CITY / ECOLOGY DEVELOPMENT REVIEW CHECKLIST

All documents submitted to the City associated with proposed development at the Landfill Site must be reviewed for compliance with environmental requirements of the Cleanup Action Plan. The following checklist summarizes environmental requirements for each type of development component and provides a means of highlighting pertinent documentation and tracking City and Ecology reviews. Attach additional pages as necessary.

Name of Document(s) Under Review: Everett Riverfront Site Phase 1 and 2 Site Work Permit Set (documents listed at end of checklist)

Received From: Shelter Holdings, Perteet, HWA Geosciences

Name of City Reviewer: Megan King, PE

Date Received for City Review: 04/22/2020 **Date City Review Completed**: 05/05/2020

City Review Summary and Requested Action: The City's review finds this submittal in compliance with Consent Decree requirements, and the City requests Ecology concurrence of this finding.

The Everett Riverfront project's limits stretch from 41st Street at the project's south terminus to 36th Street at the project's north terminus. Currently, a dirt access road crosses the 44-acre site from south to north, for a distance of about a half mile. The initial phases of the Riverfront Development include the following:

- Riverfront Boulevard and Trunkline Utilities Phase – The project area for the construction of the boulevard and utility project is 4 acres. It includes grading, equipment staging, excavation, haul roads, off-site construction support areas, and all other soil disturbance acreage associated with the project.
- Advanced Site Work Phase – This phase includes the development of the site adjacent to the proposed boulevard to the west and will consist of site electrical distribution utilities, a temporary access road, temporary staging areas and field trailer utilities, and a refuse relocation area. The pile-supported sanitary sewer main for Buildings A and B is also included in this phase.
- Phase 1 and 2 Buildings and Parking lots – This phase will include landscaping, grading, and constructing the parking lots, installing storm drainage structures and pipes, installing water mains, installing the sewer main for the Phase 2 buildings, landfill gas (LFG) management and collection system, and site lighting.

This permit set is for the Phase 1 and 2 Site Work, and includes grading, paving, pavement marking, and landscaping for the portion of the site west of Riverfront Boulevard. This plan set includes storm drainage and utility improvements on the site consisting of a new LFG collection system, water main, sewer line, stormwater conveyance, connections to water quality treatment facilities installed in the Riverfront Boulevard Contract, and street lighting facilities. Utility connections terminating at the cantilevered building aprons are also included in this permit set. The project will address elements of all proposed curb ramps and pedestrian paths to achieve compliance with the Americans with Disabilities Act (ADA).

The developed cover will be constructed of impermeable materials that will form the hydraulic barrier and include pavement, concrete sidewalks, and landscaped areas (underlain by low permeability soil barriers and/or asphalt). This work will include installation of utilities beneath the developed cover for the site that will support the future developed condition. Utilities to be installed during this phase of work include storm drain, water, sewer (for Phase 2 buildings only), LFG collection system, and landscaping irrigation and subdrainage systems. Utilities will connect to newly constructed infrastructure along Riverfront Boulevard, and will include stub-outs for future connections to planned buildings within the Phase 1 and 2 development areas.

Development Components	**Environmental Requirements**	**City Review Comments and submittal reference (i.e., page, sheet #)**
General Layout		
Phased development areas.	The Site may be developed in several separate projects or phases, depending on Site ownership and project plans. In that event, the phases shall be adjacent to Site boundaries and to prior phases, allowing CAP requirements to be fully operational and effective for each phase and in total. Special consideration shall be given to landfill gas system boundary conditions. Access will be controlled during development to maintain separation between developed and undeveloped areas of the landfill, and to prevent damage to environmental systems from subsequent construction.	The Riverfront Development Project consists of developing a new central boulevard and mixed-use site with grocery and theater on top of an existing landfill. The overall site is approximately 44 acres and includes 14 mixed use buildings, a grocery, and a theater. The project will occur in multiple phases, beginning with construction of Riverfront Blvd and associated utilities. Phases 1 and 2 will occur west of Riverfront Blvd. The General Notes on Drawing NT2, sheet 3 describe site access/fencing requirements. Fence and work area shown on Drawings AP1 through AP3, sheets 6 through 8.

Development Components	Environmental Requirements	City Review Comments and submittal reference (i.e., page, sheet #)
Construction Disruption		
Site re-grading including cut and fill magnitudes typical for an urban redevelopment site. Assume regrading could encounter refuse, and perched groundwater. Subsurface excavation for utilities and structures. Import and export of soils, potential localized refuse removal, and stockpiling.	Dust and odor controls during construction – During Site construction activities, dust and odor controls would be required to prevent migration of materials outside the construction zone at levels of concern. These measures will include daily cover of any exposed waste, and could include localized wetting, application of suppressant foams, or use of temporary cover materials. Stormwater management – Erosion controls using best management practices, as necessary, in accordance with the City of Everett's Stormwater Management Manual and provisions of a NPDES permit for construction sites greater than five acres, as applicable. Run-on controls to prevent run-on of surface water onto exposed landfilled materials. Direct contact controls – Health and safety requirements for construction crews, to be triggered if construction occurs below the elevation of the clean soil cap. Construction dewatering procedures – Excavation construction for future potential development will likely encounter perched groundwater in portions of the waste. This water must be assumed contaminated and handled accordingly. Pumped dewatering water could be discharged into the leachate collection system provided it is approved by City Industrial Pretreatment Program. Or, the water could be stored in mobile tanks, tested for contaminants and disposed of accordingly. Construction performance monitoring and inspection – During Site construction activities, inspections for adequate perimeter dust controls, erosion controls, and dewatering and odor controls are required. On-site construction oversight by a health and safety professional or inspector is required of all applicable development activities as described in the CMCP. Controlled on-site relocation and re-capping of excavated refuse during construction activities is allowed. Location and quantities will be approved prior to excavation. As necessary, excavated refuse could also be disposed off-site in an active municipal landfill. Following construction, all developed areas of the landfill must be covered with pavement, buildings, or clean soil underlain by hydraulic barrier.	Grading is shown on Drawings GC0-GC21, sheets 21 through 48. Environmental requirements related to construction disruption will be met through the measures described below: • Dust and Odor Control: Fugitive dust monitoring and proposed measures for odor control are described on Drawing NT2, sheet 5. • Construction Stormwater Management: Erosion and sediment controls are shown on drawings SP1 through SP5, sheets 9 through 13 and are described under the Phase 1 and 2 Site Work Stormwater Pollution Prevention Plan (SWPPP; Shelter 2019). • Direct Contact Controls: Drawing NT2, sheet 5 provides an overview of the health and safety requirements for direct contact that are described in detail in the previously submitted project Healthy and Safety Plan (HASP; Rose Environmental 2019). • Construction Dewatering Procedures: Perched water is not anticipated to be encountered during this phase of work. If encountered, leachate will be handled as described in Section 3.3 of the previously provided Landfill Gas Collection System Engineering Design Report (LFG EDR; Herrera 2019) • Construction Performance Monitoring and Inspection: Onsite performance monitoring will be conducted by designated health and safety and stormwater professionals, per the site HASP and SWPPP (Rose Environmental 2019, Shelter 2019). • Controlled Onsite Relocation and Re-Capping of Excavated Refuse: See Drawing RP1, sheet 14. • Final Developed Cover: LFG barrier plan is shown on Drawing LBP1, sheet 18.

Development Components	Environmental Requirements	City Review Comments and submittal reference (i.e., page, sheet #)
Temporary Facilities, Operations and Hydraulic Control		
	Describe and acknowledge temporary leachate collection system, gas collection system and stormwater. Maintain hydraulic control of shallow aquifer.	Perimeter leachate system to remain operational – no temporary systems included for this work.
Site Infrastructure		
Water lines.	Utility trenches or corridors below developed area cover elevation will be lined with a geotextile and backfilled with clean soil, to allow maintenance without additional health and safety requirements for contaminated materials. Construction methods and materials to accommodate expected settlements are required. Seal entry into buildings or enclosed structures including utility manholes/vaults to prevent landfill gas leaks. Backfill trench with low permeability soil where utility line leaves property.	Water lines will be 12-inch-diameter HDPE pipes joined by thermal butt fusion as described in Section 3.4.6 of the LFG EDR and Section 4.4.1 of the Geotechnical Report. Water line plan views are shown on Drawings WT1 through WT6, sheets 73 through 78. Profile views are shown on Drawings WPR1 through WPR4, sheets 79 through 82) along with the impermeable cover along the profile (including trench seal offs where the utilities exit the landfill site), and the approximate depth of existing refuse. HDPE piping with Kor-n-seal flexible type connections to manhole and catch basin structures will be used to accommodate settlement between structures. Utility and trench details are shown on Drawings UD1, TD1, and TD2, (sheets 85 through 87).
Sanitary sewer lines.	For sanitary sewer and storm drainage systems, watertight manholes using gasketed riser sections and rubber boot connections are recommended. HDPE piping is recommended. Additional measures to mitigate settlement include flexible telescoping sleeves and flexible connections at vaults and interfaces with buildings, and pipe hangers beneath pile supported structures. Seal entry into buildings or manholes to prevent landfill gas leaks. Backfill trench with low permeability soil where utility line leaves property.	The sewer system will be made of HDPE and will be supported by piles on grade beams, limiting settlement. Design considerations for sanitary sewer lines are described in Section 3.4.6 of the LFG EDR and Section 4.4.2 of the Geotechnical Report. The sanitary sewer plan and profile for the Phase 2 development are shown on Drawings SS1 through SS2, along with the impermeable cover along the profile (including trench seal offs where the utilities exit the landfill site), and the approximate depth of existing refuse. Utility and trench details are shown on Drawings UD1, TD1, and TD2, (sheets 85 through 87). Property boundary connections are shown on Drawing LFG16.

Development Components	Environmental Requirements	City Review Comments and submittal reference (i.e., page, sheet #)
Site Infrastructure (cont.)		
Storm sewer lines.	Stormwater will not be allowed to infiltrate into the landfill. Measures described above for sanitary sewer and storm drainage systems will be taken. All stormwater will be collected for off-site discharge. Seal entry into catch basins and manholes to prevent landfill gas leaks. Backfill trench with low permeability soil where utility line leaves property.	Stormwater will be collected and treated prior to offsite discharge, as described in the Drainage Report submitted with the Riverfront Blvd Plan Set (Perteet 2019). The site is paved with stormwater collected and connected to the drainage network described in the Riverfront Blvd permit package. Storm sewer lines will be HDPE pipes joined by thermal butt fusion. Pipe penetrations into manholes, catch basins, and treatment structures will have gas tight connections and a plug of bentonite sand backfill (BSB) around the pipe penetrations. Storm system plan view are shown on Drawings DR1 through DR15, with profile views on Drawings DP1 through DP9 (sheets 49 through 72). Catch basin and manhole pipe connections and seals are shown on Drawing UD1; trench details are shown on Drawings TD1 and TD2 (sheets 85 through 87). Utility trench backfill at the property boundary will be sealed with BSB, as detailed on Drawing LFG16.
Manholes and maintenance access.	Vaults will be designed with water and gas tight joints and will be clearly labeled for necessary confined space entry procedures per gas pathway requirements.	All vaults, manholes, and catch basins will have gas and watertight seals along with a plug of BSB around the pipe penetrations on the exterior of the structure as indicated in Section 3.4.6 of the LFG EDR (Herrera 2019). Catch basin and manhole pipe connections and seals are shown on Drawing UD1; trench details are shown on Drawings TD1 and TD2 (sheets 85 through 87). Labeling for confined space requirements are shown on Drawing NT1.

Development Components	Environmental Requirements	City Review Comments and submittal reference (i.e., page, sheet #)
Site Infrastructure (cont.)		
Electrical, telephone and gas lines.	For electric, telephone, and natural gas systems, settlement can be accommodated by the use of additional wire lengths or flexible piping. Light fixtures and similar features shall either be finished above the underlying gas barrier or, if penetrating the gas barrier, be internally sealed and booted to the barrier layer to preclude intrusion of landfill gas. Seal conduit at building entry to prevent landfill gas leaks. Ensure interior of conduit is sealed as well.	Primary site power and communication lines for Phases 1 and 2 were included in the Advanced Site Work phase and are described in Section 3.4.7 of the LFG EDR and Section 4.4.1 of the Geotechnical Report (Herrera 2019; HWA 2019a). Electrical components installed as part of this permit package will include site illumination (Drawings E0 through E6, sheets 115 through 121) and LFG system electrical components (Drawings EF1 through EF17, sheets 122 through 138). All underground electrical and communication raceways will be liquid-tight flexible metal conduit (LFMC) to provide the flexibility for ground settlement and will also be rated for installation in Class 1, Division 2 environments. The conduits will terminate in pull boxes (also rated for Class 1, Division 2) installed in the vaults or handholes, so that the entire raceway system is rated for the classified environment. Excess distance of LFMC raceways will be provided in trenches to allow for differential settlement between handholes.

Development Components	Environmental Requirements	City Review Comments and submittal reference (i.e., page, sheet #)
Site Infrastructure (cont.)		
Pavements (concrete and/or asphalt) for roadways, parking lots and sidewalks.	Subgrade reinforcement (such as a geotextile or geogrid material) may be used to minimize areas of localized, uneven settlement. Pavements should be designed to accommodate settlement at boundary conditions to pile-supported buildings. Penetrations below landfill cover sections in paved areas will not be allowed without appropriate procedures to address health and safety and repair. A construction quality assurance plan shall detail pavement permeability testing procedures. Install phased active landfill gas controls including perforated pipes in gravel filled trenches connected to header pipes and a vacuum source. The perforated pipes and gravel bed would be located beneath the pavement. The phased active landfill gas controls will be installed continuously throughout developed areas, below pavement, open space and buildings. Quarterly monitoring with a hand held sensor would trigger repair of pavement cracks if methane concentrations above 500ppm were detected. Routine inspection of paved areas is required to identify and repair areas of pavement cracking or locations where required landfill cover may be compromised.	Pavement design considerations are discussed in Section 4.5 of the HWA Geotechnical Engineering Report, and Addendum 5 (HWA 2019a and 2019b). Paving plans and details are shown on Drawings PV1 through PV4, sheets 18 through 22. Penetration requirements are shown on Drawing LFG15. A Construction Quality Assurance (CQA) Plan with testing requirements for LFG barriers was previously provided and reviewed/approved by Ecology and is applicable to this phase of work (HWA/Herrera 2019). The LFG EDR describes improvements to the LFG system (Herrera 2019). Active gas controls installed during this phase of work will include five new LFG lines, associated condensate lines, improvements to the north and south blower facilities, and three new LFG knockout stations. LFG sub-headers A through E will run east to west with tie-ins to the Riverfront Boulevard header and the existing perimeter LFG system, respectively. Improvements are shown on Drawings LFG1 through LFG23, sheets 92 through 114.
Buildings		
Potential light structures with shallow foundations.	If design of structures can address seismic stability concerns, light structures with shallow foundations would be allowed.	Blower facility improvements will include shallow foundations for skid mounting equipment. The north blower facility improvement will include construction of a new concrete pad for mounting equipment, with shed cover. The south blower facility improvements will include a new backup generator installed on a concrete pad, and installation of a flow meter, with associated pipe supports on the existing blower facility.

Development Components	Environmental Requirements	City Review Comments and submittal reference (i.e., page, sheet #)
Buildings (continued)		
Heavy structures with pile supported foundations	Pile supported structures are anticipated at the Site. Either driven or drilled pile types may be installed, following implementation of the groundwater compliance monitoring program and completion of evaluation re: potential zones of pile-type restrictions. Piles to support structures would be installed through refuse, through the underlying clay and peat layers into bearing sands. Piling or foundations that penetrate the gas barrier layer shall be booted or sealed to the barrier layer. All areas of the Site are restricted to augercast type pile construction or equivalent. This determination will be made following additional shallow aquifer sampling and evaluation.	The sewer plan for the Phase 2 development is shown on Drawings SS1 through SS2, sheets 83 through 84. These sewer lines for the Phase 2 development will be grade-supported with flexible ball joint connections.
Potential basement or below grade parking areas. Gas controls beneath buildings	Excavation requirements are listed under "Construction Disruption" requirements above. Particular care should be given to design of utility and pavement connections at the interface of pile supported buildings and surrounding Site areas, where significant differential settlement is expected. Buildings will be protected by a geomembrane beneath the foundation slab that is booted and sealed around piles and utility penetrations. Phased active gas controls will be installed continuously below developed areas, including perforated extraction piping in gravel trenches, spaced a maximum of 100' on center. Below buildings, extraction piping would be installed in development fill or slab subgrade – above refuse. The extraction piping will be connected to header pipes, a vacuum source and a discharge location. A full-time continuous ground floor methane monitoring system will be installed in all buildings. Methane concentrations exceeding 1,000 ppm will automatically activate the building's HVAC system and notify operations personnel. Methane concentrations exceeding 10,000 ppm will activate audible alarms and trigger building evacuation. Monitoring with a hand held sensor would be used to identify any locations with methane exceeding 100ppm for repair. Temporary enclosures erected over pavement or open space areas will contain continuous methane monitors that would activate an alarm if triggered.	Basement or below grade parking areas are not applicable to this phase of work. No new field trailers are expected under this plan set. However, requirements are described in Special Safety Provisions on Drawing NT2.

Development Components	Environmental Requirements	City Review Comments and submittal reference (i.e., page, sheet #)
Open Space / Landscaping		
Landscaped areas around buildings and parking areas. Recreational use/park areas and trails.	Landscaped or open space areas will be constructed with a low permeable hydraulic barrier underlying clean soil established with vegetation to prevent erosion. Hydraulic barriers should obtain permeability similar to that of asphalt pavement. Institutional controls and property management procedures are required to prevent unauthorized digging and potential disturbance of hydraulic barrier. Subdrainage is required above the hydraulic barrier, to collect drainage above the barrier for off-site discharge. In landscaped areas where it is impracticable to connect with the storm water system for discharge, a drain may be placed in the hydraulic barrier to allow infiltration into the landfill, as long as it does not compromise gas collection system effectiveness. Phased active gas controls will be installed continuously below developed areas, including perforated extraction piping in gravel trenches, spaced a maximum of 100' on center. Below landscaped areas, extraction piping would be installed in development fill below the hydraulic barrier – above refuse. The extraction piping will be connected to header pipes, a vacuum source and a discharge location. Quarterly surface monitoring with a hand held sensor would be used to identify any locations with methane exceeding 500 ppm for repair. Fence posts shall either be finished above the underlying gas barrier or, if penetrating the gas barrier, be internally sealed and booted to the barrier layer to preclude intrusion of landfill gas. A Stormwater Pollution Prevention Plan and routine inspection of open space areas will be required to ensure cap integrity is not compromised by erosion.	Landscaped islands within the parking areas will be underlain by hot mix asphalt (HMA) and geomembrane liners. Landscaped areas surrounding the buildings will be underlain by LPSB. See Drawings L1.01 through L1.12, sheets 139 through 151. Subdrainage included in all landscaped areas, as shown on Drawings L5.00 through L5.12, sheets 189 through 201. No drains through the barrier are proposed. Landscaping site details are shown on Drawings L4.00 through L4.04, sheets 184 through 188. Quarterly surface monitoring: N/A. Fencing: N/A – No fence within final development areas. SWPPP provided. Inspection N/A.
Public Access		
Unlimited public access in developed areas.	Public will be allowed access to all developed areas of the Site, except controlled entry to confined spaces and maintenance corridors. Warning signage may be placed as appropriate. Landfill gas controls must be installed and operational in developed areas for public access.	Landfill gas control will be installed and operational in developed areas prior to allowing public access. This requirement will be met through the city inspection process prior to allowing public access.

Development Components	Environmental Requirements	City Review Comments and submittal reference (i.e., page, sheet #)
Public Access (cont.)		
Access restrictions to undeveloped areas.	Perimeter fencing with secured entries will restrict access to undeveloped portions of the Site.	Perimeter fencing to restrict access to any undeveloped portions of the landfill is shown on Drawings AP1 through AP3, sheets 5 through 8.

Additional Comments:

Documents included with this submittal reviewed for compliance include:

1. Design Drawings: Riverfront Commercial Investment, LLC; Everett Riverfront Development; Everett Riverfront Site Phase 1 and 2
2. HWA Geosciences Inc Addendum 5 to Geotechnical Engineering Reports; Everett Riverfront Development, Phase 1 and 2 (Letter dated November 5, 2019)
3. HWA Geosciences Inc. Plan Review Letter; Advanced Site Work (dated February 7, 2020)
4. Stormwater Pollution Prevention Plan (SWPPP) for Everett Riverfront Development – Mixed-Use Site and Boulevard Phased Development; Phase – Phase 1 and 2 Buildings and Parking Lots (dated 3/15/2019)

In addition, this plan set is supported by the following design documents that were previously provided to and reviewed by Ecology as attachments to the checklists for the Riverfront Boulevard, Advanced Site Work, and Phase 1 and 2 Advanced Site Work Plan Sets.

- Herrera Environmental Consultants, Inc. (Herrera). 2019. *Everett Riverfront Site Development Support, Environmental Control Requirements and Landfill Gas Collection System Engineering Design Report*. Everett, Washington. August 16.
- HWA Geosciences, Inc. (HWA) and Herrera Environmental Consultants (Herrera). 2019 Construction Quality Assurance Plan for Everett Riverfront Boulevard. Prepared for Riverfront Commercial Investments, LLC. August 7.
- HWA Geosciences, Inc. (HWA). 2019a, March 26. GEOTECHNICAL ENGINEERING REPORT Riverfront Boulevard, Everett, Washington
- HWA, 2019b, "Addendum 5 to Geotechnical Engineering Reports (Revised), Everett Riverfront Development, and Riverfront Boulevard". November 5.
- HWA, 2019c, "Addendum 4 to Geotechnical Engineering Reports, Everett Riverfront Development Phase 1, and Riverfront Boulevard", September 26.
- Perteet. 2019. Everett Riverfront Development Phase – River Boulevard Drainage Report. Submitted to the City of Everett. July.
- Shelter Holdings, LLC. 2019. *Stormwater Pollution Prevention Plan (SWPPP) for Everett Riverfront Development – Mixed-Use Site and Boulevard Phased Development; Phase – Phase 1 and 2 Buildings and Parking Lots.* March 15.
- Rose Environmental. 2019. "Riverfront Commercial Investment LLC Site Specific Health and Safety Plan." October 31.