



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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November 20, 2012

Mr. T. Patrick Sanchez  
Chehalis Power Plant  
1813 Bishop Road  
Chehalis, WA 98532

**Re: Further Action at the following Site:**

- **Site Name:** Chehalis Power LP Generation Facility
- **Site Address:** 1813 Bishop Road
- **Facility/Site No.:** 3336951
- **Cleanup Site ID No.:** 11776
- **VCP Project No.:** SW1246

Dear Mr. Sanchez:

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

**Issue Presented and Opinion**

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

**YES. Ecology has determined that further remedial action is necessary to clean up contamination at the Site.**

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

**Description of the Site**

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

- Petroleum hydrocarbons and related constituents into the Soil, Groundwater, and Surface Water.



**Enclosure A** includes a detailed description and diagram of the Site, as currently known to Ecology.

Please note the parcels of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

### **Basis for the Opinion**

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

1. URS Corporation, Geotechnical Data Report-Subsurface Investigation Proposed Chehalis Generation Facility, Lewis County, Washington. September 13, 2000.
2. Cowlitz Clean Sweep, Inc., Chehalis Power Pacific Corp. Energy Mineral Oil Release (Initial Spill Cleanup Report), January 20, 2011.
3. PacificCorp Energy, Pacific Energy Chehalis Power Plant Transformer GSU#1 Oil Spill Status Report, April 29, 2011.
4. TEC Inc., Site Investigation-PacifiCorp Chehalis Plant, July 2011.
5. KTA Associates, Inc., Water Disposal Report for Chehalis Power Plant Generator Step-up Transformer No. 1 (GSU #1) Oil Spill, August 2012.
6. KTA Associates, Inc., Cleanup Action Report for Chehalis Power Plant Generator Step-up Transformer No.1 (GSU #1) Oil Spill, August 2012.
7. PacifiCorp Energy, PacifiCorp Energy Chehalis Power Plant Voluntary Cleanup Program Application, August 10, 2012.
8. Email communications with Mr. Patrick Sanchez, the Environmental Analyst of Chehalis Power Plant, with regard to clarifications on cleanup activities. October 23-31, 2012.
9. Ecology Industrial Stormwater Discharge Permit (WAR0087807) monitoring data for Chehalis Power Generation Facility, April 2011 to April 2012.

Those documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. You can make an appointment by calling the SWRO resource contact at (360) 407-6365.

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

## **Analysis of the Cleanup**

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Ecology has concluded that **further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

### **1. Characterization of the Site.**

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

The Chehalis Power LP Generation Facility Site is located at 1813 Bishop Road, Chehalis, Lewis County, in the Chehalis River Valley. The Site is a 20-acre, level grade property occupied by a power generation facility. The facility also includes two 1.7 million gallon fuel oil aboveground storage tanks (ASTs) in a lined earthen containment. A stormwater collection ditch surrounds the facility to collect stormwater from the facility's graveled lot, and conveys the water to a stormwater pond located at the west side of the facility. The ditch is lined with gravel, and some segments are covered, galvanized pipes. The stormwater pond has a permitted outfall under Ecology's Industrial General Stormwater Permit (WAR008707) under the National Pollutant Discharge Elimination System (NPDES).

At 4:15am on January 20, 2011, a Generation Step Up transformer (GSU #1) containing non-Polychlorinated Biphenyls (PCB) mineral oil experienced an explosive failure and subsequent fire. An estimated 2000 gallons of the 11,000 gallons of mineral oil in the transformer sprayed onto the transformer containment structure and onto the soil outside the containment. The transformer suppression system initiated automatically and sprayed water over the transformer. The Fire Department responded and extinguished the fire using water and aqueous fire-fighting foam, which added significant amount of water to the Site.

During the fire fighting operations, the containment around GSU #1 was filled beyond capacity causing the spilled mineral oil to flow over the top. The mixture of oil, oil-contaminated water, and foam saturated the fill gravel and soil surrounding the containment and pooled around the transformer, and further flowed into the adjacent stormwater ditches. The oil-contaminated water reached the stormwater pond yet no water was discharged from the pond because the on duty staff was able to shut off the discharge outfall.

Cleanup effort was started subsequently by a spill response company, Cowlitz Clean Sweep (CCS), right after the fire was extinguished about two hours following the incident (see Section 4 of this letter for details).

Due to the emergency nature of the spill and contamination, cleanup was conducted without pre-cleanup characterization for any contaminated media (soil, groundwater, and

surface water), rather, samples were collected after various cleanup efforts for confirmation purposes. Several months after the cleanup activities, a Site investigation was conducted to evaluate the status of groundwater contamination.

Based on a review of Site investigations and other available file information as well as the confirmation soil sampling during interim cleanup activities, Ecology has determined the investigations were sufficient to characterize the Site for soil, groundwater, and surface water for their extent and degree of contamination, and summarized as follows.

1. **Stormwater Pond and Ditches:** The stormwater pond and ditches were cleaned up through oil skimming, pumping, and soil excavation. Contaminated water was pumped into an AST for temporary storage (see Section 4 of this letter for details). A total of 23 soil samples were collected from the stormwater ditches on January 27, 2011, and 12 soil samples were collected from the stormwater pond on February 4, 2011 after the cleanup effort. Soil analysis results indicated that one location in the stormwater ditch and one location in the stormwater pond detected concentrations above the MTCA cleanup level for mineral oil. Additional excavation was conducted at these locations and two more confirmation samples, one each from stormwater ditch and pond, were collected on March 2, 2011, and the results met the MTCA Method A cleanup level for soil. One water sample from the stormwater pond also indicated that the stormwater in the pond met MTCA Method A cleanup level (Note: no surface water criteria exists for mineral oil, so the data were compared against MTCA Method A cleanup levels for groundwater). Since the stormwater system is permitted through Ecology's Industrial Stormwater NPDES Permit (WAR008707), the subsequent required quarterly monitoring indicated that the stormwater met the permit limitations and met the MTCA Method A cleanup level. The characterization of the stormwater system (water, bank liners and soil) was sufficient.
2. **Soil Around GSU #1:** Three separate confirmation soil sampling efforts were conducted to evaluate the cleanup of soil contamination surrounding the GSU#1 (see Fig. 3 of **Enclosure A**), and the results demonstrated that soil contamination still exists in a limited area under the extension portion of the newly enlarged GSU#1 containment structure.

After the spill incident, soil in the stormwater ditch segment immediately to the west of the GSU#1 containment structure was excavated in an effort to remediate the soil. Soil from the closest locations possible to the footing on the west side of the containment was also excavated in a limited extent. Six soil samples collected (January 28, 2011) detected no mineral oil above the MTCA Method A cleanup level. Second set of confirmation soil samples were collected on February 5, 2011, including one each from the three footing pits at 4.5 feet below ground surface (bgs) prior to the concrete footings being poured, and seven from the rest of the area, which was excavated to 20 inches bgs and to be covered by the extension of the containment. Out of the ten samples collected, only one soil sample (#D8) collected

at 20 inches bgs detected mineral oil at 28,100 milligram per kilogram (mg/kg), exceeding the MTCA Method A cleanup level. The results came back after the concrete containment was completed because replacing the transformer was urgently needed so that the plant could resume operation. As such, no further excavation was conducted to the soil directly beneath the new containment structure, and contaminated soil remains and is now covered by the concrete containment. The containment extension is 14 feet wide in east-west direction and 51 feet long in south-north direction.

One month after the spill incident and after the completion of the new containment structure, soil surrounding the enlarged GSU#1 containment structure, in an area approximately 70 by 80 feet in dimension, was excavated to approximately 6 inches below the static groundwater table. Free product was present and absorbents were deployed in the excavated area to remove it. Confirmation soil samples were collected on February 21–22, 2011 from the saturated zone at the excavation bottom. The results indicated that the soil was either non-detect for mineral oil, or detected mineral oil at levels that were below the MTCA Method A cleanup level.

The soil cleanup and confirmation sampling demonstrated that no soil contamination went beyond the extent of the 70 foot by 80 foot area surrounding the GSU#1 containment. However, soil contamination remains in the area now covered under the extended portion of the enlarged GSU#1 containment structure. The sample from 20 inches bgs detected mineral oil at 28,100 mg/kg, which exceeded the MTCA Method A cleanup level.

3. **Groundwater:** Free product was observed and absorbents were used to remove free product in the area surrounding the enlarged GSU#1 containment, which confirmed the contamination of groundwater. Unknown amount of contaminated groundwater was pumped into the AST on Site for temporary storage but no groundwater samples were collected from excavation pits.

A Site investigation focused on groundwater was conducted in July 2012, several months after the soil excavation. Temporary wells were installed using a track mounted direct-push GeoProbe® rig. Five of the six wells were located down gradient of the transformer and one was located upgradient. The wells were screened from 5 to 15 feet bgs. Groundwater samples were collected from all six wells. One well (GW-4) detected diesel-range total petroleum hydrocarbon (TPH-Dx) at 1,100 microgram per liter (ug/L), which exceeded the MTCA Method A cleanup level of 500 ug/L. Other wells detected TPH-Dx at lower than the MTCA Method A cleanup level, or non-detect for TPH-Dx. With only one out of six wells detected mineral oil, at a location close to GSU#1, the groundwater contamination plume was sufficiently defined.

Ecology has the following additional comment:

In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840 (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted simultaneously in both a written and electronic format. For additional information regarding electronic format requirements, see the website <http://www.ecy.wa.gov/eim>. Be advised that according to the policy, any reports containing sampling data that are submitted for Ecology review are considered incomplete until the electronic data has been entered. Please ensure that data generated during on-site activities is submitted pursuant to this policy. **Data must be submitted to Ecology in this format for Ecology to issue a No Further Action determination.** Please be sure to submit all data in this format. Data collected prior to August 2005 (effective date of this policy) is not required to be submitted; however, you are encouraged to do so if it is available. Be advised that Ecology requires up to two weeks to process the data once it is received.

**2. Establishment of cleanup standards.**

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

MTCA Method A cleanup levels for soil and groundwater were used for the Site. Since no surface water criteria exists for mineral oil, the Method A cleanup level for groundwater was used to determine compliance in surface water. Standard points of compliance were used for the Site. The point of compliance for protection of groundwater was established in the soils throughout the Site. For soil cleanup levels based on human exposure via direct contact or other exposure pathways where contact with the soil is required to complete the pathway, the point of compliance was established in the soils throughout the Site from the ground surface to 15 bgs. In addition, the point of compliance for the groundwater was established throughout the Site from the uppermost level of the saturated zone extending vertically to the lower most depth that could potentially be affected by the Site.

**3. Selection of cleanup action.**

Ecology has determined the cleanup actions you selected for the Site have not met the substantive requirements of MTCA.

Cleanup actions selected included source removal (removal of spilled mineral oil on Site and migrated free product in stormwater pond, ditches and surface of groundwater table); contaminated soil excavation; and pumping and discharge of contaminated surface and groundwater. The discharge of the contaminated water and surface water was through a tank storage and was run through an oil/water separator. These cleanup actions did not

complete the contaminated soil and groundwater cleanup (please refer to Section 4 of this letter for details).

#### **4. Cleanup.**

Ecology has determined the cleanup you performed has not met the cleanup standards at the Site. The cleanup activities conducted so far at the Site included:

##### **1. Stormwater pond and ditches cleanup:**

- Free product removal: containment boom was deployed to limit the migration of mineral oil in the stormwater pond. Absorbents were also deployed. Oil skimmer was used along with a vacuum truck to remove the oil from the pond surface. The same oil skimming process was employed to collect free product from the open channel segments of the stormwater ditches and the skimmed oil was also loaded into the vacuum truck.
- Contaminated water cleanup and temporary storage: After the oil on the surface of the stormwater pond was cleaned, uncontaminated excess stormwater was pumped into the lined earthen containment for the two 1.7-million-gallon fuel oil ASTs for temporary storage to avoid stormwater pond overflow. The AST's containment area is a large bermed area, lined with heavy gauge vinyl material with a total capacity of 2 times 1.7 million gallons plus 10% of the AST's capacity. The pump was stopped when water was about 12 inches deep in the containment.

The potentially contaminated water from the stormwater pond, however, was pumped into one of the two empty 1.7-million-gallon ASTs for temporary storage (see Bullet #4 within this section for its disposal).

- Soil excavation and cleanup: Soil and line gravel along the bank of the stormwater pond and along the stormwater ditches were visually inspected and those impacted by the oil were excavated to approximate depth of 6 to 8 inches on average. One area of the pond was excavated to a lower extent due to a little tree at the location and a confirmation soil sample indicating higher than MTCA cleanup level concentration of mineral oil. Additional excavation was also conducted at an area of the stormwater ditch where higher than MTCA cleanup level contamination was identified after the first round of soil samples were analyzed. All the excavated fill rock and soil was loaded into dump trucks for subsequent disposal.

##### **2. Soil cleanup around GSU#1:**

- Soil cleanup at area covered by the newly enlarged GSU#1 containment: After the spill incident, soil in a stormwater ditch segment immediately to the west of the GSU#1 containment structure was excavated in an effort to remediate the soil.

Soil from the closest locations possible to the footing on the west side of the containment was also excavated in a limited extent to construct an enlarged containment for the GSU#1. Soil was removed to 4.5 feet in three footing pits, and to 20 inches beneath the rest of the extended portion of the enlarged containment. Even though one of seven soil samples collected at 20 inches bgs detected mineral oil at level of 28,100 mg/kg, exceeding the MTCA cleanup level, no further cleanup action was conducted at this location because the results came back after the concrete containment was completed due to an urgent need to replace the transformer so that the plant could resume operation. As such, the soil directly beneath the new containment structure still contains contaminated soil and may be not feasible for further excavation. The area covered by the containment extension was 14 feet wide in east-west direction and 51 feet long in south-north direction.

- Soil cleanup in area surrounding the newly enlarged GSU#1 containment: One month after the spill incident, after the completion of the new containment structure, soil affected by the transformer oil release, approximately 70 by 80 feet in dimension surrounding the new GSU#1 containment structure, was excavated to approximately 6 inches below the static groundwater table. Confirmation soil samples collected (February 21–22, 2011) from the saturated zone at the excavation bottom indicated that the soil was either non-detect for mineral oil, or detected mineral oil at levels that were below MTCA cleanup level.

3. Groundwater cleanup around GSU#1:

- Groundwater cleanup in area surrounding the GSU#1 containment: Free product was removed from the surface of groundwater table in the excavation pits during the soil excavation effort from under and surround GSU#1 containment. Contaminated groundwater was also pumped to the east AST from the excavation pits. However, no information was recorded with regard to how much groundwater was pumped. No confirmation groundwater samples were collected upon the completion of the excavation.
- A Site investigation conducted in July 2011 demonstrated that groundwater contamination still exists in the area surrounding the enlarged GSU#1 containment structure (see Section 1 of this letter for details), yet no further cleanup action was taken.

4. Disposal of collected free product and contaminated soil/gravel:

- Free product collected from the stormwater pond surface, from the stormwater ditches, and from groundwater surface using oil skimmers and vacuum trucks became emulsified oil and water. A total of 8,869 gallons of such fluid was transported off Site for disposal as non-hazardous waste to Oil Re-Refine Co. (ORRCO) in Portland, OR for recycle.



- A total of 845.51 tons of contaminated soil and gravel excavated from stormwater ditches, stormwater pond, and under and around the GSU#1 transformer was transported to the Weyerhaeuser transfer station, and subsequently disposed of at Weyerhaeuser Headquarter Landfill in Cowlitz County, WA.
5. Disposal of contaminated water collected during cleanup operations and stored temporarily in the containment and in the on Site AST:

- The water stored in the containment of the two 1.7-million-gallon ASTs was authorized for discharge through Ecology's Industrial Stormwater NPDES Permit (WAR008707) after the water was tested and met the permit limitations before discharge.
- The potentially contaminated water pumped from the stormwater pond, stormwater ditches, and from groundwater into one of the two 1.7-million-gallon empty ASTs on Site for temporary storage during the original spill cleanup effort was discharged or disposed of through several steps. The total amount of water filled the tank up to about 25% of its capacity and was estimated at 339,562 gallons. A 0.5 inch oil layer was present at the top of the water within the AST.

After sampling, the water beneath the oil layer was confirmed to meet the stormwater discharge limitations and was approved for discharge through Ecology's Industrial Stormwater NPDES Permit (WAR008707). The AST has a discharge pipe suction located in a sump below the floor of the AST and allows the discharge of water at lower portion of the AST being discharged without disturbing the oil layer at the top of the water surface. A total of 270,301 of the 339,562 gallons of water in the AST was discharged to the stormwater system. The water drained out of the AST was run through a three-compartment, open-top, 9,000-gallon oil/water separator. Best management practice was used, including the use of oil absorbent mats in the three compartments so any oil could be readily detected.

- The remaining 60,000 gallons of water, about 1.5-2 feet in depth, was drained through the plant's waste water system with the permanent oil/water separator as part of the in-line process, and essentially discharged to the City of Chehalis Wastewater Treatment Plant.
- The remaining oil in the AST was removed with a vacuum truck and transported to ORRICO in Portland, OR for recycle.

Based on review of the cleanup activities reported in the several documents in "Basis for the Opinion" section of this letter, residual contamination is still present in soil and groundwater. Ecology has following additional comments:

1. Soil contamination was found in a limited pocket in the area under the newly extended portion of the GSU#1 containment. The concentration of mineral oil at 20 inches depth was 28,100 mg/kg, exceeding the MTCA cleanup level. The contaminated soil is now covered under the enlarged concrete containment structure. Additional remediation is needed. Alternatively, an environmental covenant may be put on the Site if additional remediation is deemed infeasible, in which case, please provide a brief feasibility study and disproportionate cost analysis that evaluates alternatives for cleanup in this area.
2. Free product was found on the surface of the groundwater right after the spill incident in the area immediately adjacent to the GSU#1 containment. One month after the incident, the free product was present on the surface of groundwater table in the area surrounding the enlarged GSU#1 containment. Even though free product was removed and contaminated groundwater was pumped out from the excavation pit, further investigation in July 2011, six months after the incident, indicated that mineral oil in groundwater still exceeded MTCA cleanup level within a limited area near the GSU#1 containment at a concentration of 1,100 ug/L. Additional groundwater remediation is warranted. Please note that Ecology requires four consecutive quarters of monitoring results below the MTCA cleanup levels to demonstrate compliance. This is to account for seasonal variation in groundwater levels.

### **Limitations of the Opinion**

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**1. Opinion does not settle liability with the state.**

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

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

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

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

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

**3. State is immune from liability.**

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

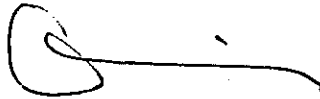
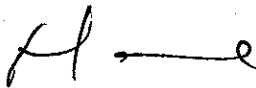
**Contact Information**

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Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: [www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm](http://www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm). If you have any questions about this opinion, please contact me by phone at (360) 407-6265 or by e-mail at [hqiu461@ecy.wa.gov](mailto:hqiu461@ecy.wa.gov).

Sincerely,



Hans Qiu, L.HG.  
Site Manager  
SWRO Toxics Cleanup Program

HQ/ksc:Site FA Draft Chehalis Power

Enclosures: A – Description and Diagrams of the Site

By certified mail: (7010 2780 0000 2503 5895)

cc: Bill Tietzel – Lewis County Health Department  
Kevin Hancock – Ecology  
Dolores Mitchell – Ecology  
Scott Rose – Ecology



## **Enclosure A**

### **Description and Diagrams of the Site**



## Site Description

The Chehalis Power LP Generation Facility Site is located at 1813 Bishop Road, Chehalis, Lewis County, in the Chehalis River Valley. The Site is a 20-acre, level grade property occupied by a large industrial facility, including two combustion turbines, electrical transformers, heat recovery steam generators, air emissions control equipment, exhaust gas stacks, air-cooled steam condenser, water treatment equipment, and operations and maintenance buildings. The facility also includes two 1.7-million-gallon fuel oil aboveground storage tanks (ASTs) in a lined earthen containment. The tanks were never used for oil storage since the initial startup of the facility. A stormwater collection ditch surrounds the facility to collect stormwater from the facility's graveled lot, and conveys the water to a stormwater pond located at the west side of the facility. The ditch is lined with gravel, and some segments are covered, galvanized pipes. The stormwater pond has a permitted outfall under Ecology's Industrial General Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (WAR008707). The pond outfall flows west in a gravel waterway to Berwick Creek. Berwick Creek flows from east to west to Dillenbaugh Creek, which then flows into the Newaukum River.

The geology beneath the Site consists of pre-Fraser Glaciation sand and gravel recessional outwash deposits. Bore holes revealed a silty clay layer within 5 feet of the land surface, a silty sand about 5 feet may exist in some areas beneath the silty clay layer. Below the silty sand lies the shallow aquifer, a sandy gravel layer about 30 to 40 feet thick. A silt layer at about 50 feet below ground surface perhaps serves as a confined layer. Groundwater table was at 15 to 20 during drilling and was observed between 4 to 14 feet during the cleanup activity period in 2011. Groundwater flow direction at the Site was assumed from northeast to south/southwest.

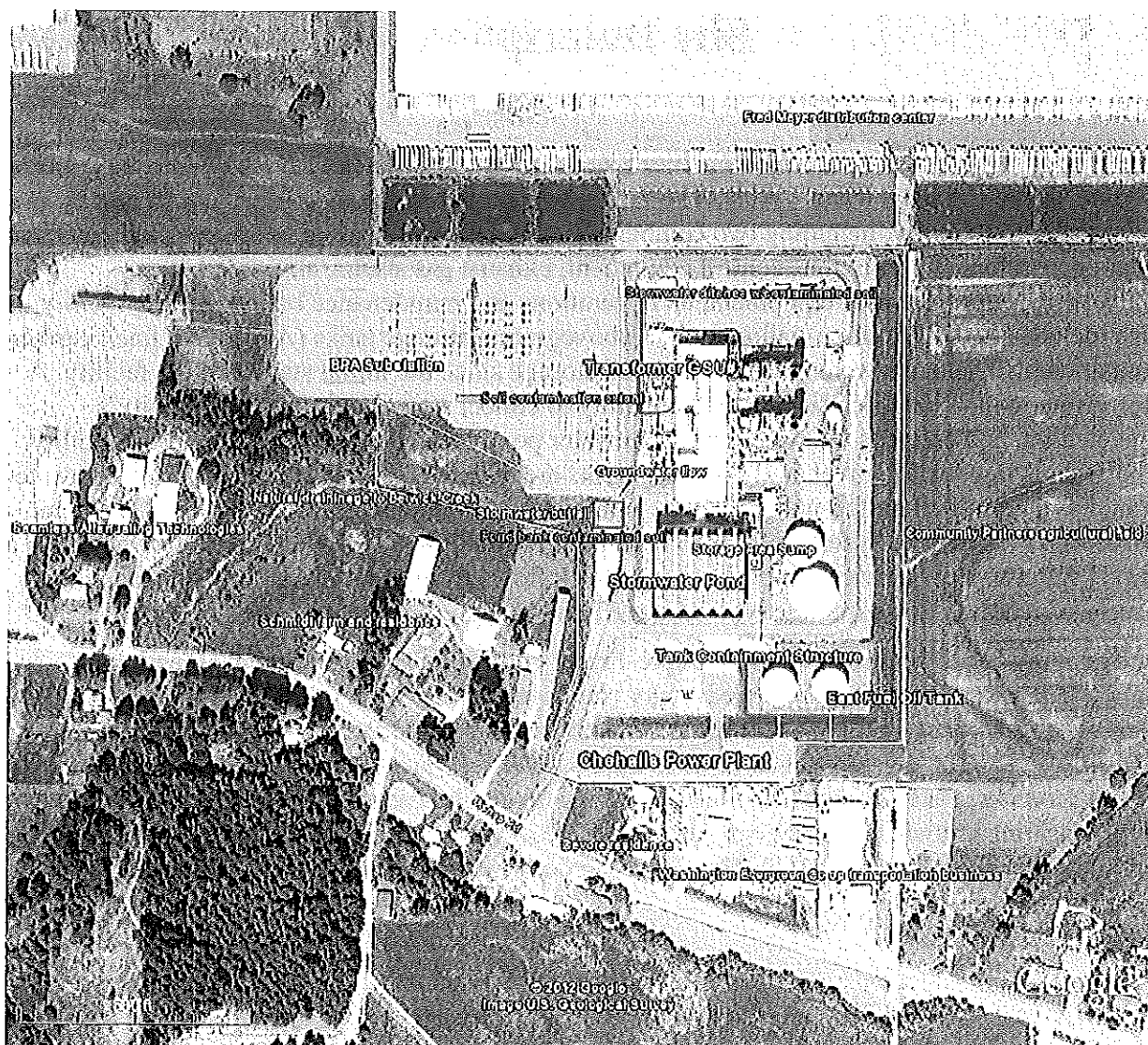


Fig 1. Location of Chehalis Power Generation Plant



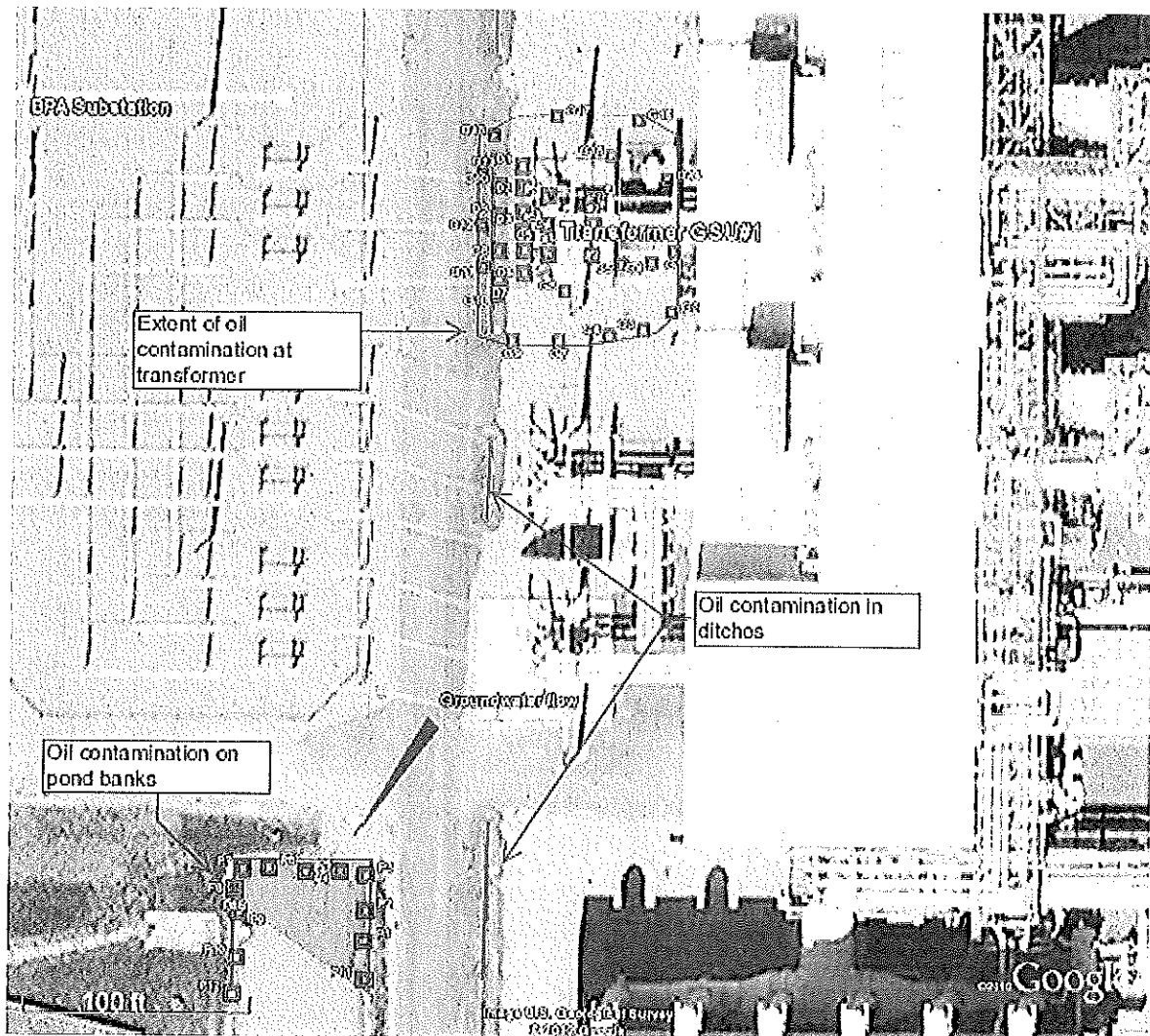


Fig. 2 Sampling locations for soil around the GSU#1 containment, and for the Stormwater pond



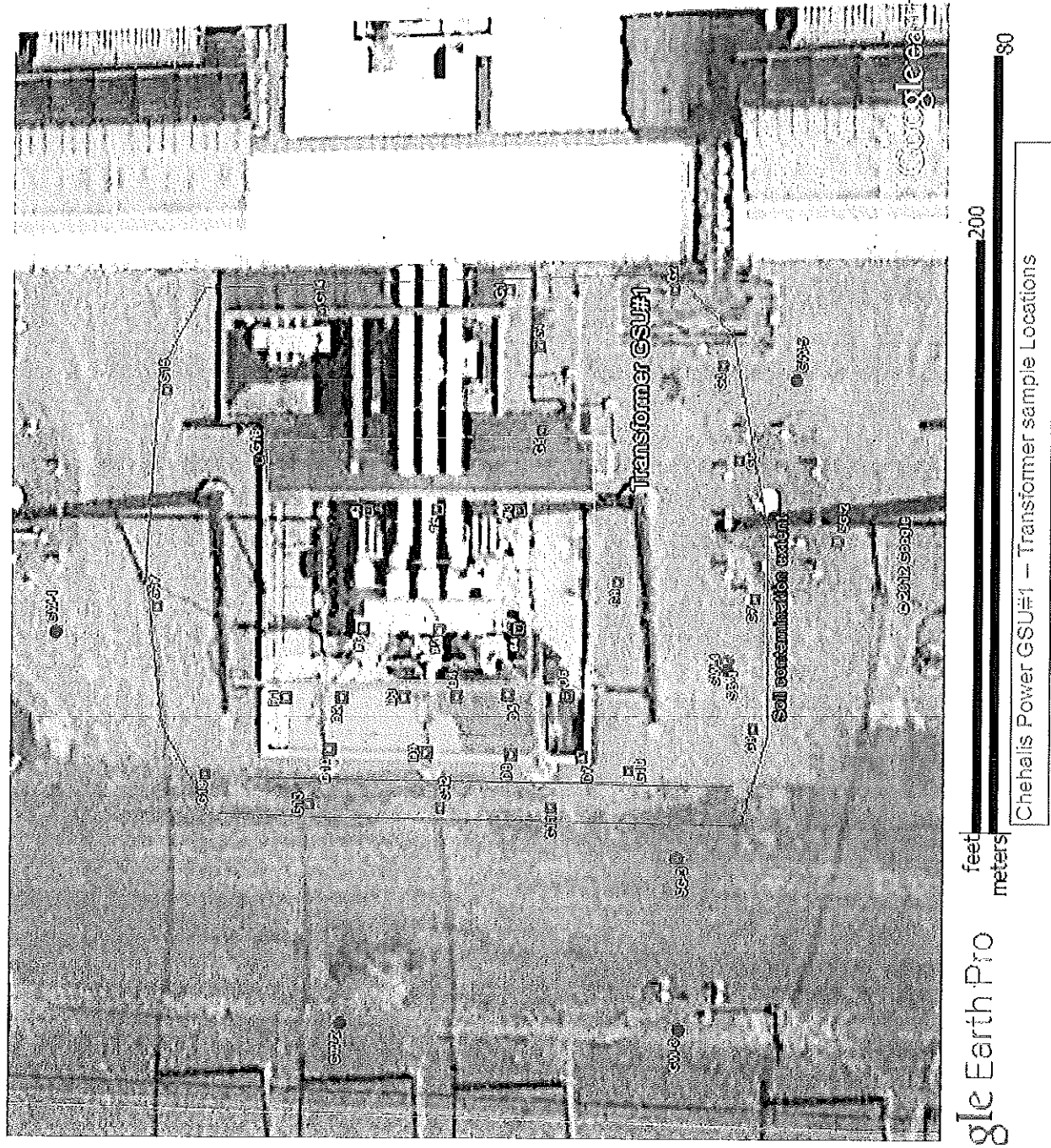


Fig.3 Soil Confirmation sample locations and groundwater Site Investigation Surrounding GSU#1

Soil Sample: 1) #1-6, Jan. 28, 2011 from under old containment; 2) D1-D10, Feb. 5, 2011 from construction pits under the extension of the containment; 3) G1-G18, Feb. 21-22, 2011, from surrounding the newly constructed containment; 4) GW1-GW5, groundwater wells, SG1-SG3, surface soil, both on July 2011.

