GSI Water Solutions, Inc.

TECHNICAL MEMORANDUM

Potential Costs Associated with Prospective Redevelopment McCormick & Baxter Superfund Site

To: Sarah Miller, Oregon Department of Environmental Quality

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1. Introduction

Portland Botanical Gardens (PBG) is engaged in negotiations with the Oregon Department of Environmental Quality (DEQ) to purchase the McCormick & Baxter Superfund Site (the "Site"). As part of these negotiations, DEQ is requesting financial assurance from PBG for potential costs to return Site infrastructure to pre-purchase conditions, in the event PBG damages the cleanup remedy during development or is unable to complete development. Based on GSI's understanding of PBG's preliminary development plans, and discussions with DEQ, GSI prepared this memorandum to identify reasonable scenarios in which the Site is returned to pre-purchase conditions.

It is GSI's understanding that PBG construction plans are limited to development of the site above existing grade, and no development will be conducted along the Willamette River shoreline below the riparian area. PBG plans to construct a replacement shop building for ongoing DEQ use. The existing building will not be demolished until construction of the new building is complete; as such, a scenario to rebuild the existing shop building is not included. The estimated costs derived in this memorandum are intended to be used for preliminary budgetary purposes and should not be solely relied upon if one of the repair scenarios is encountered.

2. Repair Scenarios

Three potential repair scenarios were developed in coordination with DEQ. These include (1) replacing the Site fence; (2) removing a building foundation for a partially constructed structure; and (3) repair damage to the Site cap if an excavator causes damage during development. For each scenario, GSI estimated high- and low-end cost scenarios.

2.1 Fence Replacement

The fence replacement scenario identifies costs to replace the perimeter fence if a future developer removes fencing as part of redevelopment, then halts construction. This assumes all fencing and gates will be reinstalled to the current condition with the same or similar material.

For this risk scenario, the high-end cost estimate assumes that all perimeter fencing and interior support area fencing have been removed (6,200 linear feet of fencing and nine gates). The low-end cost estimate

assumes the perimeter fence parallel to the Willamette River and along North Van Houten Place has been removed (2,400 linear feet of fencing and five gates). It is assumed that the current fence is 6 feet in height, composed of 9-gauge chain link fabric, and topped with three-strand barbed wire. It is also assumed that posts are spaced 8 feet apart and set in concrete.

The cost for fence replacement includes new materials, subcontractor labor estimates, and consultant oversight and reporting costs.

2.2 Foundation Removal

The foundation removal scenario describes a situation in which a new structure is in development, then construction is stopped, leaving a concrete slab foundation and a partially constructed building. This scenario assumes a concrete slab foundation has been installed which must be demolished and disposed of. Following removal, the ground surface would be restored to existing conditions.

The high-end cost estimate assumes that the foundation will be 5,000 square feet and 8 inches thick. The low-end cost estimate assumes that the foundation will be 2,500 square feet and 4 inches thick. Pre-construction conditions assume level soil with native vegetation. This scenario assumes that the slab is built on-grade or within the vegetated topsoil layer and no repairs to the engineered cap layers will be required. During construction, grading and clearing are conducted but no soil is removed from the site. For this risk scenario, it is assumed that the concrete will be disposed of as environmental cleanup material at a Subtitle D landfill. Post-construction may require importing, grading, and establishing and maintaining vegetation to match current conditions. This scenario assumes 60 cubic yards of clean soil will be imported to restore surface conditions in the low-cost scenario and up to 120 cubic yards of clean soil imported for restoration for the high-cost scenario. Both scenarios include surface vegetation restoration costs (native grass seed purchase and installation, limited tree or shrub planting, and watering for three years). Watering assumes water trucks will be used every two weeks for four dry months per year (8 watering events).

The cost for removal includes removal subcontractor and trucking estimates, disposal fees, import soil, surface restoration and management, and consultant oversight and reporting costs.

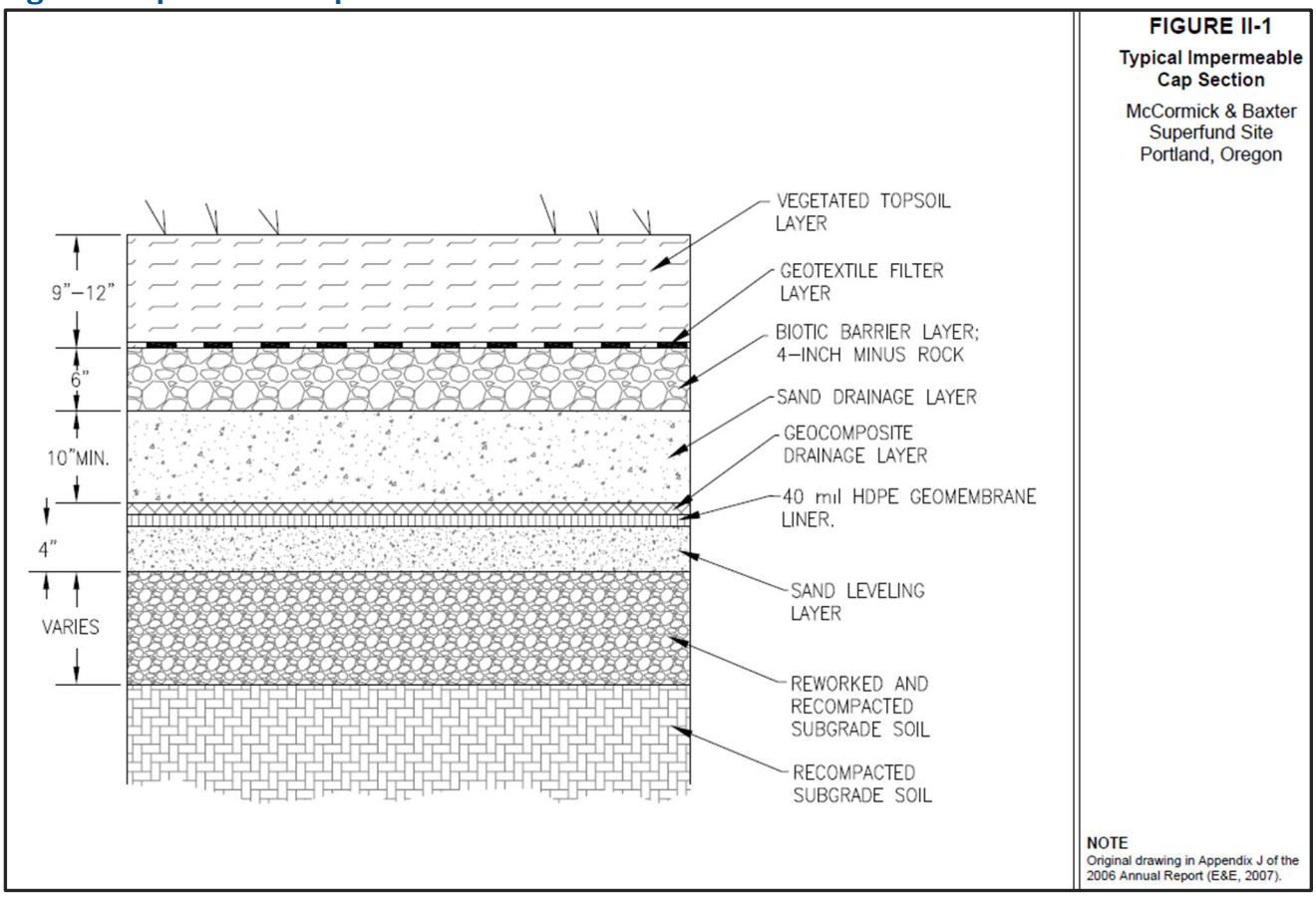
2.3 Engineered Cap Repair

This scenario identifies costs associated with a future developer damaging the engineered cap layer during development. Figure 1 included below shows the impermeable cap layers for reference (DEQ and EPA, 2021). For this risk scenario, it is assumed that damage to engineered cap layers will be limited to a 10 square-foot area.

The low-cost scenario assumes the geotextile layer was penetrated at about 2 feet below grade (either within the impermeable cap area or earthen cap area). The high-cost scenario assumes a contractor has penetrated the geocomposite drainage layer and HDPE geomembrane liner (i.e., the impermeable cap) into the reworked and recompacted subgrade soil layer by a single excavator bucket scoop. The depth to this layer varies, but the maximum depth is approximately 7 feet below ground surface (DEQ and EPA, 2021). It is assumed that there are no other drainage layers or perforated pipes that need to be replaced. The high-end scenario assumes that rock, sand, and/or soil removed from below the impermeable cap layer will be placed into two 55-gallon drums and disposed of as hazardous waste at a Subtitle C disposal facility, consistent with disposal of most other Site media. The void left by removed materials will be filled using sand to level the subgrade prior to repairing engineered cap layers. Material removed from above the impermeable cap will be reused in both scenarios. The reconstruction of each layer in the cap will be to the original standards including compaction and material testing standards. Both scenarios include surface vegetation restoration costs (native grass seed purchase and installation, no tree or shrub planting, and watering for three years). Watering assumes water trucks will be used every two weeks for four dry months per year (8 watering events).

The cost for cap repairs includes materials, HAZWOPER-certified earthwork subcontractor, specialty HDPE welding subcontractor, compaction testing, disposal fees, surface restoration and management, and consultant oversight and reporting costs.

Figure 1. Impermeable Cap Section



3. Financial Risk Estimate

Based on the three scenarios and assumptions stated above, estimates of the range of repair costs were developed and are summarized in the attached Table 1. The ranges of cost estimates are graphically represented in Figure 2. Costs are in 2025 dollars and are derived based on GSI's experience working at the Site and professional experience.

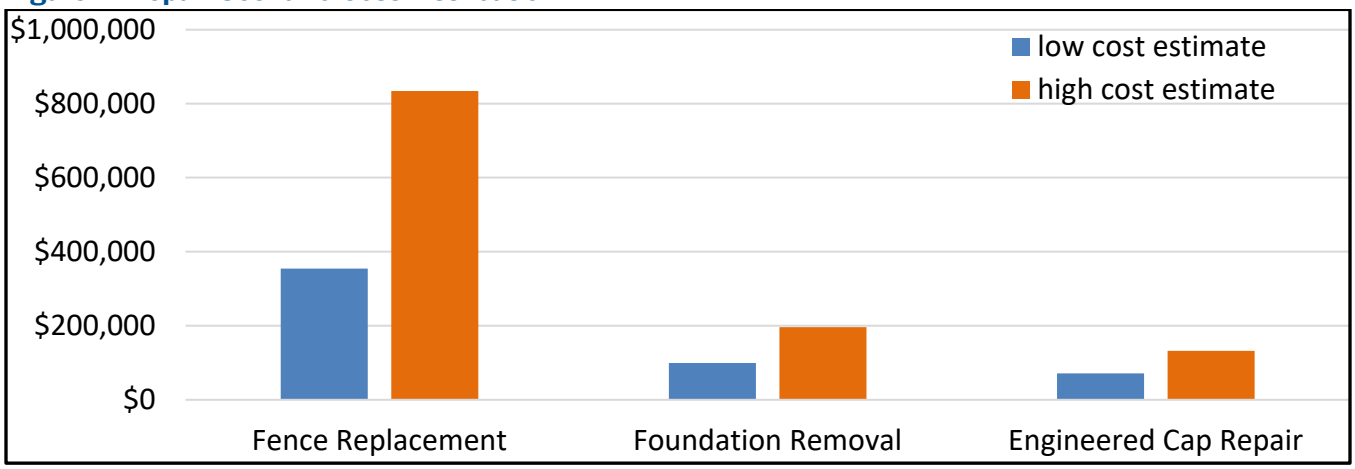
Table 1. Projected Costs for Repair Scenarios

Repair Scenario	Projected Costs	
	Cost Range Assumptions	Estimated Total
1) Fence Replacement	Low	$354,000
	High	$834,000
2) Foundation Removal	Low	$99,000
	High	$196,000
3) Engineered Cap Repair	Low	$71,000
	High	$132,000

Note:

Projected costs are based on 2025 dollars.

Figure 2. Repair Scenario Cost Distribution



Statement of Limitations

This memorandum documents the work performed by GSI at the request and direction of DEQ. The findings, opinions, and conclusions included herein are for the exclusive use of DEQ. The estimated costs derived in this memorandum are intended to be high-level and should not be solely relied upon if one of the repair scenarios is encountered. Reliance shall not be provided to any other person or entity without DEQ's and GSI's written consent. Reliance on this document for any use or by parties, other than those specifically identified, is prohibited without the expressed written consent of GSI and DEQ, and such use is at the sole risk of the user.

4. Reference

DEQ and EPA, 2021. Fifth Five-Year Review Report: McCormick & Baxter Creosoting Company Superfund Site, Portland, Multnomah County, Oregon, ORD009020603. September 2021.