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DEPARTMENT OF ECOLOGY
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October 30, 2017

Ms. Sonja Max
914 12th Street
Bellingham, WA 98225

Re: Further Action at the following Site:

- **Site Name:** Cascade Laundry
- **Site Address:** 205 Prospect Street, Bellingham, WA
- **Cleanup Site ID:** 11853
- **Facility/Site No.:** 21786898
- **VCP Project No.:** NW3076

Dear Ms. Max:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Cascade Laundry 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 releases:

- Total petroleum hydrocarbons in the gasoline, diesel and oil range (TPH-G, TPH-D and

TPH-O into the soil.

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) into the soil and ground water.
- Tetrachlorethene (PCE), trichloroethene (TCE) and vinyl chloride to soil
- 1, 3, 5 Trimethylbenzene and 1, 2, 4 trimethylbenzene to soil.
- Benzene, carbon tetrachloride, TCE, cholorform and PCE to air.

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 associated with this Site is affected by other sites.

Basis for the Opinion

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

1. Whatcom Environmental, *Remedial Investigation Work Plan*, May 24, 2016.

2. Whatcom Environmental, *Baseline Environmental Summary*, March 12, 2015.

Those documents are kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. You can make an appointment by calling the NWRO resource contact at 425.649.7235 or sending an e-mail to nwro_public_request@ecy.wa.gov.

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 **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.

Contaminants detected in soil include TPH-G, TPH-D/TPH-O, BTEX, PCE, TCE, 1,3,5 trimethylbenzene, 1,2,4 trimethylbenzene, cis-1,2-dichloroethene, n-propylbenzene and vinyl chloride between depths of 2 and 24 feet below ground surface (bgs), beneath the

southern and western portions of the Site. Contaminants above MTCA Method A cleanup levels for ground water include TPH-G, benzene and PCE beneath the southern portion of the Site. Ground water was encountered at depths ranging from approximately 12 to 17 feet bgs. Contaminants identified within indoor air include benzene, carbon tetrachloride, TCE, PCE and chloroform.

Ecology has determined your characterization of the Site is not sufficient to establish cleanup standards and select a cleanup action. The Site is described above and in **Enclosure A**. Below are Ecology's comments regarding Site characterization and the *Remedial Investigation Work Plan*:

- It is unclear how long the leathering and tanning operations were conducted at the Property. Additional clarification is needed on duration and methods used. If details regarding chemical use for prior operations are not attainable, potential contaminants that result from leather tanning and fabric dying need to be discussed. Both processes generate a large volume of wastewater and have the potential for a high contaminant load.

- In addition to fabric dying and leather tanning, laundering also produces high volumes of waste water. It is noted that prior to connecting the drain line up to the sanitary sewer, the drain line was discharging onto the slopes west of the building. It is likely that the fabric dying, leather tanning waste and dry cleaning wastes were discharged in a similar manner. Any additional information regarding where the drain line discharge was located may help identify a potential release area. This area should be assessed for additional contaminants associated with leather tanning and fabric dying processes as well.

- Information regarding previous chemical storage and disposal for chemicals used in all former activities needs to be provided. It is mentioned in the *Baseline Environmental Summary* that a ground penetrating radar (GPR) survey was completed throughout the interior and exterior of the Property. Using data from this survey, a map of utility lines, the floor drains and piping associated with the former dry cleaner and any other underground utilities that may have created a preferential pathway for contaminant migration would be useful for development of the conceptual Site model. Include the location of the outlet that is suspected to have discharged out of the back of the building. Include on the map the layout of the former dry cleaner facility with as much detail as possible (for example, if the location of the machines are known beyond "southwest corner of the main building" include that level of detail on the map).

- The oxidation state of chromium present on the Site must be determined to demonstrate that chromium detected in soil samples (DP-2, DP-3 and DP-4 concentrations ranging from 20 to 54 milligrams per kilogram (mg/kg) exceeding the chromium IV Method A cleanup level) represents trivalent chromium and therefore are well below the MTCA Method A cleanup level.
- The notation "ND" should not be used in data tables to indicate that concentrations were below the laboratory detection limit. All data tables should be reported as "< laboratory detection limit", with the numerical value insterted.
- Ecology agrees the sump should be pumped clean and the wastes should be disposed of properly. The sump sludge contained TPH-D/TPH-O at concentrations exceeding the MTCA Method A cleanup levels and likely collected runoff from the dry cleaning equipment area. The location of the discharge area for the sump needs to be identified and soil and ground water collected and analyzed for contaminants to assess conditions in this area.
- Ecology agrees with the conclusion presented in the *Baseline Environmental Study* report. Based on the exceedances of the screening levels for benzene, carbon tetrachloride, TCE, PCE and chloroform additional vapor intrusion assessment is necessary. Ecology recommends following the guidance for a Tier II assessment which includes additional indoor samples be collected in conjunction with sub-slab soil gas and ambient (outdoor) air (see Ecology's *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, revised 2016*). The basement of the building should also be assessed during the next round of indoor air sampling.
- The horizontal and vertical extent of contamination has not been delineated, which is a necessary prerequisite for selecting a cleanup action for the Site. Ecology agrees that shallow and deep ground water monitoring wells should be installed to further assess the vertical and lateral extent of the contaminant plume and establish ground water gradient and flow direction. Ecology agrees additional soil samples should be collected during installation of the proposed wells and off-Property samples will likely be needed to delineate the extent of contamination in soil and ground water.

2. Establishment of cleanup standards.

Cleanup standards have not been developed yet for this Site. Site characterization is a necessary prerequisite to establishing cleanup levels. The proximity of this Site to Whatcom Creek and its location adjacent and upgradient of the Holly St Landfill site add

complexity to establishing cleanup levels. It may be necessary to adjust cleanup levels to be protective of surface water standards.

Ecology has the following comments regarding the cleanup standards proposed in the *Baseline Environmental Summary*:

Soil

Until the down gradient extent of contamination in ground water has been delineated, it cannot be determined if soil cleanup levels must be protective of the ground water to surface water pathway. In addition, Site characterization must be complete prior to Ecology's consideration of a potability demonstration. Ground water contamination has been confirmed and therefore the leaching pathway is complete. Soil cleanup levels protective of ground water cleanup levels will need to be developed. MTCA Method B cleanup levels developed based on direct contact may need to be adjusted downward for protection of ground water.

If MTCA Method A cleanup levels are selected, the more conservative 30 mg/kg must be used due to the presence of benzene.

Ground water

If it can be demonstrated that ground water is non-potable, ground water cleanup levels must be established under WAC 173-340-720 (6). A Site-specific risk assessment as provided for under WAC 173-340-720(6)(c) for the protection of other ground water beneficial uses must be used to establish appropriate cleanup levels. The risk assessment shall evaluate all potential exposure pathways and ground water uses at the Site, including potential impacts to persons engaged in Site development or utility construction and maintenance activities. When completing a human health risk assessment, land uses other than residential (industrial is not applicable for this Site) shall not be used as the basis for a reasonable maximum exposure scenario for the purpose of establishing a cleanup level (WAC 173-340-708). If an alternative reasonable maximum exposure scenario is used for the purpose of assessing protectiveness of a remedy, appropriate institutional controls will be necessary, which would require an environmental covenant for the Property.

Indoor Air

The Occupational Safety and Health Administration and the Washington Industrial Safety and Health Act establish permissible exposure limits (PELs) to regulate work place exposure to chemicals. For most volatile organic compounds, the human health-based

indoor air cleanup levels required under MTCA are much lower than the PELs. It should not be concluded based on PELs that air quality does not pose a health risk to occupants or workers within the building over an 8-hour period. PELs are based on both risk and economic feasibility. For this Site, residential land use scenario should be used to determine the MTCA cleanup level protective of human health. However, during development of a cleanup action plan, if needed, remediation levels can be developed using alternative reasonable maximum exposure scenarios (for example, based on a commercial land use scenario) to determine the protectiveness of a proposed remedy (WAC 173-340-708 (3) (ii)). If an alternate reasonable maximum exposure scenario is used to assess the protectiveness to human health of a cleanup action, alternative engineered controls and/or institutional controls will be needed to limit exposure to the contamination remaining onsite (WAC 173-340-708 (3) (d).

- Mitigation is necessary if it is determined that soil and ground water contamination is resulting in indoor air quality that is harmful to human health.

- In 2015, Ecology updated the table of vapor intrusion screening levels to reflect recent toxicological information. Table B-1 from Ecology's October 2009 draft Guidance for Evaluating Soil Vapor Intrusion in Washington State can be found at the following link: http://www.ecy.wa.gov/programs/tcp/policies/VaporIntrusion/2015-changes.html.

- The Site does not qualify for a Terrestrial Ecological Evaluation (TEE) exclusion. Contaminant concentrations at your Site fall below the ecological indicator concentrations listed on Table 749-3 and therefore you may end the TEE process. If additional contaminants are identified at the Site or concentrations exceeding values provided on Table 749-3 for protection of wildlife are detected, additional evaluation will be necessary.

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 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

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. If you have any questions about this opinion, please contact me by phone at (425) 649-7097 or e-mail at diane.escobedo@ecy.wa.gov.

Sincerely,

Diane Escobedo
NWRO Toxics Cleanup Program

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Enclosures (1): A – Description and Diagrams of the Site

cc: Kim Ninnemann, Stratum Group
Sonia Fernandez, VCP Coordinator, Ecology

Enclosure A

Description and Diagrams of the Site

Site Description

This section provides Ecology's understanding and interpretation of Site conditions, and is the basis for the opinions expressed in the body of the letter.

Site: The Site is defined by the release of total petroleum hydrocarbons in the gasoline, diesel and oil ranges (TPH-G, TPH-D and TPH-O), tetrachloroethylene (PCE), trichloroethylene (TCE), 1,3,5 trimethylbenzene, 1,2,4 trimethylbenzene, cis-1,2-dichloroethene, n-propylbenzene, vinyl chloride, benzene, toluene, ethylbenzene and xylenes (BTEX) to soil and TPH-G, PCE and BTEX to ground water associated with the operation of a dry cleaning facility. The Site is located at 205 Prospect Street in Bellingham, Washington (Property).

Area and Property Description: The Property corresponds to Whatcom County parcel number 380330111249 which is 0.54 acres in size. The Property is occupied by a two-story building constructed in 1922 which has a daylight basement. The Property is bounded by Prospect Street to the east, a paved parking area and offices to the north, a museum to the south and Maritime Heritage Park (which is the Holly St Landfill site, Cleanup Site ID 253). Land use surrounding the Site is commercial with the exception of the adjacent park. A former gas station was located across Prospect Street to the southeast.

Property History and Current Use: The Property was first developed with a residence, first seen in aerial photos from 1892. The southern portion of the Property was used as a car sales lot until approximately 1935. The Property was developed as a dry cleaning and laundry facility by 1932, which included fabric dying and leather tanning. Dry cleaning and fabric dying activities continued until 1971. A commercial laundry operation continued at the Property until the early 2000s. The southeastern portion of the building on the Property is currently occupied by a sculpture studio. The remainder of the building is currently vacant with plans of being redeveloped into a performing arts center.

Contaminant Source and History: Three underground storage tanks (USTs) were previously located on the Property for storage of Bunker C fuel oil (3,200-gallon) used to power the boilers, gasoline (500-gallon) and dry cleaning solvent (300-gallon). The gasoline UST was installed in 1978 and closed-in-place in 1992. The installation dates of the other two USTs are unknown but they were both removed in 2010. The gasoline UST was located along the west side of the building, the Bunker C UST was located along the northwest exterior wall of the building and the dry cleaning solvent UST was located along the southwestern exterior wall of the building. TPH-G, PCE and xylenes were detected at concentrations that exceed MTCA Method A cleanup levels in bottom and sidewall soil samples collected during removal of the dry cleaning solvent UST. TPH-G detected in all samples was likely mineral spirits, which was the most common dry cleaning solvent in use in the United States from the late 1920s through the late 1950s. Sludge contaminated with TPH-D, TPH-O, 1,3,5 trimethylbenzene and 1,2,4 trimethylbenzene was present in the sump within the southwestern room of the building. The source of petroleum in the sump sludge is suspected to be from machinery leaks, such as hydraulic fluid, that were captured in the sump. 1,3,5 trimethylbenzene, 1,2,4 trimethylbenzene and n-propylbenzene which are contaminants

associated with dyes, were detected in soil at test pit 2 (TP-2) at 5 feet bgs and boring DP-3 on the southwest side of the main building at 2 feet bgs.

Volatile organic compounds were identified within the indoor air of the building including carbon tetrachloride, PCE and chloroform. Carbon tetrachloride was commonly used in dry cleaning (either mixed with other solvents for dry cleaning or as a spot cleaner) by the 1930s but due to high toxicity and the tendency to corrode machinery, it was phased out by the early 1950s. By 1962, PCE became the leading solvent used in the United States. Chloroform can be used as a dry cleaning spot remover and for cleaning leather.

Physiographic Setting: Western Whatcom County and the Bellingham area are part of the Fraser-Whatcom Lowlands, broadly characterized as a north-south trending structural and topographic depression bounded to the west by the complex tectonics of the San Juan and Canadian Gulf and Vancouver Islands, and to the east by the Cascade uplift. The Lowlands typically feature extensive sequences of consolidated and unconsolidated sediments, typically dominated near the surface by geologically recent glacial deposition. The Property slopes to the west, steepening at the western boundary, with a steep, former shoreline slope along and adjacent to the western Property boundary. The slope at the back (west side) of the building is vegetated and approximately 35 feet high. The Property is approximately 65 feet above mean sea level and includes the upper portion of the original shoreline bluff above the creek estuary.

Surface/Storm Water System: The Whatcom Creek estuary is located approximately 320 feet to the northwest and Whatcom Waterway is located approximately 500 feet west of the Property. The entire length of Whatcom Creek has been listed by Ecology as a Category 5 "Polluted Water" for concentrations of dissolved oxygen and fecal coliform and temperature variations. Documented fish using Whatcom Creek include bull trout and sea-run cutthroat, Chinook, coho, chum, pink and steelhead salmon. Restoration of Whatcom Creek's riparian habitat has been ongoing since the early 1990's. Estuary habitat exists in the tidal zone.

Ecological Setting: The Property is located adjacent to Maritime Heritage Park, which includes a native plant trail, fish hatchery, athletic fields, a trail along Whatcom Creek and landscaped areas (primarily grass with shrubs and trees).

Geology: The Property is underlain by glaciomarine drift. The Bellingham drift which was deposited by melting glacial ice near the end of the last glacial period generally consists of silty clay. Silty clay, clayey silt, sandy clay and sandy silt were encountered to depths of up to 30 feet bgs. Zones of sand approximately 2 to 14 feet thick were encountered at various locations. Fill material with brick, woody debris, glass and charcoal was encountered on the west side of the Property and the southwestern corner of the building east of the retaining wall.

Ground Water: Ground water at depths ranging from 12 to 17 feet below ground surface (bgs)

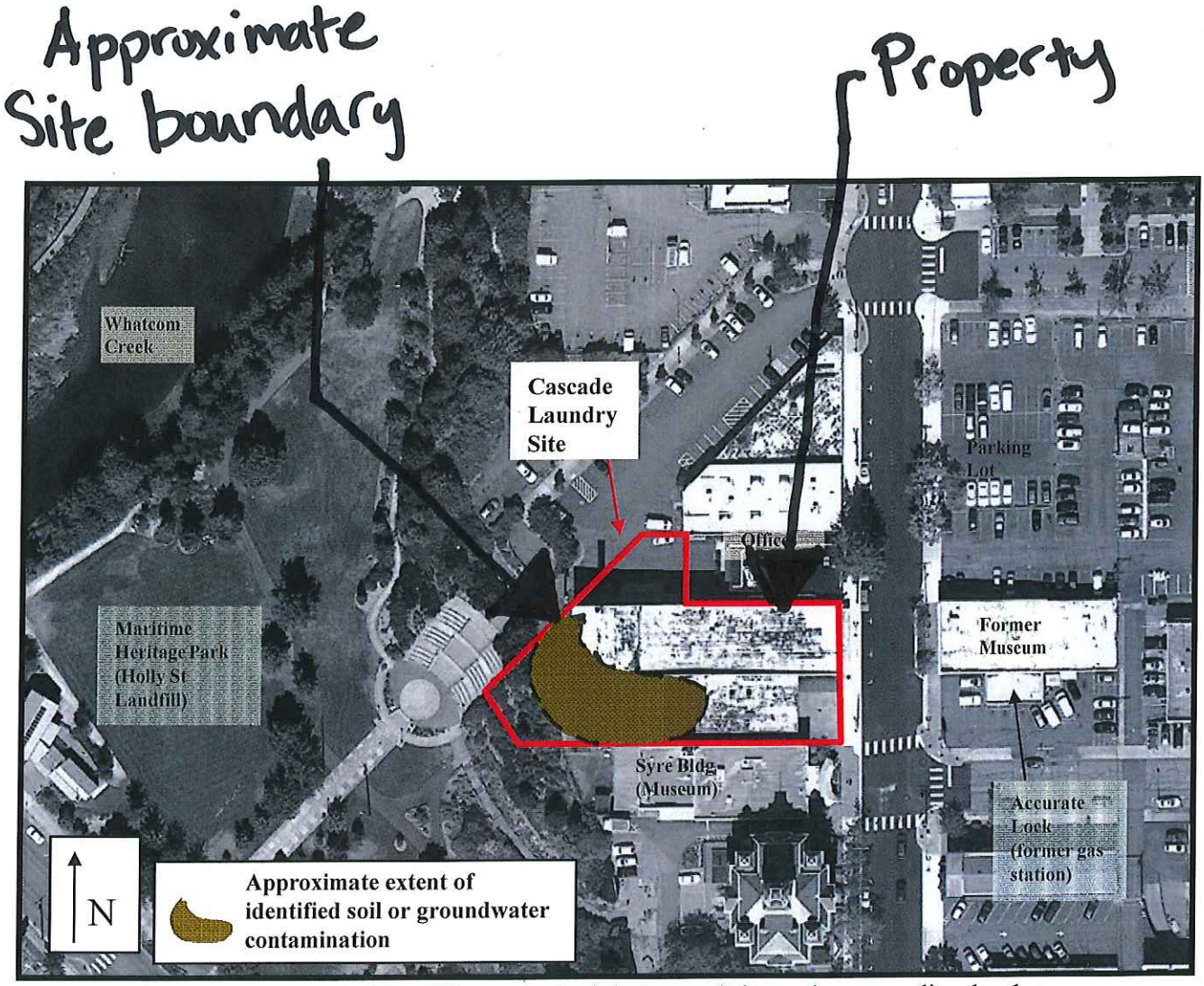
was encountered during winter and spring months. Ground water is present year round below 17 feet bgs within slightly coarser sandy lenses within a predominantly saturated silty clay. Ground water at the adjacent Maritime Heritage Park (Holly St Landfill site) was encountered at 12 to 13 feet bgs, which corresponds with a depth of approximately 43 feet bgs at the Property. Ground water flow is likely to the northwest, toward Whatcom Creek.

Water Supply: The Property is served by the City of Bellingham public drinking water utility, which obtains its water from Lake Whatcom. According to Ecology's well log database, no drinking water wells are located within ½ mile of the Property.

Release and Extent of Soil, Ground Water and Air Contamination: Soil contamination was identified in shallow fill soils along the southwestern corner of the building and between 14 to 24 feet bgs throughout the southern and western portions of the Property. TPH-G, TPH-D, TPH-O, benzene, ethylbenzene, xylenes and PCE exceeded MTCA Method A cleanup levels. The horizontal and vertical extent of this contamination has not been delineated. PCE and benzene concentrations above MTCA Method A cleanup levels have been detected as deep as 30 feet bgs (boring B-5).

TPH-G, benzene and PCE have been detected in ground water at concentrations exceeding the MTCA Method A cleanup level. Ground water contamination was identified beneath the south, southwestern and western portion of the Property. The vertical and down gradient extent of ground water contamination has not been delineated.

Indoor air samples were collected from the first and second floor of the building. Carbon tetrachloride and PCE were detected above vapor intrusion screening levels in all six samples, two of which were collected from the second story. Benzene was detected above screening levels both upstairs and downstairs in four of the six sample locations. Chloroform was detected above screening levels in downstairs samples only.



Remedial Investigation Work Plan Figure 2. Aerial photo of site and surrounding land uses