

September 24, 2004

Washington State Department of Ecology
 Toxics Cleanup Program
 4601 North Monroe Street
 Spokane, Washington 99205

Attention: Patti Carter

Subject: Request for Opinion Letter
 Convention Center Expansion Landscaped Areas
 Spokane, Washington
 File No. 0110-047-07

On behalf of the Spokane Public Facilities District (SPFD), we would like to request an opinion letter from the Washington State Department of Ecology (Ecology) through the existing VCP application regarding SPFD's planned landscaping of several areas at the Spokane Convention Center Expansion site. The current plan is to plant trees, ornamental shrubs, and turf grass to beautify entry and peripheral areas of the west portion of the site as shown on the attached figure. The total proposed landscaped area is approximately 21,000 square feet. Note that a portion of the landscape area, particularly the area immediately west of the existing C.I. Shenanigans building, will be underlain mostly by non-contaminated fill because a storm sewer utility will be placed at this location. Further, a portion of these areas are currently landscaped.

We sent you two emails on September 10 and 20, respectively, that included tables, figures, and laboratory reports describing the concentrations of contaminants of concern and approximate sample locations near the proposed landscape areas. This letter supplements those earlier communications.

The proposed use of these areas for landscaping is consistent with the site Cleanup Action Plan (CAP) and the intent of the Washington State Model Toxics Control Act (MTCA) for the following reasons:

1. Landscaped areas within SPFD's Convention Center Expansion site boundaries will be included in site institutional controls that will be in effect following implementation of the CAP. Six or more inches of non-contaminated topsoil will be placed over contaminated soil in areas that will be planted with turf grass and eight or more inches of soil will be placed over contaminated soil in areas where trees and shrubs will be planted. Institutional controls will limit access to soil beneath the topsoil. In addition, only non-contaminated backfill material will be used in irrigation piping trenches. This will minimize potential human contact with contaminants of concern.
2. The concentrations of contaminants of concern in soil in the proposed landscaped areas, based on the available data, are protective of groundwater as predicted by the fixed parameter three-phase partitioning model described in MTCA, WAC 173-340-747, Equation 747-1. The concentration of lead in soil that is protective of the Method A Cleanup Level for Groundwater is calculated to be about 3,000 milligrams per kilogram (mg/kg). This exceeds the highest concentration of lead yet detected at the site. The benzo(a)pyrene (BaP) concentration in soil that is protective of Standard Method B Formula Values for Potable Groundwater (CLARC V3.1) is calculated to be about 0.233 mg/kg; the concentration of BaP in soil from a test pit nearest the landscaped areas

was 0.207. Note that the estimated BaP soil concentration protective of Method A Cleanup Levels for Groundwater is 1.09 mg/kg, approximately an order of magnitude greater than concentrations detected near the landscaped areas. Other site contaminants of concern are not suspected at concentrations exceeding Method A Cleanup Levels at proposed landscaped areas, based on existing soil sampling data. Worksheets showing lead and BaP fixed parameter three-phase partitioning model calculations are attached.

3. Low-flow irrigation systems will be used. The following systems will limit the amount of water used in landscaped areas:
 - a. Turf grass will be irrigated using low-angle spray heads. This will limit over-spray and the amount of water used to meet grass irrigation demands.
 - b. Irrigation timers will be used and set so that the amount of water used to irrigate grass areas will approximate the evapotranspiration rate of the downtown Spokane environment. This will limit the amount of water potentially migrating through contaminated soil.
 - c. Sprinkler controls will have rain gauge sensors that will turn off the sprinkler system during periods of precipitation, further reducing the likelihood that over watering will occur.
 - d. Trees and shrubs will be irrigated with low-flow drip-irrigation systems.
 - e. Landscaping irrigation will only occur during the active growing season, generally between April and October.
4. A landscape maintenance plan will be prepared that will describe how irrigation schedules will be seasonally/climatically modified to match evapotranspiration rates with irrigation water application.

In our opinion, the potential aesthetic and environmental benefits of the landscaped areas and the overall site cleanup being performed by the SPFD outweighs the minimal risk to human health and the environment posed by potential leaching of contaminants. The SPFD requests concurrence by Ecology that the intended landscape plan does not significantly increase the threat to human health and the environment at these locations.

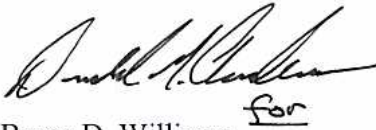
Please do not hesitate to call if you have questions regarding this letter.

Respectfully submitted,

GeoEngineers, Inc.



R. David Enos, LG, LEG
Senior Geologist



Bruce D. Williams ^{for}
Principal

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cc: Matt Walker, Spokane Public Facilities District
William Ogram, Abbottswood Design Group, Inc

Attachments

Spokane Convention Center Expansion Landscaped Areas
Lead in Unsaturated Soil
Benzo(a)Pyrene in Unsaturated Soil

SPOKANE RIVER

C.I.
SHENANNIGANS

AG TRADE
CENTER

SKY BRIDGE

DOUBLETREE HOTEL

EXPANSION

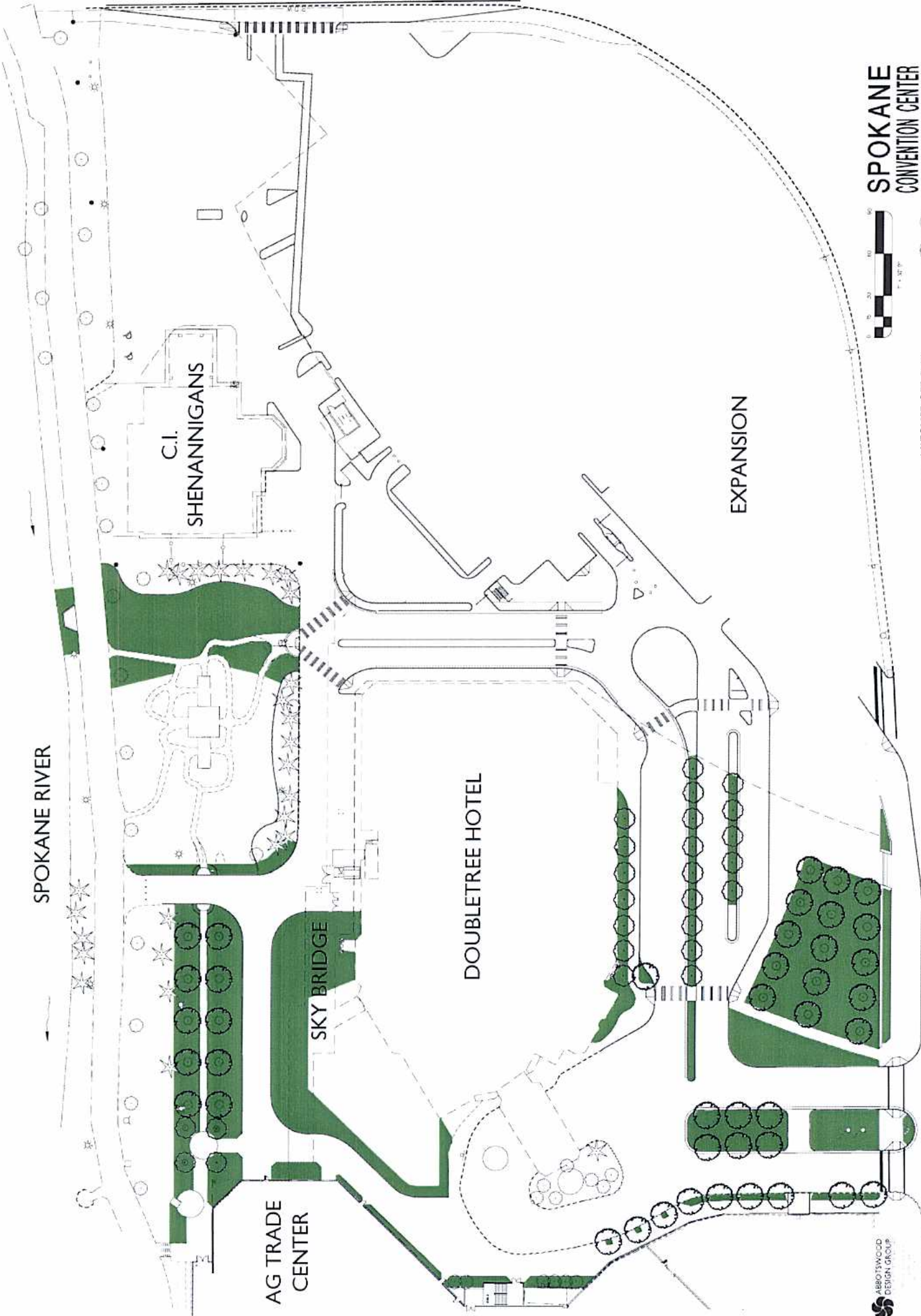
SPOKANE CONVENTION CENTER EXPANSION



LANDSCAPE SITE PLAN
SHEET 002 OF 02



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Lead in Unsaturated Soil

Equation 747-1

Fixed Parameter 3-Phase Partitioning Model

$$C_s = C_w (\text{UCF}) \text{ DF} \left[K_d + \frac{(\Theta_w + \Theta_a H_{cc})}{P_b} \right]$$

	Value	Units	Comments
$C_w =$	15	ug/L	Method A Cleanup Level for Groundwater
$C_s =$	3,000.039	mg/kg	Calculated
UCF =	0.001	mg/ug	Equation 747-1 notes
DF =	20.0	n/a	Equation 747-1 notes
$K_d =$	10,000	L/kg	Table 747-3
$\Theta_w =$	0.3	n/a	Equation 747-1 notes
$\Theta_a =$	0.13	n/a	Equation 747-1 notes
$H_{cc} =$	0	n/a	WAC 173-340-747 (4)(d)
$P_b =$	1.5	kg/L	Equation 747-1 notes

Notes

ug = micrograms
 L = liters
 mg = milligrams
 kg = kilograms

Benzo(a)Pyrene in Unsaturated Soil

Equation 747-1 Fixed Parameter 3-Phase Partitioning Model

$$C_s = C_w (UCF) DF \left[K_d + \frac{(\Theta_w + \Theta_a H_{cc})}{P_b} \right]$$

	Value	Units	Comments
$C_w =$	0.012	ug/L	CLARC Method B Potable Groundwater
$C_s =$	0.233	mg/kg	Calculated
UCF =	0.001	mg/ug	Equation 747-1 notes
DF =	20.0	n/a	Equation 747-1 notes
$K_d =$	969	L/kg	Calculated, $K_{oc} \times f_{oc}$
$\Theta_w =$	0.3	n/a	Equation 747-1 notes
$\Theta_a =$	0.13	n/a	Equation 747-1 notes
$H_{cc} =$	0.0000463	n/a	CLARC, 11/01
$P_b =$	1.5	kg/L	Equation 747-1 notes
$K_{oc} =$	968774		CLARC, 11/01
$f_{oc} =$	0.001	g/g	Equation 747-2 notes

Notes

ug = micrograms
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