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60 WASHINGTON AVENUE, SUITE 390 | BREMERTON, WA 98337 | P 360.377.0014

SENT VIA EMAIL

June 3, 2021
Parametrix No. 553-2377-121

Michael Bateman
City of Poulsbo

Re: Oslo Bay Apartments - Stormwater Review

Dear Michael:

Parametrix has reviewed the revised East Pond grading exhibit provided by the Applicant (Jeremy Febus of kpff) on May 18, 2021 for the project known as Oslo Bay Apartments. We also discussed the applicant's approach to placing the East detention pond near steep slopes during a virtual meeting on May 19, 2021 with the applicant, City, and other peer reviewers. See below for our comments on the discussed items.

Access and Stability Berm

Per Figure V-12.10 on page 977 of the 2019 Ecology manual the top width of the "berm" that shall surround all sides of the East Pond must be at least 6 feet wide and 12-15 feet wide if being used for access. The facility is mostly in a cut into the slope as configured in the most recent submittal. Consequently, there is not a clear stability or access berm location in the section. We recommend that a flat element be included in the section to provide the function of the berm for stability (6 feet) at the top elevation of the proposed facility. If the emergency overflow is to remain in its current location, the flat portion should be a minimum of 12 feet for access per the manual, and reasonable access around the facility should be provided if there is no structure at this location.

Setback from Steep Slopes

The requirements for stormwater facility setbacks are outlined in the 2019 Ecology manual. Per page 972 of the manual "All detention facilities are to be at least 50 feet from the top of any slope greater than 15%.". In our opinion, the latest grading sketch does not meet this setback requirement.

The edge of the 15% slope should be indicated on the plan. This appears to extend into the facility (it may be possible the entire slope is greater than 15 percent). The setback measurement (50 feet) should be made to the downstream toe of the facility berm (the stormwater facility as defined in the manual).

The facility is mostly in a cut into the slope as configured in the most recent submittal. Consequently, there is not a clear "toe of slope" for a facility berm from which to measure. We would interpret that the facility setback should be measured on the outer slope from the elevation of internal facility bottom. This would be reasonably representative of the intent expressed in the manual for embankments that contain water.

Page 972 of the manual also states the "A geotechnical analysis and report must be prepared addressing the potential impact of the pond on a slope steeper than 15%." We would recommend that a geotechnical engineer prepare this documentation regarding the proposed stability of the facility in operation with these section requirements and propose additional modifications if needed.

Geotechnical Analysis

Per page 967 of the 2019 Ecology manual "A geotechnical analysis and report must be prepared if located within 200 feet of the top of a slope steeper than 40%, or landslide hazard area. The scope of the geotechnical report should include the assessment of impoundment seepage on the stability of the natural slope where the pond will be located within the setback limits set forth in this (V-12) section." This facility as proposed is less than 200 feet from a 40 percent slope. A geotechnical analysis and report are required.

Emergency Spillway

Per page 969 of the 2019 Ecology manual, the applicant must "Armor the emergency overflow spillway with riprap in conformance with BMP C209: Outlet Protection. The spillway must be armored full width, beginning at a point midway across the berm embankment and extending downstream to where emergency overflows re-enter the conveyance system (see Figure V-12.10: Typical Detention Pond Sections)." Where an emergency overflow spillway would discharge to a slope steeper than 15%, consideration should be given to providing an emergency overflow structure in addition to the spillway.

The proposed overflow discharges to a slope greater than 15 percent. An emergency overflow structure should be used, or the slope will need to be armored to the "downstream conveyance system". In this project, if the downstream convey system is the channel on the slope, it must be assessed for stability in the potential overflow condition as there are potential flows not previous directed to this location. Also, the downstream conveyance system continues to the wetland or road right-of-way, so the channel would need to be armored, per the manual, the extent of the slope to the conveyance.

In summary, the following should be revised or provided:

- A minimum stability berm width of 6-feet at the top elevation of the facility
- A minimum 12-foot access to any structure (including emergency overflow) or minimum equipment access width for maintenance to all sides of the facility
- A 50-foot setback of the toe of the facility berm from a 15 percent slope
- A geotechnical analysis to assess stability of the facility in operation and assess seepage on slopes greater than 40 percent within 200-feet of the toe of the facility
- Suitable protection of the drainageway and slope downstream of the emergency overflow or an alternate strategy to include an emergency overflow structure

Sincerely,
PARAMETRIX

Paul Fendt, PE

cc: Project File