples will not be collected from that well and the condition will be documented in field logbooks and sample logs.” It should also be determined whether the well needs replacement because it is a critical part of the groundwater monitoring system.
7. **3.2.2.3 Chemical Analysis of Groundwater Quality Samples** – Only a subset of the site monitoring wells is planned to be tested for all analytes. DOH recommends complete testing for all wells for all four quarters because the purpose of the groundwater testing is to determine if there are seasonal differences in contaminant levels.

Quality Assurance Project Plan

1. **Table QAPP 1** – The regional aquifer is a current and potential future drinking water source. Therefore, federal and state maximum contamination levels and/or health advisories should be added to the table so it can be verified that the proposed reporting limits are low enough to compare with these standards or levels.
2. **Table QAPP 1** – The PQL for EDB, using EPA Method 8260, exceeds the MTCA cleanup levels and the MCL (0.05 ug/l). However, it looks like EPA Method 504.1 can achieve a

reporting limit for EDB of 0.01 to 0.05 ug/l. This method should be considered instead for EDB.

3. **Table QAPP 1** – NIOSH worker exposure limits are included on the table. However, these levels are not appropriate for assessing site health risks for this site and should be removed from this table.
4. **Table QAPP 1** – “Gasoline range organics” is one of the analytes planned for soil vapor testing using TO-15. It is not clear what will be measured (e.g., fractions, total gasoline). This should be clarified and reconsidered as a method, if not appropriate.

Conclusions

The Washington Department of Health cannot currently conclude whether the SeaTac Development site could harm people’s health because data gaps remain. However, the site poses a potential indoor air health threat via the soil and groundwater to indoor air pathway. The contaminated groundwater could also pose a health concern if people are drinking it. The proposed remedial investigation work, as described in the draft Agreed Order, will not provide the necessary data for assessing the site health threat. We are continuing to work with the Washington Department of Ecology to gather the needed information.

Recommendations

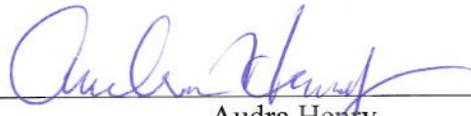
DOH recommends that Ecology require the PLPs to compile, analyze, and interpret existing site data and develop a site conceptual model. [Note: only data that has been collected and analyzed using appropriate analytical methods that meets appropriate data quality objectives should be used for characterizing the site and assessing potential health risks.] All this information should be presented in a background summary report, which should accompany a revised, draft Agreed Order addressing the issues described by DOH in this health consultation letter.

Please feel free to contact me if you want to discuss any of the comments or recommendations.

cc: Elmer Diaz, DOH

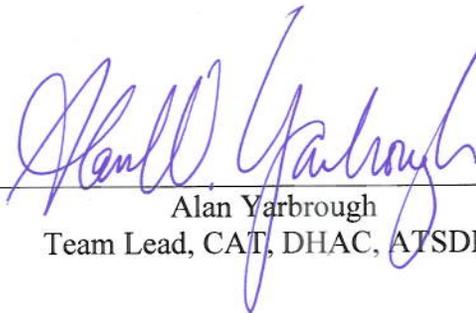
Certification

This Health Consultation was prepared by the Washington State Department of Health under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodology and a procedure existing at the time the health consultation was initiated. The editorial review was completed by the Cooperative Agreement partner.



Audra Henry
Technical Project Officer, CAT, DHAC, ATSDR

The ATSDR Division of Health Assessment and Consultation (DHAC) has reviewed this health consultation report and concurs with the findings.



Alan Yarbrough
Team Lead, CAT, DHAC, ATSDR