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e a r t h s c i e n c e s
i n c o r p o r a t e d

January 19, 2015
Project No. TV130367B

Mr. John Guenther, LHG
Site Manager
NWRO Toxics Cleanup Program
Washington Department of Ecology
Bellingham Field Office
1440 – 10th Street, Suite 102
Bellingham, WA 98225

jgue461@ecy.wa.gov

Subject: Request for No Further Action
Georgia Pacific Clear Lake Yard (aka Clear Lake Industrial Park)
12785 State Route 9 and 12827 South Front Street
Clear Lake, Washington
VCP Site No. NW2791

Dear Mr. Guenther:

Associated Earth Sciences, Inc. (AESI) is pleased to provide this letter requesting a No Further Action opinion on the above-referenced site, which is enrolled in Ecology's Voluntary Cleanup Program. AESI has prepared this letter pursuant to your request on January 15, 2015.

BACKGROUND

Previous subsurface investigations at the site by others identified releases of chlordane to the soil and ground water at the site. Several subsurface investigations and remedial excavations have historically been performed by others at the site. Although the adversely-affected soils have been successfully removed from the subject property, residual ground water impacts remain on the site and east-adjointing property. The subject property was formerly enrolled into Washington State Department of Ecology's (Ecology's) Voluntary Cleanup Program (VCP) and a No Further Action (NFA) determination from Ecology was obtained for the subject property in 2004 after the placement of a Restrictive Covenant on the site that restricted exposure to the affected ground water. No such covenant was placed on the east-adjointing property, which was not included in the NFA. After a periodic review conducted by Ecology in 2011, the NFA was rescinded by Ecology since the institutional control in place (the Restrictive Covenant) was deemed ineffective in restricting exposure to the adversely-affected ground water on the east-adjointing property.

Subsequent subsurface characterization work was performed by others at the subject and east-adjointing properties in 2012 and 2013. The subject property has since been re-enrolled in the VCP program and the recent studies submitted to Ecology in an effort to reinstate the NFA by placing an additional Restrictive Covenant on the east-adjointing property.

A Remedial Investigation was performed by AESI in 2014, the results of which successfully defined the vertical and horizontal extents of the chlordane contaminated ground water and revealed that the chlordane is present in the ground water in discontinuous hot spots rather than one plume. In addition, chlordane concentrations in the ground water in the existing wells that were sampled were below the US Environmental Protection Agency (EPA) and State Maximum Contaminant Level (MCL) of 2 micrograms per liter ($\mu\text{g/L}$). AESI also prepared a Disproportionate Cost Analysis to illustrate that the MCL should be accepted as the site-specific ground water cleanup level (rather than the Model Toxics Control Act [MTCA] Method B cleanup level of $0.25 \mu\text{g/L}$), and that the cost of active remediation or monitored natural attenuation without the use of an institutional control (Restrictive Covenant) outweighed the benefits of such an approach.

Ecology determined that there was no clear downward trend in chlordane concentrations at the site. Furthermore, although Ecology concurred with the use of the MCL as the site-specific cleanup level, it suggested that active cleanup would be recommended at the site, even though the most recent concentrations were all below the MCL. Based on communications with the Ecology Project Manager, it appears that Ecology is concerned that the concentrations may increase to levels above $2 \mu\text{g/L}$ over the next few rounds of monitoring. Ecology concluded that further action was required at the site, including a minimum of three additional quarterly monitoring events and possibly active ground water remediation at MW-3.

Three additional quarters of ground water monitoring were performed on the monitoring well network at the site in June, August and November 2014. The results of all three quarters indicated that concentrations remained below the site-specific cleanup level of $2 \mu\text{g/L}$.

DISCUSSION

AESI respectfully requests that an NFA be given to the site at this time. It is our opinion that the NFA is justified, based on the following data:

- Ground water data exists for some of the on-site wells from 1995 to the present, which represents 19 years of data. In that time, chlordane concentrations in MW-1 decreased from 6.5 to $0.303 \mu\text{g/L}$ and in MW-3 from 17 to $0.926 \mu\text{g/L}$. This suggests a clear downward trend in the data.
- Chlordane was detected in monitoring well MW-1 at $6.79 \mu\text{g/L}$ during the event of September 11, 2012. Prior to this event, chlordane was detected below $3 \mu\text{g/L}$ (less than

half the elevated detection reported in 2012) in 19 consecutive sampling events from 1999 to 2012. Furthermore, it has been detected below 3 µg/L (even 2 µg/L) for the five consecutive events after September 2012. In other words, over a period of 15 years and 25 sampling events, the chlordane concentrations in MW-1 have exceeded 3 µg/L only once. Therefore, the concentration detected in September 2012 (6.79 µg/L) appears to be an anomalous detection that should not serve to discount the obvious downward trend of chlordane concentrations thoroughly demonstrated in that well.

- Chlordane is a persistent chemical. Studies have shown that 15% of the original chlordane concentrations have persisted for 15 to 21 years¹. Given that the release of chlordane occurred at the site prior to 1994 (20 years ago), and the soil mass has been removed from 1994-2001 (14+ years ago), the fact that the chlordane has now reached a concentration below 15% of the original level (17 µg/L) is consistent with research performed on chlordane and its behavior in the environment.
- Soil excavation (active remediation) activities have been performed at the site in 1994, 1995, 1997 and 2001 to remove the chlordane-affected soils from the site. The lack of current chlordane-generating activities and the removal of the contaminated soil mass from the site have contributed to the natural degradation of chlordane in the subsurface.
- Nineteen years of data suggest that the ground water is flowing away from Clear Lake. Furthermore, limited surface water and sediment data have been collected from Clear Lake itself. The data suggest that the lake has not been adversely affected by the historical chlordane use at the site.
- The residents of Clear Lake currently obtain their drinking water, by ordinance, from municipal sources that are in no way threatened by the chlordane release at the subject site. The likelihood exists that residents of Clear Lake will continue to obtain their drinking water from municipal sources for the foreseeable future. Furthermore, chlordane concentrations will continue to decrease over time at the site. The concentrations remained below the Maximum Contaminant Level of 2 µg/L for all four quarters of 2014, suggesting that the ground water, in its current state, is safe for human consumption. If the need for private, domestic water resources should arise in the future, the data collected at the site suggest that there is no reason to believe that the water will not be in compliance with drinking water standards at that time.
- Ground water samples were collected from the approved well network (MW-1, MW-3, MW-4, MW-8, MW-9, and MW-11 through NW-14) in February, June, August and November 2014. Chlordane concentrations were below the site-specific cleanup level (2 µg/L) in all wells and in all four quarters. In fact, the highest chlordane concentration

¹ Chemicals of Special Concern in Washington State (Ecology, July 1992)

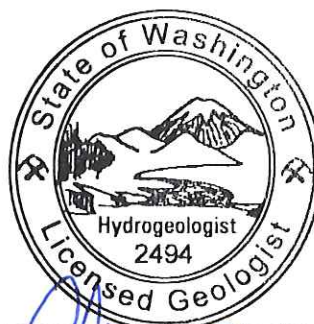
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detected in 2014 was 1.18 µg/L, which was reported in June 2014 from well MW-8. In particular, the quarterly monitoring results from MW-3 should alleviate concerns associated with the water quality in this well and eliminate the need for any active remediation. The four quarters of data from 2014 are representative of the seasonal variations of the site aquifer and all remain below 2 µg/L.


It is clear from the data that have been collected at the site over the last 20 years that the chlordane release at the site has been successfully remediated from the soil, and that the concentrations in ground water have attenuated to a level that is safe to human health and the environment. Therefore, AESI respectfully requests that a No Further Action determination be given to the site at this time.

Sincerely,
Associated Earth Sciences, Inc.
Tacoma, Washington



Elizabeth Ann Rachman

Elizabeth Rachman, L.G., L.Hg.
Senior Hydrogeologist


Jon N. Sondergaard, L.G., L.E.G.
Senior Principal Geologist

Attachment: Request For Opinion Form



Voluntary Cleanup Program

Washington State Department of Ecology
Toxics Cleanup Program

REQUEST FOR OPINION FORM

Use this form to request a written opinion on your planned or completed independent remedial action under the Voluntary Cleanup Program (VCP). Attach to this form the plans or reports documenting the remedial action. Please submit only one form for each request.

Step 1: IDENTIFY HAZARDOUS WASTE SITE

Please identify below the hazardous waste site for which you are requesting a written opinion under the VCP. This information may be found on the VCP Agreement.

Facility/Site Name: Georgia Pacific Clear Lake Yard/Clear Lake Industrial Park

Facility/Site Address: 12785 State Route 9 and 12827 South Front Street, Clear Lake, WA

Facility/Site No: 66783635

VCP Project No.: NW2791

Step 2: REQUEST WRITTEN OPINION ON PLAN OR REPORT

What type of independent remedial action plan or report are you submitting to Ecology for review under the VCP? Please check all that apply.

- Remedial investigation plan
- Remedial investigation report
- Feasibility study report
- Property cleanup* plan (* cleanup of one or more parcels located within the Site)
- Property cleanup* report
- Site cleanup plan
- Site cleanup report
- Other – please specify: Quarterly Ground Water Monitoring Reports

Do you want Ecology to provide you with a written opinion on the planned or completed independent remedial action?

- Yes No

Please note that Ecology's opinion will be limited to:

- Whether the planned or completed remedial action at the site meets the substantive requirements of the Model Toxics Control Act (MTCA), and/or
- Whether further remedial action is necessary at the site under MTCA.

Step 3: REPRESENTATIONS AND SIGNATURE

The undersigned representative of the Customer hereby certifies that he or she is fully authorized to request services from Ecology under the Agreement for this VCP Project.

Name: Elizabeth Rachman, L.G., L.Hg.

Title: Senior Hydrogeologist

Signature: 

Date: 1/16/15

Organization: Associated Earth Sciences, Inc.

Mailing address: 1552 Commerce Street, Suite 102

City: Tacoma

State: WA

Zip code: 98402

Phone: 253-722-2992

Fax: 253-722-2993

E-mail: lrachman@aesgeo.com

Step 4: SUBMITTAL

Please mail your completed form and the independent remedial action plan or report that you are requesting Ecology review to the site manager Ecology assigned to your Site. If a site manager has not yet been assigned, please mail your completed form to the Ecology regional office for the County in which your Site is located.



Northwest Region: Attn: VCP Coordinator 3190 160 th Ave. SE Bellevue, WA 98008-5452	Central Region: Attn: VCP Coordinator 15 W. Yakima Ave., Suite 200 Yakima, WA 98902
Southwest Region: Attn: VCP Coordinator P.O. Box 47775 Olympia, WA 98504-7775	Eastern Region: Attn: VCP Coordinator N. 4601 Monroe Spokane WA 99205-1295

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