RESPONSIVENESS SUMMARY

Leichner Brothers Landfill Cleanup Site

Draft Periodic Review Report

Public Comment Period February 28 – March 31, 2011

Prepared by
Washington State Department of Ecology
Southwest Regional Office
Toxics Cleanup Program
Lacey, Washington

April 2011

Site Information

Address: 9411 Northeast 94th Avenue, Vancouver

Site Manager: Mohsen Kourehdar

Public Involvement Coordinator: Diana Smith

In 1987, the Department of Ecology (Ecology) issued a Consent Order requiring Leichner Brothers Land Reclamation Corporation (Leichner) to investigate site conditions and develop a cleanup plan. Ecology and Leichner entered into a Consent Decree in 1989 for further investigation and interim cleanup work. In 1996, Ecology and Leichner entered into a Consent Decree for the final cleanup actions.

Periodic Review

Ecology completed a periodic review on the Leichner Landfill site. Ecology conducts a periodic review at least every five years, as required by the Model Toxics Control Act (MTCA). The purpose of the review is to evaluate site conditions after cleanup is considered complete, and to ensure protection of human health and the environment.

The periodic review found that the cleanup actions at the site appear to be protective of human health and the environment. Ecology held a public comment period from February 27 through March 31, 2011 for the periodic review draft report. Comments received during the comment period and Ecology's responses are summarized in this report.

Site Background

The Leichner Landfill site is located at 9411 Northeast 94th Avenue in Vancouver. The property operated as a solid waste landfill from the late-1930s through 1991. Waste was burned at the site until the mid-1960s. From the mid-1960s through 1991, the landfill compacted waste in areas where sand and gravel had been mined. The landfill occupies 70 acres.

Investigations between 1987 and 1991 found that the landfill had contaminated the shallow aquifer (groundwater) under the site. Testing showed elevated levels of inorganic and volatile organic compounds (VOCs).

Leichner Brothers Land Reclamation Corporation investigated the site and did cleanup work from 1987 through 1996. As a part of cleanup work, all of the land filled area has received final closure with an engineered composite cap and a landfill gas control/recovery system. The landfill cap eliminated direct exposure to contaminated soil and infiltration of precipitation into the landfill.

From the 1970s through 2007, Leichner installed and upgraded systems to control landfill gas as new technology became available and the amount of landfill gas decreased. Groundwater monitoring has been conducted at the site from 1987 through 2010. VOCs have not been detected since the mid-1990s and concentrations of most inorganic have been decreasing.

In 1998, an environmental covenant was recorded for the site. The covenant prohibits activities that could result in the release of contaminants contained as part of the cleanup without Ecology's approval.

Groundwater monitoring has been conducted at the site from 1987 through 2010. Contaminants have been decreasing during this time. Groundwater monitoring will continue for the foreseeable future.

Comment #1

Ecology received several comments prepared by SCS Engineers on behalf of Clark County and the Leichner Brothers Land Reclamation Corporation during the public comment period. The full comment letter is attached at the end of this document. Ecology's response to each comment can be found below.

Comment #1A:

The introduction of the *Draft Periodic Review* contains the statement, "Contaminants remaining at the Site exceed MTCA cleanup levels." SCS commented that this statement is very general, and should be omitted from the introduction and more appropriately included in the conclusion, along with additional qualifying language.

Ecology Response

Ecology removed the statement "Contaminants remaining at the Site exceed MTCA cleanup levels." from the introduction of the *Periodic Review*. The conclusion section of the report discusses in detail the impact of the landfill on human health and environment.

Comment #1B:

SCS commented that the *Draft Periodic Review* contains several statements regarding the presence of dissolved Iron, dissolved Manganese and Nitrate in groundwater. SCS believes that it is not clear that Iron, Manganese and Nitrate are currently present because of the landfill. The concentrations found may be reflective of naturally-occurring groundwater conditions.

Ecology Response

Ecology will need a background study to determine if Iron, Manganese and Nitrate are not attributed to the landfill and are naturally occurring in groundwater. Ecology will conduct another periodic review five years after finalizing the current report. During the next five years, Clark County could conduct a study to determine the natural background of Iron, Manganese and Nitrate in groundwater and their comparison with the measured values of these parameters in the landfill's compliance monitoring wells.

Comment #1C:

SCS commented that the stormwater monitoring was conducted in 2009 under the landfill's former general stormwater Permit No. SO3-005572A. However, industrial general stormwater

Permit No.WAR-005572B was issued in October 2009 and became effective in January 2010. Future stormwater monitoring will be performed pursuant to the newly issued permit.

Ecology Response

Ecology will make the appropriate changes to the periodic review report to reflect this.

Comment #1D:

The draft periodic review states that "soil and groundwater cleanup levels have not been met at the site. " SCS commented that the periodic review should remove the statement "the soil cleanup levels have not been met."

Ecology Response

The cleanup action plan finalized in 1996 does not have cleanup levels for soil. Therefore, Ecology will remove the reference to the soil cleanup levels.

Comment #1E:

SCS plans to request that Ecology formally approve reducing landfill gas monitoring from monthly to quarterly.

Ecology Response

Ecology will be writing a letter to the Leichner Brothers Landfill Oversight Committee and Clark County formalizing the reduction of landfill gas monitoring from monthly to quarterly. Reducing landfill gas monitoring is consistent with the periodic review.

Comment #1F:

The draft periodic review states that groundwater will be tested for Vinyl Chloride (VC) and 1,1-Dichloroethene (1,1-DCE) at PQLs of 0.1 µg/l in order to show compliance with the values established in the Cleanup Action Plan. SCS stated that testing for VC and 1,1-DCE will be conducted with Environmental Protection Agency (EPA) Method SW846/8260B coupled with low-level testing techniques. Used together, these can achieve a method reporting limit (MRL) that meets or is lower than the compliance level of 0.1 µg/L. If after two years of testing (four quarterly events), the results show concentrations at or below the lower MRL of 0.1 µg/l, then the testing for these parameters will be discontinued.

Ecology Response

Ecology will write a letter to the Leichner Brothers Landfill Oversight Committee and Clark County formalizing the testing for VC and 1,1-DCE with a low MRL of 0.1 µg/L. Groundwater will be tested quarterly for two years. If after two years of testing, the results show concentrations at or below the lower reporting limit of 0.1 µg/L, then the testing for VC and 1,1-DCE will be discontinued, as stated in the periodic review.

ENVIRONMENTAL SERVICES

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CLARK COUNTY
WASHINGTON

March 30, 2011

Mr. Mohsen Kourehdar
Washington Department of Ecology
Southwest Regional Office
Toxics Cleanup Program
300 Desmond Drive
Lacey, Washington 98503

Subject: Submittal of SCS Engineers' Comment to Washington Department of Ecology's Five-Year (Draft) Periodic Review Report:
Leichner Brothers Landfill, Vancouver, Washington

Dear Mr. Kourehdar:

Please find enclosed with this letter, a memorandum prepared by SCS Engineers, Inc. (SCS) on behalf of Clark County (County) and Leichner Brothers Land Reclamation Corporation (LBLRC), presenting review comments of the Washington Department of Ecology's Five-Year (Draft) Periodic Review Report of the Leichner Brothers Landfill (LBLF). The County has reviewed SCS's memorandum and concurs with comments presented in the document.

Please call (360) 397-6118 (ext 4920) or email mike.t.davis@clark.wa.gov if you have any questions concerning the contents of the memorandum.

Sincerely,

Mike Davis
LBLF Project Manager
Environmental services Department

CC (w/enclosures): Brian Carlson; City of Vancouver
Mark and Craig Leichner, LBLRC
Melissa Sutton, Clark County Public Health
Louis Caruso, SCS

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SCS ENGINEERS

TECHNICAL MEMORANDUM

DATE: March 30, 2011

TO: Mike Davis, Clark County

Cc: Mark Leichner and Craig Leichner, LBLRC; Brian Carlson, City of Vancouver; Gary Bickett and Melissa Sutton, Clark County Health Department

FROM: Louis Caruso, L.G., and David Lamadrid, L.G., SCS Engineers

SUBJECT: **Response Comments to the Draft Periodic Review Document Dated December 2010 for the Leichner Brothers Landfill (Facility ID No. 1017), Vancouver, Washington**

This memorandum provides review comments to the Draft Periodic Review (DPR) document dated December 2010, prepared by the Washington State Department of Ecology (Ecology). SCS Engineers (SCS) reviewed the DPR and prepared this memorandum at the request of Clark County and the Leichner Brothers Landfill (LBLF) Oversight Committee.

The DPR was prepared to satisfy WAC 173-340-420(2) requiring Ecology to conduct a period review of sites undergoing cleanup under the Model Toxics Control Act (MTCA) or under an order, agreed order or consent decree. As stated in DPR, the purpose of Ecology's periodic review was to determine whether the cleanup remedy at the closed LBLF continues to be protective of human health and the environment. The DPR includes a summary of site conditions (including historical background of the site operations, regulatory framework, and environmental conditions), effectiveness of cleanup actions at meeting remedial action objections (i.e., cleanup levels), and conclusions. It should be noted that a primary conclusion stated in the DPR is that the cleanup actions completed at the LBLR appear to be protective of human health and the environment.

For reference, portions of the DPR for which comments are being provided, along with the section and page number, are restated below in italicized text.

Page 1, Introduction: *Contaminants remaining at the Site exceed MTCA cleanup levels.*

Response: This statement is very general, and as presented in an Introduction section without context, it implies that "contaminants" are present at the site as a result of the landfill. It is SCS's opinion that this statement should be omitted from the Introduction section and more appropriately included in the *Conclusions* section, along with additional qualifying language noted below and in a few other comments provided in this memorandum.

It is acknowledged that certain general water quality constituents (notably dissolved iron (Fe), dissolved manganese (Mn), and nitrate) are present at concentrations that exceed cleanup levels in groundwater samples collected from a few site monitoring wells. However, these inorganic constituents also are naturally occurring in groundwater, and it is not clear and perhaps unlikely that the concentrations that exceed cleanup levels in some groundwater samples are due to landfill impacts (discussed in more detail in response comments below).

Additionally, there is conflicting information in the DPR regarding the source of these constituents in groundwater at the LBLR site. In several instances throughout the DPR, "contaminants" is used to refer to constituents in groundwater with concentrations that exceed the cleanup levels. Additionally, on page 8 under the *Dissolved Iron* and *Dissolved Manganese* sections, it is reported that "In reviewing the data from 1987-2009, the landfill appears to have impacted the noncompliance wells, but the soluble Iron [Manganese] concentration is declining and beginning to stabilize." These statements imply that the landfill is impacting groundwater through 2009. In contrast, on page 9 under the *Groundwater Water Summary* section, Ecology reports "Laboratory analytical results for groundwater samples collected from Site monitoring wells in 1987-2009 indicate that groundwater quality is generally not being affected by the closed landfill . . .", and on page 12 under the *Ground Water* section, Ecology reports "Those contaminants that appear stable at elevated concentrations also appear stable at similar concentrations in upgradient wells." This latter statement in our opinion supports the hypothesis that elevated concentrations of Fe and Mn are not attributed to former landfilling activities.

Based on the above information, and as further discussed below, it is SCS's opinion that the DPR should minimize reference to the word "contaminants" when referencing these inorganic parameters (Fe, Mn, and nitrate), and at least mention that elevated concentrations of these parameters may be reflective of natural-occurring background groundwater concentrations.

Page 8, Dissolved Iron and Dissolved Manganese: *The landfill appears to have impacted the non-compliant wells, but the soluble Iron [Manganese] concentration is declining and beginning to stabilize.*

Response: The historical groundwater database indicates that Fe and Mn concentrations in groundwater in certain wells have exceeded the cleanup levels within the last 5 years. It is not clear that these exceedances are due to landfill impacts. In fact, it appears more likely that the concentrations are attributed to naturally-occurring groundwater conditions based on the following:

- Concentrations of Fe and Mn above the cleanup levels have only been detected sporadically in samples collected from those few wells for which exceedances have been identified, except well LB-17I.

- Some of the wells that show concentration exceedances are located hydraulically upgradient or crossgradient of the landfill where landfill impacts would not be expected to occur.

SCS agrees that that Fe and Mn groundwater concentrations in certain wells exceed their respective cleanup levels; however, as previously noted, it is our opinion that elevated Fe and Mn concentrations are not attributed to landfill impacts. A more comprehensive evaluation of groundwater chemistry at and in the vicinity of LBLF is likely needed to assess whether observed Fe and Mn concentrations are reflective of natural background concentrations. At a minimum, it should be noted in these two sections of the DPR (and/or in Section 2.6.4, *Ground Water Summary*) that elevated Fe and Mn concentrations may be reflective of naturally-occurring groundwater conditions.

Page 8, Nitrate (as N): *Only two groundwater monitoring wells No. LB-27I (down gradient) and LB-4SR (cross gradient) showed non-compliance with the cleanup level. These wells are in the Alluvial water bearing zone. . . The review of data from 1987-2009 shows the Nitrate concentration declining and showing stabilizing trend except in two wells No. LB-4D (cross gradient, but below the compliance level) and LB-27D (down gradient) in Troutdale aquifer show increasing trend. Even though these two wells are increasing, they both are in compliance with the cleanup level.*

Response: Similar to the response above for Mn and Fe, current nitrate concentrations in groundwater appear to be reflective of natural background (and likely regional) groundwater conditions and not attributed to landfilling activities. Key data supporting this conclusion include the following:

- Monitoring well (LB-4SR) is located cross gradient (and primarily upgradient) of the former landfill areas, and only one concentration (in 2007) from the entire historical database for this well showed a nitrate concentration above the cleanup level. Current nitrate concentrations in well LB-4SR (excluding the 2007 concentration) are similar to those detected before 2000.

- Nitrate concentrations in groundwater samples collected from monitoring well LB-27I have not exceeded the cleanup level since 1996, and current nitrate concentrations in samples collected from this well are generally lower than those detected in samples from upgradient well LB-4SR and cross gradient well LB-3S (both Alluvial zone wells).

- Nitrate concentrations in samples collected from Alluvial zone wells LB-5S and LB-17I, both located directly adjacent to and downgradient of the landfill limits (i.e., located between the landfill and well LB-27I) are below cleanup levels and similar to those detected in well LB-27I samples.

This section (and/or Section 2.6.4, Ground Water Summary) should also reference these findings and present a statement that the occasional exceedances of the cleanup level for nitrate in wells LB-27I and LB-4SR samples may be reflective of naturally occurring (regional) groundwater conditions.

Page 9, Specific Conductivity: *The Specific Conductivity tests were conducted until year 2000. The review of the data showed the Specific Conductivity results in some cases were measured above the compliance level of 700 µmho/cm. The Specific Conductivity testing was discontinued without any justification.*

Response: Laboratory conductivity testing was discontinued in 2000 as reported in the DPR. However, field-measured specific conductivity has historically been measured and continues to be measured during routine groundwater monitoring events. Additionally, laboratory testing for pH, ammonia, total suspended solids, and sulfate were also discontinued in 2000. It is expected that there would a record in Shaw Environmental's and/or the Ecology's files documenting approval in 2000 for discontinuing laboratory conductivity, along with laboratory pH, ammonia, total

suspended solids, and sulfate, and that this approval was received before the changes in the analytical program were implemented.

Further confirmation supporting Ecology's approval for discontinuing routine testing for specific conductivity is found in the compliance monitoring plan (CMP) dated April 2005. The groundwater analytical program specified in the CMP does not include laboratory conductivity, as well as the other inorganic parameters noted above, as long-term monitoring parameters (see Table 2-1 of the CMP).

It is noteworthy that laboratory conductivity values in samples collected from wells that were being routinely monitored in 2000 were below the cleanup level for at least one year (even longer in all but one well). Furthermore, field-measured specific conductivity in well samples collected after 2000 have been below 700 µmho/cm, including wells that regularly exhibited exceedances of the cleanup level for laboratory conductivity.

Pages 9 and 10, Surface Water Quality: *In accordance with the Landfill's General Stormwater Permit No. SO3-005572A, the stormwater samples were analyzed for . . .*

Response: The dates stormwater monitoring was performed in 2009 cited in the PRD were applicable under LBLR's former General Stormwater Permit No. SO3-005572A. However, it should be mentioned in this section that LBLR was issued a new Industrial Stormwater General Permit WAR-005572B (issues October 21, 2009, effective date January 1, 2010), and future stormwater monitoring will be performed pursuant to the newly issued permit.

Page 14, Surface Water: *Stormwater Discharge generated from the landfill cover is regulated with the General Industrial Stormwater Permit No. SO3-005572A.*

Response: This should be changed to indicate that stormwater discharge at LBLR is regulated under the newly issued Industrial Stormwater General Permit WAR-005572B (issues October 21, 2009, effective date January 1, 2010).

Page 14, Threat to Drinking Water: *The most downgradient well in the Alluvial aquifer showing impact is located approximately 600 feet from the property boundary line. This downgradient well has shown exceedances for dissolved Iron and dissolved Manganese above drinking water standards.*

Response: This statement implicitly states that there are current impacts to groundwater due to the landfill. As discussed in previous responses, it appears likely that the current concentrations of Fe and Mn concentrations in groundwater are due to naturally occurring and fluctuating background concentrations. This conclusion should be mentioned in this section.

Page 14, Compliance with Cleanup Levels: *Soils and groundwater cleanup levels have not been met at the site.*

Response: It is not demonstrated in the DPR where soil cleanup levels are currently not achieved. Page 3 cites soil removal activities of a former refuse burn area; however, there is no mention of soil testing results or soil cleanup levels. The DPR should either provide specific information related to soil cleanup levels that are exceeded, or remove the reference that soil cleanup levels have not been met.

Page 14, Landfill Gas: *The landfill gas monitoring will be reduced from monthly to quarterly.*

Response: Compliance monitoring of perimeter landfill gas (LFG) probes is currently performed monthly. Modification of the compliance LFG monitoring schedule appears warranted based on the historical LFG monitoring data. As a follow up to the DPR, SCS, on behalf of the LBLF Oversight Committee, plans to submit a letter to Ecology formally requesting its approval to modify the compliance LFG monitoring schedule from monthly to quarterly.

Page 15, Future Monitoring: *The parameters that will be monitored are Dissolved Iron, Dissolved Manganese, Nitrate, Total Dissolved Solids* [TDS]*, and Specific Conductivity. Ecology will also require the Vinyl Chloride and 1,1-Dichloroethene to be tested at PQLs of 0.1 µg/l in order to show compliance with the values established in the CAP.*

Response: Consistent with the April 2005 CMP, (1) field parameters (including field conductivity), nitrate, TDS, chloride, dissolved Fe and Mn, and VOCs will be monitored semiannually and (2) laboratory conductivity will not be monitored on a routine basis.

As noted in the DPR, the method reporting limit (MRL; equivalent to the practical quantitation limit [PQL]) for testing of vinyl chloride (VC) and 1,1-dichloroethene (1,1-DCE) in groundwater samples has been 0.5 µg/L, which is above the compliance level of 0.1 µg/L. The compliance level cannot be achieved by Environmental Protection Agency (EPA) Method SW846 8260B, which has been routinely used for the analysis of VOCs in groundwater samples collected from monitoring wells at LBLF. However, testing by this method, coupled with low-level testing techniques, can achieve a MRL that meets or is lower than the compliance level of 0.1 µg/L. Future testing of VC and 1,1-DCE will be performed by low-level EPA method SW846 8260B in order to show compliance with the values established in the CAP beginning with the first quarter 2011 semiannual monitoring event performed in March 2011. If after two years of testing (four quarterly events), the results show concentrations at or below the lower reporting limit of 0.1 µg/L, then the testing for these parameters will be discontinued, as stated in this section of the DPR.