



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Bellingham Field Office • 1440 10th Street, Suite 102 • Bellingham, Washington 98225
(360)715-5200 • FAX (360) 715-5225

February 5, 2014

Mr. Miles Stover
Turnaround, Inc.
3415 A Street NW
Gig Harbor, WA 98335

Re: Opinion pursuant to WAC 173-340-515(5) on Proposed Remedial Action for the following Hazardous Waste Site:

- **Name:** Georgia Pacific Corp Clear Lake
- **Address:** 1283 Hwy 9, Clear Lake, WA 98235
- **Facility/Site No.:** 66783635
- **VCP No.:** NW2791
- **Cleanup Site I.D. No.:** 2366

Dear Mr. Stover:

Thank you for submitting documents regarding your proposed remedial action for the Georgia Pacific Corp Clear Lake facility (Site) for review by the Washington State Department of Ecology (Ecology) under the Voluntary Cleanup Program (VCP). Ecology appreciates your initiative in pursuing this administrative option for cleaning up hazardous waste sites under the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

This letter constitutes an advisory opinion regarding a review of submitted documents/reports pursuant to requirements of MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the following release(s) at the Site:

- Chlordane in soil and groundwater.

Ecology is providing this advisory opinion under the specific authority of RCW 70.105D.030(1)(i) and WAC 173-340-515(5).

This opinion does not resolve a person's liability to the state under MTCA or protect a person from contribution claims by third parties for matters addressed by the opinion. The state does not have the authority to settle with any person potentially liable under MTCA except in

accordance with RCW 70.105D.040(4). The opinion is advisory only and not binding on Ecology.

Ecology's Toxics Cleanup Program has reviewed the following information regarding your proposed remedial actions:

1. *Supplemental Phase II Subsurface Investigation*, August 29, 2013, The Riley Group, Inc.
2. *Phase II Subsurface Investigation*, November 9, 2012, The Riley Group, Inc.
3. *Phase I Environmental Site Assessment*, August 3, 2012, The Riley Group, Inc.
4. *Response to Ecology Letter Dated 10/18/96*, April 15, 1997, W.D. Purnell & Associates, Inc.
5. *Addendum Report, Final Independent Remedial Action, Clear Lake yard, Clear lake Washington*, March 2003, Bennett Engineering, LLC

The reports listed above will be kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. Appointments can be made by calling the NWRO resource contact at (425) 649-7235 or by email at nwro_public_request@ecy.wa.gov.

In addition, the following reference was used: *Chemicals of Special Concern in Washington State*, July 1992, Washington State Department of Ecology

The Site is defined by the extent of contamination caused by the following releases:

- Chlordane in soil and groundwater.

A detailed Site diagram is attached as Enclosure A. The following description of the Site is based solely on the information contained in the documents listed above.

The Property was used by the Georgia Pacific Corporation from sometime during the 1980s until 2000 as a commercial tree growing operation to support re-planting efforts following timber harvests. Chlordane (an organochlorine pesticide) was stored, mixed and used on the facility in order to control insects. Chlordane is a colorless to amber viscous liquid, which comes in oil emulsions, emulsifiable concentrations, granular or wettable powders, dusts or dispersible liquids. Chlordane has a specific gravity of 1.6 and will sink in water unless it is in the form of a wettable powder or it is combined with an emulsifier (Ecology 92-66, 1992). It is not known what trade name or specific type of chlordane product was used on the Property. The chlordane releases most likely occurred from leakage while being stored, during product application and waste disposal to the dry-wells.

Beginning in 1995, Georgia Pacific conducted cleanup actions on the Property that included the excavation and removal of at least 300 cubic yards of chlordane-contaminated soil and the decommissioning of all known above-ground and underground storage tanks (USTs). Seven groundwater monitoring wells (MW-1 thru MW-7) were also installed on and off the Property in 1995. Depths to groundwater ranged from 6 to 12 feet below the ground surface (bgs). The

horizontal groundwater hydraulic gradient is low and the flow direction has varied over time but is generally northwest, down-gradient of and away from Clear Lake. The gathering of additional groundwater elevation and flow direction information is in progress.

The highest chlordane concentrations in groundwater were detected in monitoring wells MW-1 and MW-3 with chlordane concentrations ranging between 1.2 to 36 micrograms per liter ($\mu\text{g/L}$). The MTCA Method B groundwater cleanup level for chlordane is $0.25 \mu\text{g/L}$. The state and federal primary maximum contaminant level (MCL) for chlordane in groundwater is $2 \mu\text{g/L}$. Due to the recalcitrant nature of low concentrations of chlordane in groundwater, Ecology will consider the $2 \mu\text{g/L}$ MCL as an appropriate cleanup level for chlordane in groundwater at the Site.

In 2001, Georgia Pacific requested that a Restrictive Covenant be prepared and recorded for the Property and that No Further Action (NFA) be required for the Site. Ecology agreed at that time and prepared the Restrictive Covenant that stipulated that quarterly groundwater sampling be conducted and quarterly reports be submitted to Ecology. The Restrictive Covenant was recorded with Snohomish County in May 2004 and Ecology issued a NFA determination for the Site in July 2004.

The NFA status for the Site was rescinded in April 2012, following Ecology's first 5-year periodic review of the quarterly groundwater sampling data. At that time, chlordane was detected in the groundwater sample collected from monitoring well MW-3 above the cleanup level. It was noted at that time that groundwater monitoring well MW-3 is located hydraulically up-gradient and off-Property and that the Restrictive Covenant, recorded for the subject property, was not serving adequate protection for the Site or the neighboring property.

Additional remedial investigation work was conducted between 2004 and 2012 that included a geophysical survey, advancing and sampling 11 soil probes to between eight and 16 feet bgs and the installation of four additional groundwater monitoring wells (MW-8, -9, -10 and -11). One possible former UST backfill or former dry well was identified. All of the soil sample results, including a sample collected from boring B1, advanced in the area of the former UST backfill or former dry well were below the 2.9 milligram per kilogram (mg/kg) MTCA Method B soil cleanup level.

Subsurface conditions encountered during the remedial investigation work consisted of brown, medium dense, moist to wet, sandy silt near the surface grading to silty sand at approximately 5 to 6 feet bgs to the final probe depth of 16 feet bgs. Groundwater was encountered at around 6 feet bgs.

Additional remedial investigation work was conducted in 2013 that included the installation of three additional groundwater monitoring wells (MW-12, -13, and -14), collecting groundwater samples from 13 monitoring wells and collecting and analyzing 12 discrete soil samples for chlordane. It was discovered during the July 2002 sampling event that groundwater monitoring well MW-5 had been vandalized so MW-5 was decommissioned in December 2002.

Results of remedial investigation work conducted to date indicate that the Site is in compliance with the MTCA Method B cleanup level for soil above the groundwater table. Chlordane was detected above the MCL for chlordane in groundwater in off-Property well MW-3 in May 2013. Chlordane was historically detected above the MCL for chlordane in groundwater in MW-1, MW-8, MW-9 and MW-11.

Based on a review of supporting documentation listed above, pursuant to **requirements contained in MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the following release(s) at the Site, Ecology has determined:**

The current Site characterization is not sufficient to establish cleanup standards and select a cleanup action. More specifically, Ecology understands that chlordane has recently been detected in off-Property groundwater monitoring well MW-3 at a concentration above the selected groundwater cleanup level, the state and federal MCL. Because monitoring well MW3 is located hydraulically up-gradient, additional potential source soil contamination and groundwater quality data should be collected up-gradient from MW-3. Additionally, because chlordane has a specific gravity of 1.6 (i.e., it is heavier than water), additional groundwater samples should be collected from a deeper part of the shallow aquifer and analyzed for the presence of chlordane.

Ecology's preliminary opinion on cleanup levels and points of compliance for the Site:

- The state and federal primary maximum contaminant levels (MCLs) for chlordane in groundwater are the same at 2 µg/L. This MCL may be appropriate for the Site since there is no Method A value in Table 720-1 [per WAC 173-340-720(3)(b)(ii)].
- The standard point of compliance for groundwater is throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest depth which could potentially be affected by the Site.
- A calculated Method B cleanup level of 2.96 mg/kg for chlordane in soil has been proposed for the Site and Ecology concurs with this cleanup level.
- The standard point of compliance for soil is throughout the Site.

Ecology has determined the cleanup action you proposed for the Site does not meet the substantive requirements of MTCA. Before Ecology will consider the appropriateness of an Environmental Covenant for a Property, a Feasibility Study must be conducted that includes evaluation of the following:

- At least three cleanup alternatives that are protective of human health and the environment by eliminating, reducing or controlling risk.
- Alternatives should use the standard point of compliance unless they are not technically possible or are disproportionately costly for the benefit obtained.
- At least one permanent cleanup action should be evaluated unless they are not technically possible or are disproportionately costly for the benefit obtained.

Each cleanup action evaluated must meet the following minimum requirements of WAC 173-340-360(2)(a):

- Protect human health and the environment.
- Comply with applicable cleanup standards.
- Use permanent solutions to the maximum extent practicable.
- Provide for a reasonable restoration time frame.
- Engineering controls may be considered on a Site-specific basis.

Only alternatives that meet these requirements should be considered. These alternatives should be compared based on the following:

- Protectiveness.
- Permanence.
- Effectiveness over the long-term.
- Management of short term-risk.
- Technical and administrative implementability.
- Comparison with a reasonable restoration time frame.

Ecology will consider the appropriateness of an Environmental Covenant for a Property only if a disproportionate cost analysis is prepared as outlined in WAC 173-340-360(3).

At this time, Ecology understands that additional remedial investigation work is currently planned for the Site that includes the following scope of work:

- A groundwater flow direction figure, including rose diagrams for each monitoring well location, will be prepared using all known historic groundwater elevation data to show the variation in groundwater hydraulic gradient and flow direction.
- Collecting additional groundwater sample data from existing wells.
- Advancing nine soil borings, two of the borings will be advanced to 40-feet below ground surface (bgs) and seven borings will be advanced to 20-feet bgs.
- One shallow groundwater sample will be collected from each of the shallow borings and one discrete deep groundwater sample will be collected from the maximum depth of each of the two deep borings.

Ecology concurs with this additional remedial investigation scope of work.

This opinion does not represent a determination by Ecology that a proposed remedial action will be sufficient to characterize and address the specified contamination at the Site or that no further remedial action will be required at the Site upon completion of the proposed remedial action. To obtain either of these opinions, you must submit appropriate documentation to Ecology and request such an opinion under the VCP. This letter also does not provide an opinion regarding the sufficiency of any other remedial action proposed for or conducted at the Site.

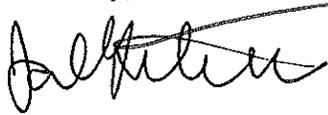
Please note that this opinion is based solely on the information contained in the documents listed above. Therefore, if any of the information contained in those documents is materially false or misleading, then this opinion will automatically be rendered null and void.

The state, Ecology, and its officers and employees make no guarantees or assurances by providing this opinion, and no cause of action against the state, Ecology, its officers or employees may arise from any act or omission in providing this opinion.

Again, Ecology appreciates your initiative in conducting independent remedial action and requesting technical consultation under the VCP. As the cleanup of the Site progresses, you may request additional consultative services under the VCP, including assistance in identifying applicable regulatory requirements and opinions regarding whether remedial actions proposed for or conducted at the Site meet those requirements.

If you have any questions regarding this opinion, please contact me at (360) 715-5213 or by email at jgue461@ecy.wa.gov.

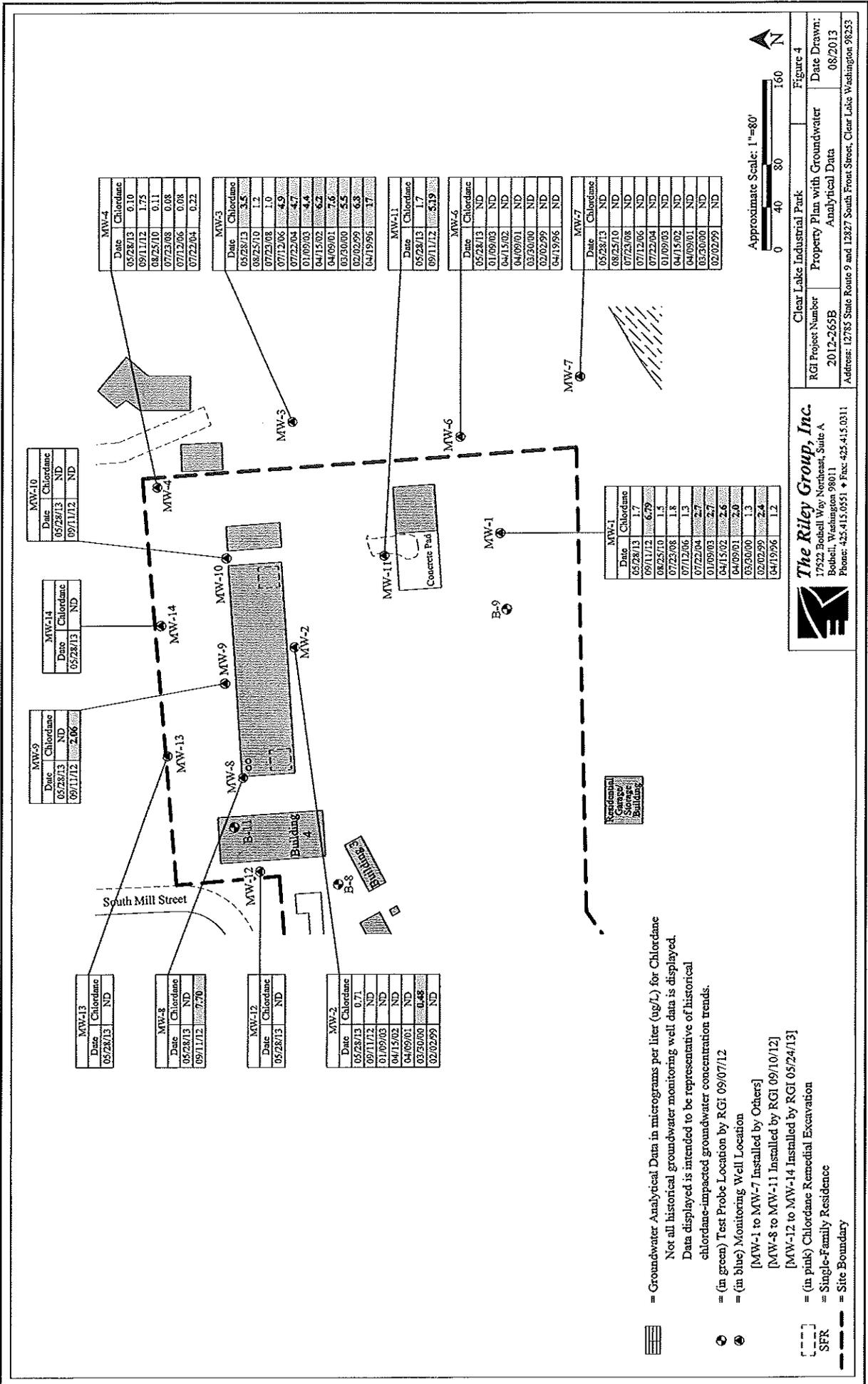
Sincerely,

A handwritten signature in black ink, appearing to read "John Guenther", written over a horizontal line.

John Guenther, LHG
Site Manager
NWRO Toxics Cleanup Program

Enclosure (1): Site Diagram

cc: Elizabeth Rachman, Associated Earth Sciences, Inc.
Sonia Fernandez, Ecology VCP Coordinator



Date	Chloroform
05/28/13	ND
09/11/12	ND

Date	Chloroform
05/28/13	ND
09/11/12	ND

Date	Chloroform
05/28/13	ND
09/11/12	ND

Date	Chloroform
05/28/13	ND
09/11/12	2.06

Date	Chloroform
05/28/13	ND
09/11/12	2.06

Date	Chloroform
05/28/13	0.10
09/11/12	1.75
04/25/10	0.11
07/23/08	0.08
07/12/06	0.08
07/22/04	0.22

Date	Chloroform
05/28/13	3.5
08/25/10	1.2
07/23/08	1.0
07/12/06	4.9
07/22/04	4.7
01/09/03	4.4
04/15/02	5.2
04/09/01	7.6
03/30/00	5.5
02/02/99	6.8
04/19/96	3.7

Date	Chloroform
05/28/13	1.7
09/11/12	6.79
08/25/10	1.1
07/23/08	1.8
07/12/06	2.7
01/09/03	2.7
04/15/02	2.6
04/09/01	2.0
03/30/00	1.3
02/02/99	2.4
04/19/96	1.2

Date	Chloroform
05/28/13	0.71
09/11/12	ND
01/09/03	ND
04/15/02	ND
04/09/01	ND
03/30/00	0.48
02/02/99	ND

Date	Chloroform
05/28/13	ND
09/11/12	ND
08/25/10	ND
07/23/08	ND
07/12/06	ND
07/22/04	ND
01/09/03	ND
04/15/02	ND
04/09/01	ND
03/30/00	ND
02/02/99	ND
04/19/96	ND

Date	Chloroform
05/28/13	1.7
09/11/12	6.79
08/25/10	1.1
07/23/08	1.8
07/12/06	2.7
01/09/03	2.7
04/15/02	2.6
04/09/01	2.0
03/30/00	1.3
02/02/99	2.4
04/19/96	1.2

= Groundwater Analytical Data in micrograms per liter (ug/L) for Chloroform
 Not all historical groundwater monitoring data is displayed.
 Data displayed is intended to be representative of historical
 chloroform-impacted groundwater concentration trends.
 = (in green) Test Probe Location by RGI 09/07/12
 = (in blue) Monitoring Well Location
 [MW-1 to MW-7 Installed by RGI]
 [MW-8 to MW-14 Installed by Others]
 [MW-12 to MW-14 Installed by RGI 05/24/13]
 = (in pink) Chloroform Remedial Excavation
 = Single-Family Residence
 = Site Boundary

The Riley Group, Inc.
 17522 Bobell Way Northeast, Suite A
 Bobell, Washington 98011
 Phone: 425-415-0551 • Fax: 425-415-0311

Clear Lake Industrial Park
 Property Plan with Groundwater
 Analytical Data
 RGI Project Number
 2012-265B
 Address: 12785 State Route 9 and 12827 South Front Street, Clear Lake Washington 98253

Figure 4
 Date Drawn:
 08/20/13

SITE DIAGRAM
 ECOLOGY, 1/29/14

