STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

July 15, 2010

Mr. Jeff Ahner
Frito Lay, Vancouver
4808 NW Fruit Valley Road
Vancouver, Washington 98660

Re: Opinion on Proposed Cleanup of the following Site:

- **Site Name:** Frito-Lay Vancouver
- **Site Address:** 4808 NW Fruit Valley Road, Vancouver, Washington 98660
- **Facility/Site No.:** 81587474
- **VCP Project No.:** SW1024

Dear Mr. Ahner:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your proposed independent cleanup of the Frito-Lay Vancouver 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

Upon completion of the proposed cleanup, will further remedial action likely be necessary to clean up contamination at the Site?

NO. Ecology has determined that, upon completion of your proposed cleanup, no further remedial action will likely be 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:

- Total petroleum hydrocarbons (TPH) in the diesel and oil range (TPH-D and TPH-O, respectively) into the soil.

- Metals (cadmium) into the soil.

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

Please note a parcel 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

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

1. Environmental Health Management, Inc., **Frito-Lay, Vancouver, Washington, Hydraulic Lift Area Petroleum Release, Remedial Investigation Report, Project Number 13002, Document Number 13002-R (Revision 1),** dated January 10, 2010. (EHM January 2010)

2. Environmental Health Management, Inc., **Frito-Lay, Vancouver, Washington, Hydraulic Lift Area Petroleum Release, Remedial Investigation Report, Project Number 13002,** dated August 5, 2009. (EHM August 2009)

3. Environmental Health Management, Inc., **Frito-Lay, Vancouver, Washington, Hydraulic Lift Area Petroleum Release, Remedial Investigation Workplan, Project Number 13002,** dated April 3, 2009.

4. Environmental Health Management, Inc., **Frito-Lay, Vancouver Processing Facility, Hydraulic Lift Area Soil Cleanup Project, Remedial Activity Report, Project Number 13001,** dated March 30, 2009.

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

Ecology has concluded that, upon completion of your proposed cleanup, **no further remedial action** will likely be 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 constituents of concern (COCs) for this Site are TPH-D, TPH-O, and cadmium. The extent of the soil contamination has been defined on the Site. Analytical information and analysis interpretation has been provided to demonstrate the ground water was not impacted by the soil contamination.

In December 2004, EHM characterized the soil in the area west of the hydraulic lift and removed all petroleum-contaminated soil (PCS) in that area to a depth of 3 feet bgs. At 3 feet bgs, the excavation encountered a silt and clay layer that extended across the bottom of the excavation. The soil contamination did not penetrate any appreciable distance into the layer, which was determined to be at least 10 feet in thickness. The soil samples were analyzed for ethylene dibromide, metals, pesticides, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, and total petroleum hydrocarbons in the gasoline, diesel, and oil range. Metals and petroleum hydrocarbon contamination was found in the Site soil above their respective MTCA Method A Soil Cleanup Levels (CULs) for unrestricted land uses. Once the contaminated soil was removed, the excavation sidewalls and bottom were sampled to confirm metals and petroleum hydrocarbon contamination was removed to below the MTCA Method A CULs. Approximately 248 tons of PCS was excavated and transported to an off-Site disposal facility in Hillsboro, Oregon. Clean backfill was used to fill in the excavation and was then capped with concrete and the area was returned to service.

In January 2005, EHM characterized the soil under the hydraulic lift, identifying metals-contaminated soil (MCS) and PCS above their respective MTCA Method A CULs. No MCS or PCS was removed from this area due to limited access issues. The highest soil contamination values measured under the hydraulic lift were 4,790 mg/kg for TPH-D at Boring 13 and 16,900 mg/kg for TPH-O at Boring 17. The deepest soil sample was collected from Boring 17 at 36 inches bgs. Metals analysis indicated that cadmium was just above the MTCA Method A CUL of 2 mg/kg, the highest concentration came from boring location 6-2 with a concentration of 2.532 mg/kg collected at 1.5 feet bgs. A 10-inch wide bentonite slurry wall was installed along the west side of the hydraulic lift to prevent the horizontal migration of the contamination into the western area that was previously remediated and the silt and clay layer inhibits the vertical migration of the contaminants.

In May 2009, Environmental Health Management, Inc. (EHM) conducted extractable petroleum hydrocarbon/volatile petroleum hydrocarbon (EPH/VPH) fractionation analysis on the Site soils. EHM, prompted by the 2005 soil analytical results from under the hydraulic lift, attempted to establish TPH-O soil concentrations that would be protective of human health. EHM analyzed the soil sample for EPH/VPH, polycyclic aromatic hydrocarbons (PAHs), TPH-D, TPH in the gasoline-range (TPH-G), TPH-O, and volatile organic

compounds (VOCs). PAHs, TPH-D, TPH-G, TPH-O, and VOCs were either not detected or below their respective MTCA CUL. Based on the EPH/VPH analytical results from the soil sample next to the hydraulic lift, FL-07-2 collected at a depth of 1 foot below ground surface (bgs), EHM calculated a Method B TPH soil CUL using the MTCATPH11.1 Excel workbook and derived a TPH Method B Soil CUL protective of human health of 15,532 milligrams per kilogram (mg/kg). EHM provided an additional vertical migration calculation based on diffusion factors that predicted a TPH-D soil concentration of 2,000 mg/kg would be found at 13.2 feet bgs at that location; 2,000 mg/kg is also the MTCA Method A CUL for diesel-range organics. In addition, TPH-D was detected below the TPH-D MTCA Method A Soil CUL in several samples and also in the laboratory method blank at 20.2 mg/kg.

At Ecology's request, EHM also collected one ground water sample from soil boring FL-07 in an effort to establish if ground water had been impacted. Ground water at that location was encountered at approximately 30 feet bgs. Based on the FL-07-02 soil sample analytical results, EHM did not recommend analyzing the ground water sample. Ecology, based on the lack on previous ground water data, requested the sample be analyzed. EHM analyzed the ground water sample for PAHs and EPH/VPH. PAHs were not detected above the practical quantitation limit. The EPH/VPH fractionation analysis was performed on the ground water sample and the results indicated ground water had a TPH concentration of 1,400 µg/l in the C31-C34 range; no other range appeared to be impacted. The field blank also had a concentration of 600 µg/l in the same range. The presence of the TPH in the FL-07-02 ground water sample and field blank was attributed to exhaust emissions from plant machinery operating in the vicinity of the sample location. The sum TPH concentration derived from the ground water fractionation analysis was 1,715 µg/l. Using the MTCATPH11.1 Excel workbook, EHM calculated a ground water Method B CUL protective of human health of 2,944 µg/l. Given the questionable ground water analytical result, Ecology would recommend the installation of ground water performance monitoring wells as long as TPH-D, TPH-O, and cadmium soil contamination above the MTCA Method A CUL is to remain on the property.

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.

Standard points of compliance are being used for the Site. The point of compliance for protection of ground water will be 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 shall be established in the soils throughout the Site from the ground surface to 15 feet bgs. In addition, the point of compliance for the ground water is established throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth that

could potentially be affected by the Site.

Ecology will evaluate the Site cleanup actions against the Modified MTCA Method B Soil CULs for unrestricted land uses and MTCA Method A Ground Water CULs.

Based on the information above, compliance with cleanup standards has been achieved provided that institutional controls are implemented at the Site in the form of restrictions on property usage. **The implementation of these restrictions will need to be done through the filing of an environmental covenant with Clark County** (see next section for more detail).

3. Selection of cleanup action.

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

Cleanup actions conducted at the Site to date have included the removal of the PCS and construction of a bentonite slurry wall.

Following soil excavation, confirmation soil samples indicated concentrations of residual COCs above MTCA CULs remained on the Site. A feasibility study and disproportionate cost analysis was generated to screen remedial technologies to address the residual contamination remaining on Site. The screening process resulted in two potential alternatives:

1. Physical Removal of all PCS –
    a. Immediate Action – Hydraulic lift would be dismantled and PCS would be excavated and removed, causing significant interruption of the production process.
    b. Delayed Action – Delay excavation until plant is decommissioned and the hydraulic lift is relocated or replaced. Estimated time to removal is 25 years. The current asphalt and concrete cap prevents surface water infiltration; a maintenance plan, deed restriction, and performance monitoring would be developed and instituted to prevent mobilization of soil COCs.
2. In-Situ Treatment – PCS would be treated using enhanced biological or chemical oxidation methods. This method involves modification to the hydraulic lift equipment and periodic disruptions to the plant operations and may not provide full cleanup of the Site.

Frito Lay has stated their preferred alternative proposed in the feasibility study was alternative 1. b. Ecology has reviewed and evaluated the proposed alternatives, and agrees that alternative 1. b. is acceptable. As part of this remedy, an environmental covenant will be

placed on the property restricting ground water use and any other intrusive activities without prior Ecology approval. As part of the covenant, long-term monitoring of the ground water is required, which will be conducted at two monitoring well locations to be installed downgradient of the hydraulic lift area. **Prior to issuance of a no further action opinion, Ecology would want to review at least one round of ground water analytical data.**

A long-term ground water monitoring plan must be generated and submitted to Ecology for review and approval. The format of the monitoring plan should be similar to that of a Sampling and Analysis Plan per WAC 173-340-820. The monitoring plan should include a monitoring schedule (Ecology recommends every 18 months to account for seasonal variation) for the two proposed wells, as well as a contingency plan for additional remedial action if COCs are detected above MTCA CULs. Monitoring will need to occur as long as the covenant remains in place; however, at our discretion, Ecology may reduce the sampling frequency or discontinue the sampling requirement upon review of the Site during a periodic (5-year) review. The ground water samples should be analyzed for TPH-D, TPH-O, and total cadmium.

Once approved, the monitoring plan will be included as an attachment to the environmental covenant. To create an environmental covenant, do the following:

1. Conduct a title search to identify all persons holding a prior interest in the real property subject to the covenant. To save time later, you should conduct the search as early in the process as possible. Generally, Ecology will not sign the covenant unless all prior interest holders are willing to sign on as grantors or subordinate their interests. See step 5 below.

2. Draft the covenant using the boilerplate document available on the VCP web site: www.ecy.wa.gov/programs/tcp/vcp/vcp2008/vcpRequirements.html. Please note that any changes to the boilerplate language in the covenant must be approved by the Attorney General's Office.

3. Submit the draft covenant for review and comment to the appropriate land use planning authority in your jurisdiction. When requesting such review, please do the following:

    - Send me a copy of your written request.
    - Provide the authority with my contact information.
    - Request that the authority send me a copy of any written response.

    Ecology will not approve the covenant unless the authority has been adequately consulted.

4. Upon completing your consultations with the local land use planning authority, submit the draft covenant to Ecology for review and approval. Unless already submitted, also submit to Ecology any comments provided by the planning authority or, if none were provided, documentation of your consultation.

5. Upon Ecology approval, obtain the signatures of all grantors of the covenant and obtain subordination agreements with any persons holding a prior interest in the real property subject to the covenant who are not signing the covenant as a grantor.

6. Upon obtaining the signatures of the grantors and any necessary subordination agreements, submit the covenant to Ecology for its signature as the grantee.

7. Upon obtaining Ecology's signature, record the covenant in every county where the real property subject to the covenant is located. For detailed recording instructions, please refer to Chapter 65.04 RCW.

8. Upon recording, return the original signed and recorded covenant to Ecology and provide a copy of the recorded covenant to the following persons:

    - Each person that signed the covenant.
    - Each person holding a recorded interest in the real property subject to the covenant.
    - Each person in possession of the real property subject to the covenant at the time the covenant is executed.
    - Each municipality or other unit of local government in which real property subject to the covenant is located.
    - Any other persons Ecology requires.

The copy must be legible and the recording number must be evident.

For more information on how to create an environmental covenant, please refer to the Uniform Environmental Covenants Act (UECA), Chapter 64.70 RCW, and WAC 173-340-440 of the Model Toxics Cleanup Act (MTCA) Cleanup Regulation.

Once Ecology receives the original signed and recorded covenant, plus full payment of all charges, the NFA letter will be provided to you.

As a reminder, 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 soil and ground water data collected to date, as well as any future 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.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

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

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

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

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

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

3. Opinion is limited to proposed cleanup.

This letter does not provide an opinion on whether further remedial action will actually be necessary at the Site upon completion of your proposed cleanup. To obtain such an opinion, you must submit a report to Ecology upon completion of your cleanup and request an opinion under the VCP.

4. 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

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). As you conduct your cleanup, please do not hesitate to request additional services. 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. If you have any questions about this opinion, please contact me by phone at (360) 407-7404 or e-mail at erad461@ecy.wa.gov.

Sincerely,

Eugene Radcliff, L.G.
Site Manager
SWRO Toxics Cleanup Program

GER: [SECRETARY INITIALS]

Enclosures (2): A – Description and Diagrams of the Site
Figure 1 FRITO LAY - Vancouver
Figure 2 Detail - Site Layout

By certified mail: (7009 2820 0001 7160 8883)

cc: Mr. John Ruddick, Environmental Health Management, Inc.
Mr. Bryan DeDoncker, Clark Co Health
Scott Rose – Ecology
Dolores Mitchell – Ecology

Enclosure A

Description and Diagrams of the Site

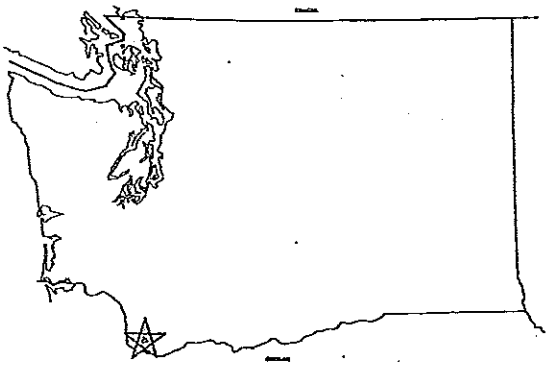
Site Description

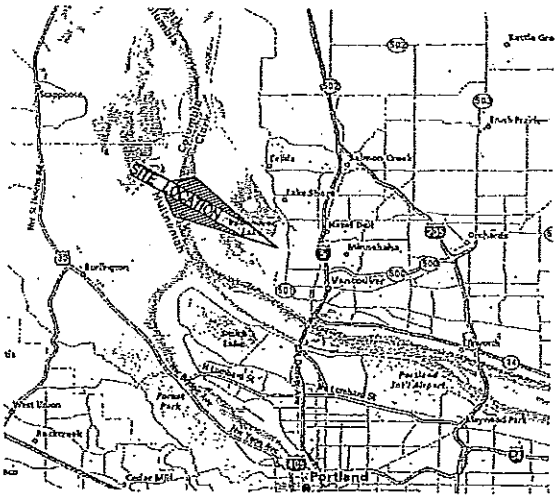
Media of Concern: Soil

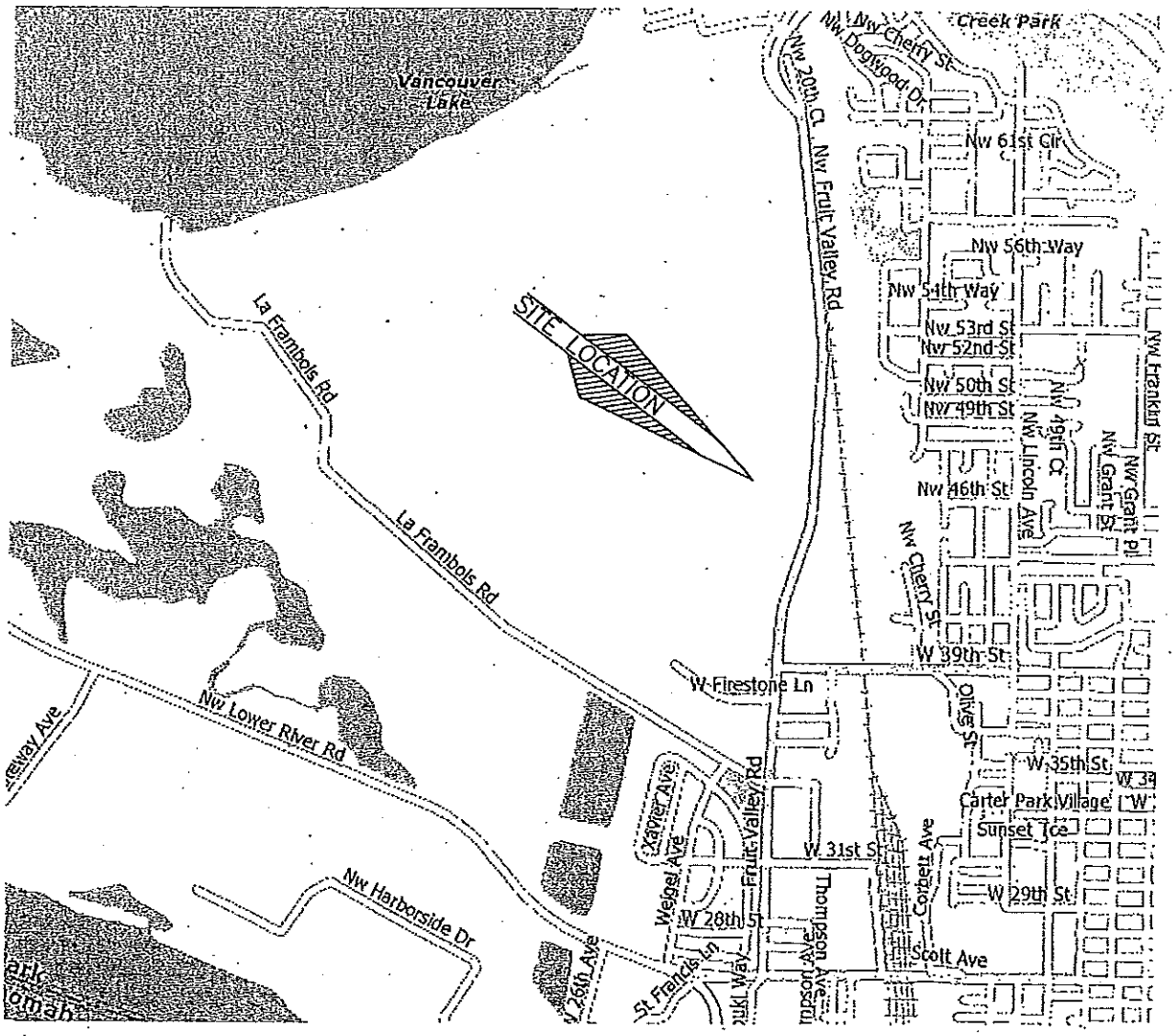
The Frito-Lay Vancouver facility (Site) is located at 4808 NW Fruit Valley Road in Vancouver, Clark County, Washington (see Figure 1). The Site has been used for agricultural purposes since at least the late-1800s until the 1970s when it began operations under Frito-Lay. The parcel on which the facility is located encompasses approximately 17 acres and most of the parcel is covered by impervious surface. The Site is bordered on the east by NW Fruit Valley Road, on the south by agricultural land, on the west by undeveloped land and a parking lot, and on the north by semi-developed and undeveloped land. The Site is currently used as a food processing facility. The Clark County Assessor's office notes the Frito-Lay property has an assigned tax parcel number of 6727033.

The Site is located in the Portland Basin. The underlying rocks are mostly Eocene and Miocene age volcanic and sedimentary rocks that are overlain by the Troutdale formation, Pleistocene-Holocene alluvium, and finally by Pleistocene glacial flood deposits. The soils overlying the flood deposits are described as gray, dense sands grading up to brown clay/silt surface layers ranging in depth from 10 feet below ground surface (bgs) to 35 ft bgs. Ground water was measured in FL-07 to be 28.6 feet bgs. The direction of ground water flow beneath the Site has not been determined; however, based on surface topography, ground water flow appears to be to the west.

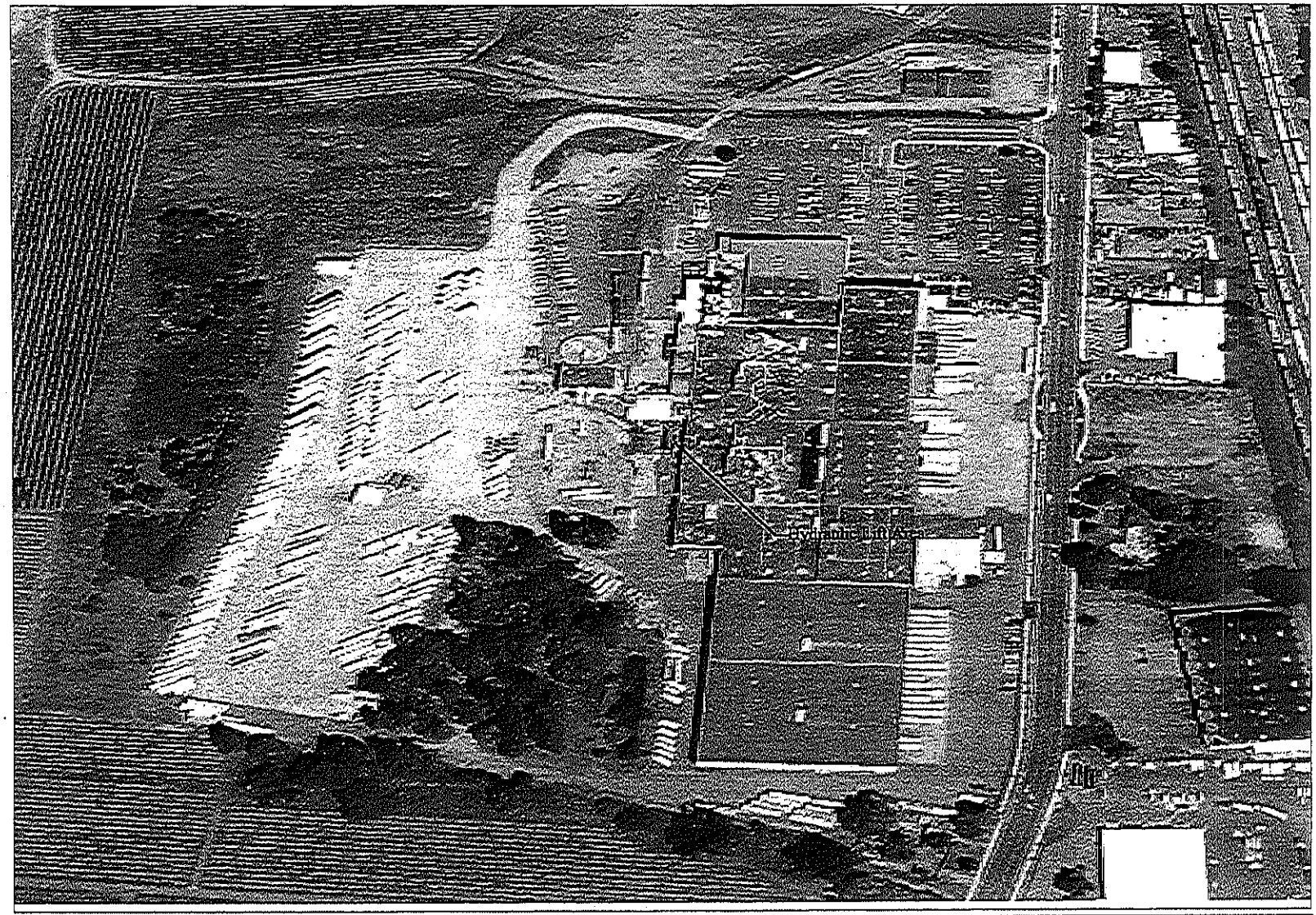
During a pavement removal project in 2004, Frito-Lay personnel discovered total petroleum hydrocarbons in the diesel range (TPH-D) and oil range (TPH-O). The spill was attributed to a 1991 spill that occurred as a result of a failure and collapse of the hydraulic lift, spilling diesel fuel from the vehicle that was on the lift and oil presumably from the lift itself (see Figure 2). An estimated 300 gallon mixture of diesel fuel and hydraulic fluid was reportedly released. Soil cleanup activities were completed in the area west of the hydraulic lift in 2004. During subsequent investigation and cleanup activities in 2004 and 2005, Frito-Lay discovered that TPH-D and TPH-O soil contamination above the MTCA Method A Cleanup Level (CUL) for unrestricted land uses was present under the hydraulic lift area.







ENVIRONMENTAL HEALTH MANAGEMENT, Inc PO BOX 1746 Lake Oswego, Oregon 97035 (503) 287-4620	DRAWN BY: KIM APPROVED BY: JHR DATE: 3/26/09 JOB NO.: 13002	FRITO LAY – Vancouver Hydraulic Lift Area Investigation Location Map	FIGURE 1



ENVIRONMENTAL HEALTH MANAGEMENT, Inc. PO BOX 1746 Lake Oswego, Oregon 97035 (503) 287-4620	Detail – Site Layout	DRAWN BY: JHR APPROVED BY: JHR DATE: 3/27/09 PROJECT NO.: 13002	Frito Lay Vancouver, Washington Hydraulic Lift Area Investigation	FIGURE 2