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EVANS CREEK PRESERVE SCHEMATIC DESIGN REPORT

**Prepared for:
City of Sammamish Park and Recreation**

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**In association with:
The Watershed Company
HWA Geotechnical Engineering
Berger ABAM Engineers**

In fall of 2007, the City of Sammamish completed the Evans Creek Preserve Long Term Strategy Plan (LTS) for the site, and in May 2008 began the Schematic Design for the Preserve. Three public meetings were held during the LTS process and several City Council/Parks Commission meetings.

The Evans Creek Preserve site is 179 acres and is located in unincorporated King County, abutting the City of Sammamish on its south side, and Highway 202 on its north side. It is split by 224th Ave NE. A 26.4-acre site owned by King County abuts the west side of the property and is being considered for purchase by the City of Sammamish. A pedestrian trail connection is proposed from the existing overlook adjacent to Sahalee Way NE that connects into the Preserve trail system.

The Evans Creek Preserve Schematic Design includes the following improvements:

- Preserve vehicular access via 224th Ave. NE
- Parking lot with maximum 40 stalls -to be constructed in phases
- A networks of pedestrian trails/boardwalks throughout the preserve
- View decks/ viewpoints on hillside, at creek, and at wetlands
- Future equestrian trail when a trail connection is made to the south
- Group picnic shelter and individual picnic tables
- Restroom facilities
- Tool shed for use by Parks Department and during volunteer restoration efforts
- Enhanced wildlife habitat with opportunities for interpretive information
- Informal play meadow
- Small natural play area adjacent to the picnic shelter

The Schematic plan includes plans, sections, geotechnical review, structural engineering for one pedestrian bridge, stormwater engineering design, a wetland and stream study, SEPA documentation, an interpretive concept plan, and a planning level cost estimate for the project. Greater detail is provided for a 20-acre survey area encompassing the primary use area of the preserve. These associated documents are sited at the end of this design report.

Vehicular Access and Parking. Access to the Preserve is via 224th Ave NE, passing through a small 10-car parking lot, then merging onto the alignment of an existing farm access road, crossing Evans Creek on a replacement vehicular bridge, accessing a maximum 40-car parking lot, and exiting the site via 224th Ave NE. The one-way access road is 12' wide with crushed rock surfacing, and 224th Ave. NE is widened to a 20-foot wide paved roadway with 4-foot gravel shoulders. A drop off zone is provided at the entry plaza adequate for two cars or for one school bus. This allows convenient access to the group picnic shelter.

Pedestrian Trails and Boardwalks. A system of pedestrian trails is proposed with a trail hierarchy that includes handicapped accessible trails, rustic trails and a future mixed use trail for equestrian and pedestrian use. During the LTS, the City determined that mountain bike use at the Preserve would be an inappropriate use of the site, as it includes sensitive steep slopes, sensitive wetlands and streams, and the primary purpose of the Preserve is to provide opportunities for wildlife watching, environmental education, and preservation and restoration of high quality wildlife habitat. The Preserve is also inappropriate for extensive equestrian use due to the sensitive nature of the site and the limited length of trail (maximum 1.25 miles) on gentle gradient areas. Bicycle racks are proposed at the entry plaza area to encourage bicycle use to travel to the Preserve.

A primary trail loop, handicapped accessible, will be a 6' wide, crushed rock trail. At the lower level of the site, crushed rock, handicapped accessible trails will be 4' wide with bridges and boardwalks typically of equal width for stream and wetland crossings. Signs will indicate where the visitor is leaving the designated ADA trails. A hierarchy of trails may be created with signs indicating handicapped accessible, moderate difficulty, and high difficulty to allow visitors to individually assess their abilities. Rustic trails will be located on the steep slopes of the southern portion of the site and will be 2' wide with either crushed rock surfacing or a combination of native mineral soils and (permeable) crushed rock surfacing. Trail construction on steep slopes requires minimizing clearing and control of subsurface drainage where groundwater is anticipated or encountered. (DDES) Review by a geotechnical engineer during trail design will be required to ensure that seeps are avoided or accommodated and that a geomorphic analysis guides trail siting. Steep slope critical areas and landslide hazard areas are likely present on the site and should be identified and located more accurately by a geotechnical engineer.

Boardwalk crossings over wetlands will be 4'-6' wide wooden boardwalks with pin-pile footings to avoid wetland impacts. Boardwalk widths will match trail sizes. Viewpoints located in wetlands will be view decks that are also constructed with pin-pile footings.

Pedestrian Bridges. A 6' wide by 35' long pedestrian bridge is proposed downstream of the future vehicular bridge across Evans Creek. The pedestrian bridge provides a fully accessible crossing of the creek as a part of the primary pedestrian entry path to the Preserve. The proposed

bridge is a steel truss bridge constructed of weathering steel and likely supported by a deep concrete foundation. (A number of bridge companies construct pre-engineered bridges of this type, including Contech Construction Products Inc. and Excel Bridge Mfg. Co.) The pedestrian bridge deck will be at approximately elevation 110.5 ft, with a bottom chord elevation of 109.5, in order to allow a 2 foot freeboard above the FEMA floodway level (BFE: 107.5' NAVD88). The safety railing of the steel bridge serves as the pedestrian railing and meets code requirements of openings less than 4". A second pedestrian bridge (approx. 4' x 35') crossing Evans Creek is proposed to be located approximately 50' downstream of the primary pedestrian access path and pedestrian bridge crossing. (See Geotechnical Investigation and Pedestrian Bridge Schematic Design Plan.)

Future Equestrian Trail. A potential mixed use equestrian and pedestrian 10'-wide crushed rock trail is proposed starting at the parking lot, following along the west side of 224th and then extending to the southeast edge of the property. This trail would be developed if a public trail is created in the future along the existing Williams gas line easement to the southeast of the Preserve. Two potential horse trailer parking spots could be located at the east end of the lower parking lot.

Group Picnic Shelter and Tables. A picnic shelter is proposed in close proximity to the lower parking lot for use as a gathering space for school groups and for renting out to the public. The picnic shelter will be approximately 720 SF size with 6 large picnic tables, accommodating 48 people. It is located in the informal play meadow with views to the east to the Cascades and across the meadow to the west. Three individual picnic tables on small concrete pads are located in a grouping at the northwest end of the play meadow. Each table will accommodate 4 people. Picnic shelter height and exterior building materials have not yet been determined, but should be compatible with the rustic character of a preserve and could reflect the historic agricultural use of the site by developing designs that recall the farm architecture typical of the area.

Restroom Facilities. A temporary sani-can with enclosure is proposed at the upper parking lot. The sani-can enclosure will likely be a simple cedar slatted structure similar to the one used at the City's Beaver Lake Preserve, or alternatively could be designed with a gable roof to match the character of the rustic restroom and picnic shelter. This sani-can would be removed after construction of a restroom at the lower parking lot. The proposed restroom has not been designed, but would likely include one men's and one women's and a small maintenance storage space. The restroom would require installation of a septic system with drain field sized to serve approximately 225 people (estimated peak use). Restroom height and exterior building materials have not yet been determined, but should be compatible with the rustic character of a preserve. The restroom roof could be designed with a green roof to showcase this type of sustainable design. Although the site includes areas of category 1 and 2 critical aquifer recharge areas, this "classification will not impact the design requirements for on-site sewage disposal." (KCDDDES Geotechnical Meeting Notes, by Todd Hurley, Aug. 2007)

Tool Shed. A tool shed is proposed in the vicinity of the upper parking lot. This tool shed would be for use by City of Sammamish Parks Department maintenance staff, in addition to storage of materials and tools for use during community volunteer restoration events. The proposed tool

shed will be approximately 12' x 20' with a 10' wide garage door. Vehicular access to the shed is required and is accommodated at the upper parking lot in the Schematic Design Plan.

Sustainable Design Showcases. In keeping with the intent of the Preserve as a place for education about the environment, elements that showcase sustainable design and environmentally sound stewardship are appropriate. Small structures such as the entry kiosk, tool shed, or restroom have potential as green roof technology showcases. The stormwater management techniques employed at the site include a rain garden and dispersion trenches that utilize large areas of native vegetation to filter and infiltrate stormwater. Potential interpretive signs at these elements could tell the story of sustainable design, construction, and function.

Wildlife Habitat Enhancement. Invasive non-native plant species control is proposed at wetlands, forest edges, roadside and residential/Preserve interface. Non-native species found on the site include Himalayan blackberry, evergreen blackberry, reed canarygrass, climbing nightshade, and a pocket of Japanese knotweed in the vicinity of the Evans Creek culvert at 224th Street. As the knotweed is located close to Evans Creek, it is critical that this very aggressive weed is eliminated in order to prevent further spreading via water-borne seeds.

Habitat diversification is proposed to increase habitat both for native plant species and for associated wildlife. Development of several ephemeral pools within low quality wetlands is proposed to increase wetland plant diversity and improve amphibian habitat. Existing clearings and forest edges are ideal for enhancement with native shrubs and herbaceous plants that attract butterflies, in addition to native berry shrubs for winter bird foraging. Forest edges are also ideal for placement of songbird nest boxes, bat boxes, snags for cavity nesters, and stick bundles for small animal refuge. Enhancement of pollinator habitat will be accomplished incidentally to other enhancement efforts through the planting of a diversity of native flowering plants. Refer to the Evans Creek Preserve Schematic Plan for proposed enhancement areas and potential mitigation areas. Additional information related to potential impacts and mitigation is identified in the "Evans Creek Preserve Wetland and Stream Study".

Fisheries habitat enhancement is proposed at Evans Creek. A stream study by a fisheries biologist will be required to design specific stream enhancements for potential spawning and salmon rearing habitat. General recommendations were made during the development of the Long Term Strategy (LTS), as follows: "An increased abundance of large woody objects, including stumps and logs, would also be beneficial for in-stream habitat along Evans Creek. On the Preserve site, Evans Creek generally has little in-stream woody debris due to a long-term lack of large trees along its banks. As a result, its in-stream habitat lacks complexity. However, the low-energy character of Evans Creek as it courses through the Preserve lends itself to the placement of much-needed wood in the creek without a lot of supporting features that might include grading and/or rock placement. While placement of this wood would involve the use of large equipment, it could be done with little or no grading or fill, which would simplify permitting considerably." Refer to "Evans Creek Preserve Site Analysis Memo", Nov. 27, 2007, revised May 6, 2008 for further recommendations related to fisheries habitat enhancement.

A salmon rearing habitat area is proposed. Creation of a pond within existing wetland B is proposed, including the re-routing of two small tributary streams flowing through the area. The

tributary streams appear to have been straightened, likely during earlier agricultural use at the site, and could be redirected into the proposed pond prior to connection via a new tributary to Evans Creek. It may be possible to redirect stream flow through the use of 2 or 3 weirs, bringing stream flow into new, meandering streams connecting to the pond. This would likely provide winter habitat for rearing Coho Salmon and Cutthroat Trout.

Forest restoration and enhancement is proposed for improved cavity nester habitat and long term forest health. The forest located at the furthest southeast corner of the site is an ideal location for a forest restoration demonstration area as it contains a dense stand of very even-aged conifers. With the assistance of an arborist, trees that may be infected with root rot or other diseases could be selectively removed, the stand could generally be thinned to promote growth of larger, healthier trees, some trees could be girdled to create snags, mimicking natural ancient forest characteristics and providing more cavity nester habitat, and a greater diversity of tree species could be added, such as planting Western Red Cedar, Western Hemlock, and Spruce. Interpretive signs could describe the restoration efforts underway. These forest restoration measures should be implemented over the full extent of the Preserve as the forest is largely second-growth impacted by clear-cutting, likely during the early 20th Century.

Refer to the Schematic Plan for the location of habitat enhancements, potential mitigation areas, and to the associated wetland and stream study for additional enhancement and mitigation opportunities.

Educational Interpretive Signs. A series of up to 15 interpretive signs is proposed along the preserve trail system to provide information about natural systems, wildlife and habitat. Refer to the associated memo for the interpretive plan concept and map. Interpretive sign topics include: wetland ecology, forest ecosystems, aquatic habitat, Evans Creek basin and watershed, Cascade Mountains, bird life, amphibians, wildlife, stewardship, habitat restoration, invasive and noxious weeds, and sustainable design showcase elements such as green roof design, rain gardens, and stormwater dispersion trenches.

Informal Play Meadow. The existing pasture area to the north and west of the group picnic shelter will be mowed frequently during the spring, summer, and fall months in order to allow it to be used as a play area for informal ball games or throw Frisbees, etc.

Natural Play Area. A children's play area is proposed adjacent to the picnic shelter that would provide children with natural elements to play on, over, and around. Logs, boulders of various sizes, stepping stones, balancing rails, nurse logs, climbing webs, and stepped log rounds are some of the possibilities. The play elements can be placed in engineered wood fiber fall surfacing where important for child safety, while smaller logs and rocks for sitting on can be located in planting areas. Nature play is an opportunity to educate and engage children with the natural environment found at the preserve, while providing fun activities that promote good health.

Grading. The proposed site grading balances cut and fill at the site. No fill in delineated wetlands is proposed. Boardwalks built with pin-pile foundations are proposed to eliminate the need for fill at wetland trail crossings, thereby avoiding a requirement for a Corps of Engineers

permit. Proposed landscape berms adjacent to the lower parking area soften views of the parking lot and cars. Fill will be required at the bridge approaches and will be imported aggregate to meet engineering requirements for roadway and trail foundations. Fill at bridge abutments and approaches will be above the FEMA floodway elevation (107.5' and 107.7' NAVD '88).

As part of the long-term restoration and habitat enhancement goals for the preserve, excavation is proposed at several locations to increase the diversity of hydroperiods within existing wetlands, thereby increasing the variety of habitat niches for birds, amphibians, and fish. Excavated material will be removed from the site or deposited in upland areas where landscape berms could be created. Incidental fill in wetlands may occur during excavation for wetland pools. Care will be taken to place excavated soils where appropriate for habitat enhancement. Refer to the fisheries and amphibian enhancement section of this report for further description of proposed wetland ponds. A 404 Clean Water Act permit from the U.S. Army Corps of Engineers will likely be required for the proposed wetland enhancements.

Energy Use/ Lighting. Currently, no parking lot or trail lighting is proposed at the Preserve. The restroom building at the lower parking lot will utilize skylights in addition to push-button electrical lighting, or similar energy-saving electrical lighting. No lighting is proposed for the sani-can or picnic shelter.

Energy Conservation Measures. The Preserve will only be open from dawn to dusk, thereby eliminating the need for lighting at trails or parking lots.

Impervious Surfaces. All proposed site vehicular paving will be constructed using impervious surfacing. The upper and lower parking lots and one-way entry drive will be crushed rock surfacing, and the improved 224th Street will be asphalt surfacing. To ease long term maintenance at the site, the City may choose to add asphalt surfacing to the crushed rock loop drive and parking areas. Permeable paving was considered for the site, but due to the nature of the existing soils and drainage limitations, the only area where infiltration is an option is at the upper parking lot area. A rain garden is proposed for managing stormwater at the upper parking lot and permeable paving could be added there. The remaining paved areas are located over site soils containing too much silt to be suitable for infiltration. Stormwater management for vehicular circulation at the lower parking lot is proposed through the installation of a series of dispersion trenches. Refer to the associated "Stormwater Plan and Summary Report".

Public Services Required. The lower parking lot, restroom and picnic area will allow fire department access via a 12-foot wide crushed rock entry road and 20-foot wide asphalt 224th exit road. Fire truck access is available to the upper parking lot also, but is not required. (KCDDDES Meeting Notes, Aug. 2007) Periodic police surveillance will be required at the site, primarily in the lower parking lot area where higher use is expected. Police can easily access the site via the loop drive to the lower parking lot (as indicated above for fire truck access).

Utilities. Refer to "Evans Creek Preserve Site Analysis Memo", Nov. 27, 2007, revised May 6, 2008 and to the SEPA checklist for information regarding utilities available at the site.

Vegetation Management. The management efforts at the Preserve will be split between City of Sammamish municipal management and volunteer efforts led by the City. Vegetation management will include control of invasive, non-native plants, selective thinning in dense forest stands to promote forest health and stand diversity, edge-mowing of designated open meadows in order to maintain these as open space, and removal of alders invading marsh areas. These select open meadows and open marshes intended to remain as open space are identified in the Schematic Plan (areas that are neither existing forest nor proposed shrub thicket or forest/shrub restoration areas). Vegetation management will also include planting of native shrubs and trees to enhance stream and wetland buffers, create view buffers to surrounding residences, and reconnect fragmented tree groves to more extensive forest areas.

Maintenance at the site should adhere to the NE Sammamish Sewer and Water District's aquifer protection plan's limitations on using fertilizers near the well fields. Fertilizer may be beneficial at the time of planting, but as the site will be planted primarily with native plants, little need for fertilizers is anticipated. There are several wells located on the site, one of which was located by survey within the 20-acre area and includes a 100' radius buffer. Two more wells are located on the preserve, but their locations are unknown.

Stream and Wetland Buffer Impacts and Mitigation. The Schematic Plan includes wetland and stream information from a number of available sources: King County GIS data, The Watershed Company's (TWC) wetland delineation within the 20-acre survey area, and TWC's wetland delineation along the proposed "outer loop trail" which was located with a GPS unit. These three sources of information were merged on the Schematic Plan in order to illustrate the best available information related to on site streams and wetlands.

The regulatory buffers identified by TWC were extrapolated to extend along the wetlands and streams shown only on the GIS information. This was done to provide the City with a best estimate of the location of all buffers on site and in order to provide an estimate of the amount of impacts and required buffer mitigation.

The TWC Wetland and Stream Study identifies approximately 85,872 square feet of wetland and stream buffer impacts resulting from construction of the proposed preserve facilities within the 20-acre survey area and including the "outer-loop trail". In addition to this there are 19,975 lineal feet of trail proposed that are outside of the currently delineated areas. These trails will be between 2' and 4' wide and will impact an additional 59,925 SF of the site. It is estimated that roughly 80% of this square footage will be within stream or wetland buffers, totaling an additional 47,940 square feet of potential buffer impact. The total estimated buffer impact is 133,812 SF and will need to be offset with an equal amount of buffer mitigation. There are many areas on site where invasive plants, such as Himalayan blackberry and reed canarygrass could be removed and replaced with native plants. An area of approximately 134,000 SF is identified on the Schematic Plan to indicate potential mitigation areas.

Transportation. The Preserve will have an upper parking lot for up to 10 cars and a lower parking lot for up to 40 cars, two future horse trailer parking stalls, and a load and unload zone adjacent to the picnic shelter and plaza. The upper parking lot is intended to be constructed in

the first phase of the project in order to provide access into the site prior to construction of a vehicular bridge across Evans Creek. The full build-out of the Preserve will have no more than 40 parking stalls, split between the upper and lower parking lots. Construction of the lower parking lot is important in order to improve handicapped accessibility to the site, in addition to improving access for school groups, and public access to the proposed picnic areas.

Refer to “The Evans Creek Preserve Traffic Study” completed for the Evans Creek Preserve Long Term Strategy by David Evans and Associates, April 2008.

Vehicular bridge: A 12 foot x 28 foot long vehicular bridge will be constructed to replace an existing 25 foot concrete bridge. The vehicular bridge deck will be at approximately elevation 110.7 ft, with a bottom chord elevation of 109.7, in order to allow a 2-foot freeboard above the FEMA floodway level (Base Flood Elevation (BFE): 107.7 NAVD88). Existing alluvial soils in the vicinity of the future vehicular bridge will necessitate a deep foundation for the bridge. (See Geotechnical Report.)

Updated Phasing Plan:

The project will occur in phases. It is our understanding that the City of Sammamish has a budget of approximately \$500,000 - \$600,000 to implement Phase 1 at Evans Creek Preserve. The Phase 1 area will include construction of a small upper parking lot (10 spaces) with entry sign, trail adjacent to the existing driveway, pedestrian bridge crossing Evans Creek Preserve (independent of the old farm bridge), closing of the existing farm bridge with a fence (while maintaining it in place), construction of a small trail loop around the meadow and in the vicinity of the future lower parking lot, installation of a sani-can enclosure (at upper lot), a larger trail loop which would be constructed by the WTA, demolition of existing houses and out-buildings, and mitigation for wetland and stream buffer impacts. The schematic plan will provide more detailed information for the Phase 1 area than for the remainder of the Preserve, where only trail alignments will be refined for future WTA construction.

A phasing plan has been developed that shows development of the site over time. The phasing plan is provided to give current and future decision makers information about the elements of the long-term strategy so that phases can be identified and adjusted over time. It is expected that the actual phases will be refined during each year’s budget planning process and during grant application development. Some repackaging of phasing may be required to reflect future needs, changing priorities, availability of outside grants, and City funding available at the time of implementation. The complete 20-year long term strategy is broken out into eight phases. Specific phased development should reflect the criteria of the grants being pursued and the priorities of City government. In general, the following phasing is organized partly by Preserve area and partly by efficiency considerations, with each phase numbered based on its priority.

Phase 1:

Demolish houses, sheds, and barn

Entry sign

Upper parking lot (10 spaces)

Construct trail adjacent to existing driveway

Construct trail loop in vicinity of future lower parking lot

Construct outer trail loop

Pedestrian Bridge
Viewpoints (2-3)
Plantings in the vicinity of the upper parking lot and nearby buffers
Irrigation (water is available at 224th and 39th)
Sani-can with enclosure
Storm drainage rain garden (at upper lot)
Entry sign
Tool shed
Kiosk without signage (temporary at upper lot)

Phase 2:

Invasive plant removal including blackberries and Japanese knotweed
Vehicular Bridge, replacement of Farm Bridge
Develop access road (crushed rock topdressing)
Widen exit road (asphalt & crushed rock shoulders)
Develop up to 19 spaces in lower parking lot
Stormwater dispersion trenches for roadway loop & portion of lower parking lot
Plantings (Evans Creek buffer and select forest edge enhancement)
Irrigation
Pedestrian Bridge (second)
Habitat features (In-stream woody debris, etc.)
Picnic tables and site furniture
Interpretive signage
Kiosk without signage (relocated to lower lot)
Entry kiosk sign

Phase 3:

Trail loop development on flatter part of site
Trail link to Sahalee Way N.E. (if property is available)
Several boardwalks and viewpoints
Habitat features (2 to 3 wetland amphibian habitat enhancement areas, etc.)
Plantings
Irrigation
Interpretive signage

Phase 4:

Restroom
Picnic shelter
Plaza
Plantings (Forest restoration / forest succession demo area)
Irrigation
Interpretive signage

Phase 5:

Expansion of parking lot (up to 11 new spaces, for a total of 40 spaces)
Addition of storm drainage dispersion trenches

Trail Development (mostly on sloped areas)
Arborist forest health report and select forest thinning on slopes
Plantings
Irrigation
Interpretive signage
Viewpoints

Phase 6:

Additional development at access area
Road and parking lot paving
Plantings
Irrigation

Phase 7:

Watchable wildlife pond and salmon rearing area
Tributary stream enhancement
Plantings
Some boardwalk if funds available
Viewpoints

Phase 8:

Boardwalk and Trail development
Plantings
Habitat features
Viewing blinds
Interpretive signage

Potential Additional Needs:

Replacement of 224th Ave NE culvert

As noted above, timing and elements of these phases are subject to change due to developing priorities and budget constraints in each fiscal year. Within any year, the timing of in-water work will be consistent with state and federal construction windows established for fish protection.

Cost Estimate. A preliminary planning level cost estimate was prepared for the schematic plan. It includes roadway and driveway improvement costs taken from the traffic analysis report. The preliminary pedestrian bridge estimate does not include an estimate for grading at the bridge approaches and foundations. Assumptions made for the estimate are noted at the bottom of the cost estimate.

ASSOCIATED DOCUMENTS:

1. Evans Creek Preserve Wetland and Stream Study, by The Watershed Company (February 2009)

2. Evans Creek Preserve City of Sammamish SEPA Checklist and Supplemental Sheet for Non-project Actions, by The Watershed Company (February 2009)
3. Evans Creek Preserve Schematic Design Geotechnical Investigation, by HWA GeoSciences Inc. (February 17, 2009)
4. Evans Creek Preserve – Schematic Stormwater Design Summary, by Ed McCarthy, The Watershed Company (February 2009)
5. Evans Creek Preserve Traffic Analysis, by Dave Evans and Associates, Inc. (April 2008)
6. Interpretive Plan Concept and Graphic, by Watershed Company (February 2009)