

Storm Water Management Simplified/Abbreviated Drainage Plan Report

Parcel 222502-3-067-2003

Bainbridge Island, WA

Date: 12-9-2020

Introduction:

This report was developed as an element of the City of Bainbridge Island's (COBI) Site Assessment Report (SAR) process in conjunction with the new development of a 4.93 acre parcel of undeveloped land located in central Bainbridge Island. Because this project accommodates only single family residences located outside a Critical Area, a Simplified Drainage Review is appropriate. The anticipated short plat residential subdivision action qualifies as a New Development. This development is strictly limited to the subdivision of the residentially zoned (R0.4) parcel into two qualifying lots (two lot short plat). There is neither associated construction nor civil improvements relative to this subdivision. A Stormwater and Surface Water Management Plan for the subdivision was filed and accepted by COBI Engineering in 2019. This Simplified Drainage Plan Report (dated 12-9-2020) expands on the original Drainage Plan Report dated 2-3-2019 relative to minimum development area assumptions under the state's 2014 Stormwater Management Manual for Western Washington and is being submitted in conjunction with the required Preliminary Plat Utilities Plan.

Parcel Profile:

The parcel, whose eastern property line is approximately 673 feet east of Sportsman Club Road, is zoned R-0.4. The property is entirely undeveloped with the exception of an approved private access road. Selectively logged approximately 20 years ago, the vegetative cover consists of alder and a mixture of low-growing brush, ferns, and blackberry bushes. A small number of conifer trees are present; most are located along the northern and eastern boundaries. Topographically the western half is largely flat with an average slope of 3%, while the eastern half has a gentle east: west slope averaging 8%. Accompanying PDF files (SAR80219) provide the 2 and 20 foot topographic contours as well as the canopy makeup and distribution. The U.S.D.A.'s Custom Soil Resource Report was also included, detailing the parcel's soil composition. Both soil types present – Harstine gravelly ashy sandy loam and Kapowsin gravelly ashy loam, are characterized as moderately well drained. The Soil Report states there is no frequency of either flooding or ponding on the property. The depth to any restrictive soil feature ranges between 20" and 39". The depth to the water table is between 11" and 37" depending on soil type. The availability for water storage in the soil profile is low, indicating the area is well drained.

The parcel has no streams, ponds or other water-related forms. There is no surface water. Similarly, there are no swales, gullies, etc. There are no tributaries flowing into the property and no surface groundwater flows out of the property. The property is not near any shorelines, ponds, streams, or other bodies of water. There is no visual evidence subsurface water flows penetrating the surface or passing beyond the parcel's boundaries.

Site Plan References:

The accompanying site plan and attachments provide a detailed description of the existing parcel and the proposed developed parcel. As illustrated, the parcel proximity reveals a low level of residential development within 150' of the subject parcel boundaries. The parcel is outside the City's water and sewer service areas. Similar to adjacent

properties, private well and septic systems will necessarily be installed, but by future owner(s). Underground electrical and telecommunication services should be located within the road's utility right of way. Per prevailing zoning, two residential lots exceeding 100,000 sq. ft. each can be created from the existing parcel. Neither the parcel nor the resulting two lots contain Critical Areas.

No civil improvements are planned by the applicant owner. Any subsequent development and related soil disturbance would be decided by subsequent owners. A conceptual Utilities Plan has been prepared reflecting presumptive minimum hard surface areas of 4,000 sq. ft. per lot consistent with state requirements. These mandated areas are allocated between notional driveway and roof residential structures. The Proposed Site Plan reflects 12,000 sq. ft. homesites for each lot containing the prospective structure and connected by the driveways to the private access road. While the actual nature and location of private water wells and septic systems are incumbent upon future developers, reasonable provisional sites for the water well as well as the primary and secondary septic systems are shown. Actual future on-site or adjacent development drainage impacts will depend upon the actions of subsequent owners.

Because the access road's parcel footprint (3,497 sq. ft.) exceeded the 800 sq. ft. and 2,000 sq. ft. hard surface thresholds, but is below the 7,000 limit, Stormwater Plan Minimum Requirements 1-5 were addressed under the 2019 Drainage Plan and are addressed again in this Drainage Plan.

Site Improvement Plan

The Base Map for the Site Improvement Plan is provided by the attached Excel file, (Project Site Plan @ 10-30-2020.xlsx) and is augmented by several PDF file illustrations depicting topography and plant cover. Both Existing and Proposed Site Plans are worksheets within the Excel file. The primary differences between the two are delineation of (1) the tentative lot-specific homesites and (2) the committed ARPA/Secondary Natural Area set-asides. Property boundaries are shown and the private access road easement are shown. Provisional locations of septic and well facilities also appear on the attached PDF files. Soil log tests were performed and provided to COBI Development Engineering in 2019.

Aquifer Recharge Protection Areas (ARPA) and Secondary Natural Areas (SNAs) appear on the Proposed Site Plan and satisfy the 65% minimum area requirement consistent with ARPA standards. These SNAs bisect the parcel in the middle, running north:south while also occupying the property's perimeter. Qualifying Perimeter Buffers are included in the SNAs. The access road easement remains unchanged between existing and proposed site plans.

The approximate location of neighboring off-site well and septic installations is noted on the Existing Site Plan. Information relating to its installation was included in the original SAR's (SAR80219) attachments. The relevant adjoining parcel is 222502-3-080-2006 (Carleton). As stated above, the site's topography includes a gentle slope from west to east, continuing through adjacent properties.

There are no points of stormwater surface discharge from or into the subject parcel. Flow direction arrows mimic the gentle slope. As there are no tributary sources of groundwater to the parcel, precipitation is the only water source and it is captured by the foliage and is absorbed into the soil. Any subsurface groundwater flows are deemed to follow the flow direction arrows on the Proposed Site Plan and correlate to the gentle slope eastward. There is no evidence of such flows breaching the surface on this or adjacent parcels. There are no surface flows on the subject or adjacent parcels.

Setbacks are deemed to be included in the SNAs. Any clearing limits unrelated to the access road will be determined by subsequent owners/developers. Similarly, there are no present or anticipated groundwater conveyance facilities. Access road construction featured sediment control in the form of straw berms. Soil disturbance was limited to

construction of the roadbed and drainage ditch. The road was inspected and approved by COBI in 2019. Consistent with Minimum Requirement #5 for BMP for infiltration, dispersal, and retention of stormwater runoff on-site, the use of clean, angular ¾ minus gravel for surfacing the road contributes to adequate infiltration and drainage. This is consistent with Fig. V 5.3.5 relative to BMP T5.15 in the Washington state 2014 SWMMWW.

Stormwater Management Plan

This project requires adherence to Stormwater Minimum Requirements (MR) #1 through #5. They are addressed as follows:

MR#1: Preparation of Stormwater Site Plan

This requirement is addressed by virtue of the above Site Improvement Plan and associated Site Plan attachments. The scope of this Stormwater Site Plan is dictated by applicability of Minimum Requirements #1-#5. The steps taken in developing this particular Stormwater Site Plan include:

1. Site Analysis: Collect and Analyze Information on Existing Conditions
2. Prepare a Preliminary Development Layout and Off-site Analysis
3. Determine Applicable Minimum Requirements
4. Prepare a Construction Stormwater Pollution Prevention Plan/Permanent Stormwater Control Plan
5. Complete the Stormwater Site Plan
6. Check compliance with all applicable Minimum Requirements

Site Analysis:

Existing public and private development is portrayed via the Existing Site Plan (Excel file) and various attached aerial views provided in attached PDF files. There is minimal development adjacent to the subject parcel, the closest being on parcel #222502-3-080-2006. Underground utilities (power, communication) run parallel to the private road easement and would be extended to serve the subject property. There are no minor or major hydrologic features on the subject parcel other than that shown on the 2' and 20' PDF contour map files attached. Absent are seeps, springs, closed depression areas, and drainage swales. Similarly, there are no streams, wetlands, wetland buffers, or water bodies on or near the subject parcel. Site visits during winter months reveal no undocumented surface seeps or other indicators of near surface ground water. There are no flood hazard areas on or adjacent to the site. There are no geologic hazards or related buffer requirements on the site. By virtue of being zoned R-0.4 the site is an Aquifer Recharge Protection Area. Topographic contour PDF map files included in the submittal show for both two and five foot contours an average slope of 6%, with the western half having from zero to 3% slope, while the eastern half has a slope averaging 9%. The soils report is provided via the aforementioned USDA's Custom Soil Resource Report. The area is well drained. Vegetation protection is promoted via the establishment of Secondary Natural Areas indicated on the Proposed Site Map. These combined SNAs exceed 65% of the total site's area.

Preliminary Development Layout:

The Site Assessment Review (SAR80219) reflects an installed private access road in support of subdivision consistent with R-0.4 zoning. No other development/soil disturbance will be undertaken by the current owner. The location and design of buildings, driveways, septic and water well facilities are conceptual and provisional, to be finalized by subsequent lot owners. The Washington state 2014 SWMMWW requires presumption of a

minimum of 4,000 sq. ft. of hard surface for each lot. Provisional roof and driveway surfaces satisfying this spatial requirement are shown on the Proposed Site Plan worksheet. No building permits are sought for this development. Consequently, landscaping and pertinent stormwater management facilities and application of related Best Management Practices are not addressed in this Site Analysis.

Off-Site Analysis:

As less than 5,000 sq. ft. of hard surface area per lot is required for conceptual consideration, no off-site analysis is performed. Similarly, conversion of vegetation to land or landscaped areas or the conversion of forested area to pasture are not within the scope of this project.

Determine Applicable Minimum Requirements:

Minimum Requirements #1 through #5 apply to this project. This was determined using the flowcharts included on the SAR Reference page 1, Figure 1 – Flow Chart for New Development.

Preparation of a Permanent Stormwater Control Plan:

In the absence of actual future residential subdivision activity, a Permanent Stormwater Control Plan would be premature to undertake at this point. Unknown are the location, type, and extent of actual future hard surfaces, pervious surface areas, buildings, landscaping, etc.

Preparation of a Construction Stormwater Pollution Prevention Plan:

Because the access road resulted in the addition of approximately 3,500 square feet of hard surface area to the parcel, the project exceeds the 2,000 sq. ft. threshold, concern regarding potential pollution problems must be addressed for the proposed project. This is accomplished in the following MR#2 Construction Stormwater Pollution Plan (CSWPP).

Completion of the Stormwater Site Plan:

The Stormwater Site Plan is complete by virtue of there being a general description of the project on both existing and proposed bases, detailed tables of the site area and road improvement, and a description of both pre- and post-developed stormwater runoff conditions, particularly given the limited amount of development reflected under the Site Assessment Review. There are no site parameters requiring special attention. The natural drainage system pre- and post-development will not be materially impaired and will not adversely impact adjacent properties. The schematics and aerial maps provided clearly locate the subject property and show the route of stormwater flow offsite. There are no significant geographic features or sensitive/critical areas to contend with. Similarly, there are no drainage basins requiring identification and there are no stormwater drainage flows into or from the subject property. There are no discharge points serving existing, construction or future flows. And, in the absence of any proposed or necessary formal storm drainage system, neither proposed flow control nor treatment facility are provided. Soil characteristics compiled by the USDA are adequately described and are compatible with the type of zoned development anticipated.

Compliance with Applicable Minimum Requirements MRs #2-5:

MR#2: Stormwater Pollution Prevention Plan (SWPPP)/Construction Storm Water Pollution Plan (CSWPP) -- (Form B109d)

This requirement addresses management of construction site activity to prevent erosion and sediment discharge. The only soil disturbance occurred in conjunction with clearing vegetation and roadbed preparation for the private access road extension. Given the gently sloped nature of the road easement, sediment flow was minimal, if not nonexistent. Soil disturbance was limited to the top few inches to facilitate leveling of the road bed and creation of the parallel drainage ditch. The absence of streams or any impoundments on the easement minimizes potential sediment creation. Shallow soil disturbance precludes risk of penetrating subterranean groundwater. Berms perpendicular to the roadbed were constructed at the road entrance and midway to divert any surface water sediment and allow for its absorption on-site.

The CSWPP requires inclusion of 13 elements. These will be addressed as follows. A clearing permit for extension of the access road was issued. Very little grading was required by virtue of the absence of depression, ravines, etc. along the gently sloped easement. The entire site neither includes nor is it adjacent to critical or sensitive areas or buffers, or native growth protection easements. Secondary Natural Areas are marked on the Site Plan. There are no stormwater surface discharges from the property. No soil disturbances beyond access road construction has or will occur under current ownership. The access road does not increase likelihood of stormwater releases from the parcel and beyond its boundaries.

The above-mentioned construction plan elements include:

#1: Preserve vegetation and mark clearing limits.

As the only soil disturbance was restricted to the road easement and emergency turnaround, the only vegetation removed was along the surface of the roadway and ditches. The road was surveyed and the road contractor marked the dimensions of the area to be cleared of vegetation. No other vegetation was disturbed.

#2 Establish Construction Access

The existing private road is the only access point from and to Sportsman Club Road. This point is stabilized. The gravel road from the point of access to the parcel minimizes any tracking of sediment onto public roads.

#3: Control flow rates

There is no evidence of stormwater runoff from the site. There are no tributaries to or from the site. There is no surface water containment and hence there are no potential releases. There are no channels present to convey surface water off the site. Road construction did not induce site runoff.

#4: Install Sediment Controls

Soil erosion caused by road construction is deemed to be virtually nonexistent. Absorptive soil plus ditch drainage should minimize and counteract any flows and hence preclude erosion. Pollutants present during road construction were minimized and removed. Grading activity on the road easement was minimal due to the topography. Sediment discharge from the site precluded using straw berms to capture and redirect any flow

from the road and allow for infiltration. Site soil characteristics encourage good drainage. There are no streams on the property; hence no interference with salmonids. No outlet structures are required.

#5: Stabilize Soils

No soil erosion resulted from access road construction. The road covering is permeable rock and gravel, allowing surface stormwater to be readily absorbed. The parallel drainage ditch captures and absorbs any runoff from the road; it is sloped to promote drainage. There will not be stormwater releases on the site's surface, so volume and velocity are not issues. There are no stormwater outlets and no streams on the parcel, so there are no erosion-related concerns. The road was completed over a very short time period, thus minimizing the risk of erosion. Similarly, there were no soil stockpiles contributing to erosion and sediment runoff concerns. Only the soil on the road easement was disturbed and then only to the extent needed to create the roadbed and drainage ditch; this was minimal and confined to a shallow depth. There are no steep slopes present, thus none to be disturbed. Soil compaction was restricted to the roadbed and no unnecessary topsoil disturbance occurred.

#6: Protect Slopes

Slopes are gentle ranging from 0% to 3% on the western half and approximately 9% on the eastern half of the parcel. Consequently protective erosion measures beyond temporary and permanent seeding are not deemed required. Width of the planned road bed was minimized, which reduces soil disturbance. No excavation other than what was required for roadbed construction occurred.

#7: Protect Drain Inlets

There are no drain inlets on the property, hence no related protection measures are necessary.

#8: Stabilize Channels and Outlets

There are neither channels nor outlets on the parcel. There are no tributary areas on or immediately beyond the project site. No stabilization measures are necessary.

#9: Control Pollutants

No pollutant discharges resulted from access road construction. There were neither waste construction materials nor demolition materials on site. The road contractor guarded against vandalism and any release of pollutants. Similarly, the contractor restricted the release of vehicle wash wastewater. There was no use or release of fertilizers or pesticides on the site. As there is no surface stormwater runoff, pH sources are not a concern, particularly since pH products were not present on-site.

#10: Control Dewatering

There was neither dewatering activity nor discharges of water on or from the site.

#11: Maintain Best Management Practices (BMP)

BMPs will be maintained to ensure continued functional performance. Temporary BMPs, if present were removed following site stabilization.

#12: Manage the Project

The construction window was very short – a few days or a week for both clearing and road construction. The property owner monitored construction activity via the contractor. The absence of

surface stormwater flows and minimal soil disturbance in turn reduced potential erosion and stormwater pollution release concerns. Any stormwater pollution prevention issues were addressed satisfactorily.

#13: Protect Low Impact Development (LID) Best Management Practices (BMPs)

No bioretention or rain gardens were used in the project, so related action is not necessary. Subsequent lot owners may opt for these measures and thus be required to undertake such practices. There was no visible erosion. Sediment release was prevented. The applicant/owner consulted with the contractor re stormwater management requirements. Consistent with the SWMMWW, Vol. V, BMP T5.15: Permeable Pavements and related Figure 5.3.5, the wearing layer for driveways is presumed to follow the recommendation for use clean, angular, crushed $\frac{3}{4}$ minus gravel (no fines) to a depth of 2". This will promote good infiltration and drainage of stormwater to lower soil levels.

MR #3: Source Control of Pollution

No pollutants were released into the surface stormwater, so corrective measures during road construction were not needed.

MR#4: Preservation of Natural Drainage System Outfalls

During the course of access road construction natural drainage patterns were observed and maintained. Any Project discharges were arranged to occur at the natural location to the maximum extent practicable. No offsite discharges occurred. No new drainage points were created by the project. Had a project-related discharge occurred at an adjacent downgrade property line, measures would have been taken to prevent impacts to adjacent properties.

MR#5: On-Site Stormwater Management

The subject project is a "small project" by definition. It has the option of using either (1) on-site stormwater management Best Management Practices (BMPs) from List 1, or (2) demonstrate compliance with Low Impact Development Performance Standards. The project must employ on-site stormwater management BMPs consistent with stated thresholds and standards lists to infiltrate, disperse, and retain stormwater runoff on-site without causing flooding or erosion impacts.

Regarding List#1:

There will be no lawn or landscaping. Roofs on each lot are entirely conceptual and are assumed to rely upon full dispersion stormwater management. For Other Hard Surfaces, full dispersion and sheet dispersion are appropriate. Residential driveways are deemed to be constructed of permeable materials. The access road is deemed permeable.

Dispersion BMPs disperse runoff over vegetated pervious areas to provide flow control. Full dispersion can be utilized on impervious surfaces and cleared areas of development sites that protect at least 65% of the site in a forest or native condition. Sheet flow dispersion can be used for flat or moderately sloping (< 15%) surfaces. Sheet Flow Dispersion BMP can be used for any impervious or pervious surface that is graded so as to avoid concentrating flows. The Tree Retention BMP is also employed to support stormwater management.

MR#5

On-site stormwater management's LID performance standard is satisfied at this project by BMPs Full and Sheet Flow Dispersion methods and by Tree Retention. The intent is to comply with Volume V of the 2014 SWMMWW BMP T5.15 re Permeable Pavement by utilizing clean, angular cut, $\frac{3}{4}$ minus (no fines) gravel for the wearing surface to a depth of 2" to promote good infiltration and drainage to lower level soils.

Fln: BBI/Stormwater Management/Drainage Report Final @ 12-9-2020.docx

@ 12-9-2020 @ 1630