

City of Sammamish

Louis Thompson Road Tightline Project

Q&A May 2, 2024

Staff have received inquiries from the community, as summarized below. Staff and the project consultant team have provided answers below, based on their professional engineering expertise.

CODES AND STANDARDS

1. Does the project meet standards and codes?

Yes. The City's codes and standards, including adopted manuals, are based on the best available science and engineering practices. The project meets City and State codes, in addition to Federal regulations. Specifically for the stormwater system, the project was designed following the City's codes, adopted surface water manual (the 2021 King County Surface Water Manual (KCSWDM) and the City's 2022 Addendum), and adopted Public Works Standards.

2. The Sammamish Municipal Code Section and Tamarack Historic Plat

Sammamish Municipal Code (SMC) references to the Tamarack Historic Plat applies to stormwater design features required by *site development* within the Tamarack Plat ([SMC 21.03.050](#)) and is not applicable to Louis Thompson Road capital improvements.

3. What are the 10-year, 25-year, and 100-year precipitation events for the project area?

KCWDM Figures 3.2.1.B, 3.2.1.C, and 3.2.1.D provide the one-day precipitation totals in inches for these storm events:

- 10-Year 24-Hour Storm: 3.0 inches (10% probability of occurrence)
- 25-Year 24-Hour Storm: 3.5 inches (4%)
- 100-Year 24-Hour Storm: 4.0 inches (1%)

These levels represent significant rainfall events. The probability of occurrence represents the likelihood that such an event will occur one time during a given year.

4. Does this project provide for future stormwater standards?

No. Public projects are designed to the current adopted standards, as future standards do not yet exist. The City's current stormwater codes, standards, and regulations are mandated by the 2019-2024 Western Washington Phase II Municipal Stormwater Permit administered by the Washington State Department of Ecology. This permit originates under the Federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES).

The project meets and **exceeds** the City's adopted standards, to improve water quality within the Zackuse Drainage Basin and mitigate flooding in Zackuse Creek.

DESIGN INQUIRIES

5. Is the project designed for the 100-year storm?

The City's adopted standards, which are mandated by Ecology and reflect industry best practices, require new pipe (conveyance) systems to accommodate the 25-year storm. Accommodating the 100-year storm for flow control facilities (detention) is not required, nor is it industry standard. Per Section 1.2.4.1 of the KCSWDM, **new pipe systems** shall be designed to accommodate both the 25-year and the 100-year peak runoff levels:

- Systems shall be designed with sufficient capacity to convey and contain (at minimum) the 25-year peak flow, assuming developed conditions for onsite tributary areas and existing conditions for any offsite tributary areas.
- Runoff exceeding the 25-year design capacity may overtop structures provided discharge can be routed safely downstream.

The project design consultant evaluated the 100-year hydraulic grade line and concluded that the proposed pipe system is sufficient and has capacity to convey and contain the 100-year peak flow. Model results indicate no overtopping along the conveyance system for this storm event.

6. Is the new stormwater system a tightline?

The term tightline is used in engineering practice to describe conveying stormwater runoff through a new pipe system that was previously conveyed at the surface. This project was called a tightline because it will replace the existing ditches with new stormwater pipe.

The design team is aware of the special requirement for tightline systems (Section 1.2.4.1 of the KCSWDM); however, the definition of a tightline per the manual does not apply to the conveyance system proposed for this project, as the proposed system is not continuous (it includes several collection structures).

***"Tightline means a continuous length of pipe that conveys water from one point to another (typically down a steep slope) with no inlets or collection points in between,"** (KCSWDM).*

This requirement typically applies to surface-mounted HDPE pipes on natural slopes – not within a developed roadway corridor.

7. Can the project route stormwater runoff to the bottom of the hill?

No. The project cannot implement a flow bypass to divert flows from Zackuse Creek. Core Requirement 1 from the City's adopted surface water design manual requires discharging at the natural location. This is particularly important for a fish-bearing stream. In this case, preservation of stream flows is critical to habitat. The desire to route runoff to the bottom of the hill (flow bypass concepts) diverts stream flows and degrades habitat. The City can't support or permit that. Neither can the State (WAC 220-660).

8. How does the project plan for sheet flow or surface water runoff?

The steep side street approaches intersecting Louis Thompson will have some limited sheet flow that cannot be fixed by a road project. Most of the water will enter the stormwater system from the private roadside ditches. However, some relatively small areas of the private streets (e.g. approximately 800 square feet of 210th Place SE) will continue to contribute some limited sheet flow. This can happen at intersections where the road surface of the steep side streets have an angled approach and change cross slope in the final approach to the intersection. This is a relatively small contribution of flow and cannot be fixed by an extra storm drain or two within City right-of-way because the sheet flow is not concentrated – it is low and widely distributed. Storm drains are rarely installed within intersections or in the driving lanes of streets – it is not standard roadway design practice to grade low spots for sheet flow collection within travel lanes or intersections.

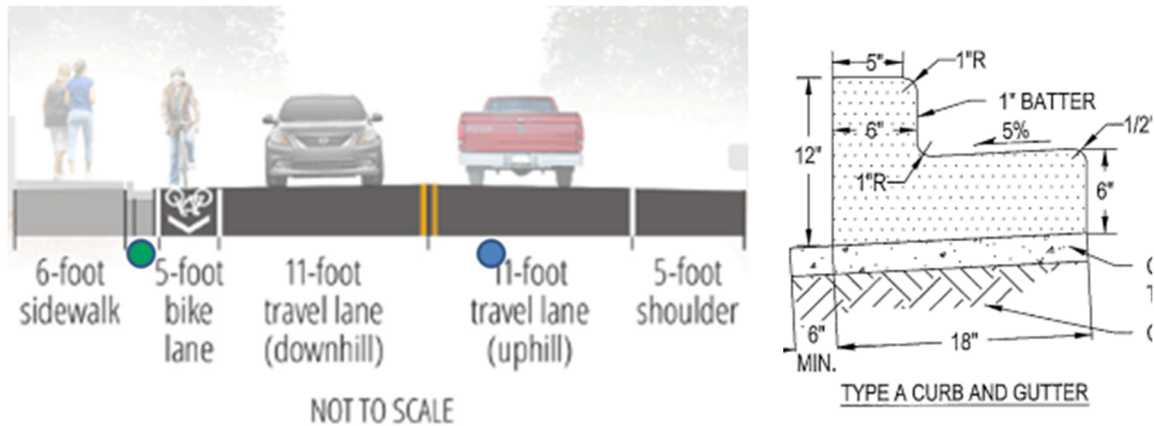
Surface water runoff from private roads and driveways frequently drains onto public streets. This condition is prevalent throughout Western Washington and does not reflect a design shortcoming or suggest corrections are necessary.

9. Will the bike lane flood during rainstorms?

Consistent with best engineering practice, the road is, at its majority, designed to maintain a crowned section so that the surface water runoff during rain events will sheet flow from the centerline of the road to the gutter. The gutter is designed to convey runoff quickly and efficiently into the next storm drain inlet. During typical storm events, the runoff will flow within the 12-inch width of the concrete gutter, as shown in the City's Standard Detail for a curb and gutter (figure, below right). A second figure, below left, shows a conceptual cross-sectional view of the road, and depicts the relationship of the 5-foot wide bike lane, curb and gutter, and sidewalk.

Industry standard roadway design allows runoff to extend beyond the gutter and onto the adjacent paved shoulder (a condition commonly referred to as runoff 'spread'). For the purposes of assessing spread on this project, the bike lanes are characterized as shoulders. The Washington State Department of Transportation (WSDOT) Hydraulics Manual ([M 23-03](#)) establishes the design criteria for spread on this project: Runoff spread from a 10-year event may extend across the full width of the shoulder (i.e. bike lane) on a low speed (<45 mph) collector street. A 10-year event has a low (10%) likelihood of occurring during a given year. Furthermore, the peak runoff experienced during a 10-year event will not occur all day but is statistically projected to peak for a 10-minute period during that day. Project calculations are consistent with this standard.

For this project, the steeper roadway slopes would rarely provide locations for ponding within the bike lane. The project also includes several combination inlets at the areas where most leaf accumulation has been observed to allow for greater collection capacity and minimize the possibility of stormwater spreading from the gutter to the full bike lane width.



10. Why is the project not accommodating stormwater from Tamarack, specifically from 210th Place SE?

The City does not make improvements to privately maintained infrastructure for a variety of reasons, including liability and risk mitigation, gift of public funds, etc. It is the responsibility of the property owner(s) to maintain a privately owned stormwater system. Privately maintained stormwater systems either directly discharge (flow) to a natural location or the stormwater runoff flows into a municipal stormwater system prior to discharging at the natural location. In Tamarack, the roads and the stormwater system are privately maintained. Most of the stormwater runoff from homes and the private roads within Tamarack flow through privately maintained roof drains, yard drains, and ditches and then into the City's stormwater system (currently ditches along Louis Thompson Road) prior to discharging at the natural location (Zackuse Creek).

While the project does not make improvements to the stormwater system within Tamarack, the project will uphold the connection locations or discharge points from Tamarack's privately maintained stormwater system to the City's stormwater system, consistent with our City Code. There are several examples:

- There are currently several privately maintained roof drains and yard drains that discharge into the City's existing ditch within the right-of-way along Louis Thompson Road. As the project replaces ditches within the right-of-way with stormwater pipe, current connections to the existing City ditch will instead connect to a new stormwater pipe. The roof drains and yard drains will be maintained by the property owner, as they convey privately maintained stormwater runoff. The City will maintain the connection point to our pipe, as that connection point and stormwater pipe are within the right-of-way and the new pipe also conveys stormwater runoff from the public road.
- The stormwater runoff from 210th Place SE flows along a private ditch parallel to 210th, which is a private road, prior to flowing into the City's stormwater system at an existing bird cage inlet (see photo from question 11 below). This connection point will be maintained, as the birdcage is located within the right-of-way, and it also receives runoff from Louis Thompson Road.
- Some stormwater runoff from 210th PI SE will flow to Louis Thompson Road, along the new curb and gutter within the right-of-way before flowing into a City storm drain. There will be some sheet flow from 210th PI SE that flows across Louis Thompson Road; see response to Question 8.

11. Does 210th Place SE need additional pipe or storm drains?

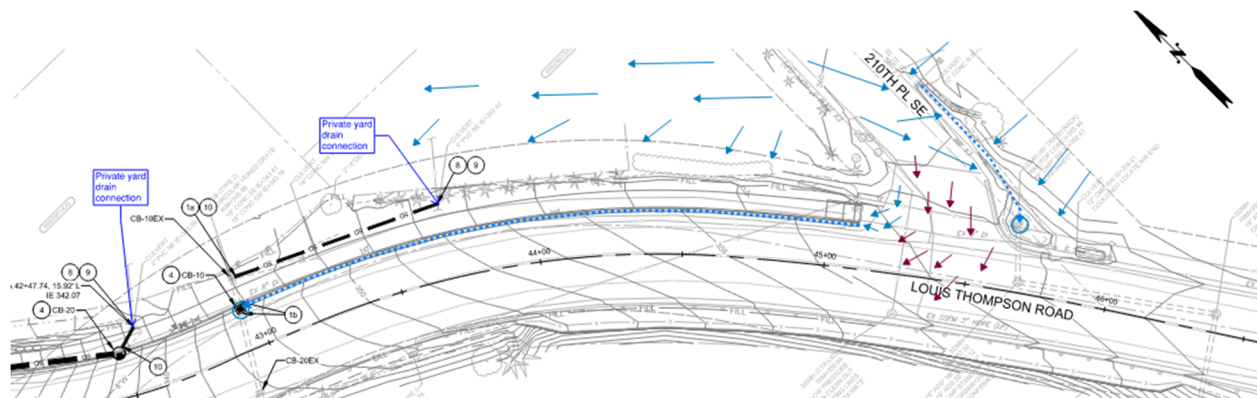
No. Most of the surface water runoff from 210th Place SE, a private road, flows along a private ditch and then into a storm drain on the southeast corner of 210th Place SE. The storm drain was replaced in 2018 with a birdcage inlet structure (photo, right) for maintenance purposes to reduce the amount of leaves, branches, and debris that enter the storm pipe.



The majority of the flow from Tamarack arrives by the privately maintained ditch. The curb and gutter will take flows to the northwest to the next storm drain. The ditch that is being replaced below 210th Place SE did not provide detention for Tamarack. It is being removed to reduce impacts from high flows leading to erosion within the ditch and sediment transfer.

The figure below is a snippet of Sheet 27 from the Final Design for Project that demonstrates a concept of the stormwater surface flows at the vicinity of the intersection with 210th Pl. To demonstrate the direction of stormwater flow, the project engineering team added the following:

- Dashed blue lines – areas where concentrated surface flow is anticipated. Concentrated surface flow is anticipated in the existing ditch and along the gutter line. The end point of both elements is a collection structure.
- Blue arrows – direction of surface flow at the vicinity of the intersection (collected). These flows would be eventually collected by the stormwater system.
- Yard drain connection – two existing yard drains are shown to be directly connected to the storm system at the proposed location.
- Red arrows – direction of surface flow at the vicinity of the intersection (not collected). These flows originate from a very small area within the intersection. Based on the contours, the flows will cross into Louis Thompson Road and sheet flow towards the ravine. Because of the current private road grades, there is not an opportunity to collect these flows using a storm drain (see also answer to previous question).



12. Will the project resolve flooding concerns within Tamarack?

No. A City project cannot reduce flooding within Tamarack neighborhoods as that responsibility falls to the owners of the roads and private storm system. However, the City's new road storm drain system is designed to accommodate flows from Tamarack (25-year and 100-year storm events) and all offsite tributary areas. This flow is received primarily from the existing private ditches. At minimum, Tamarack can preserve the function of ditches through maintenance and by preserving cross slope of private streets as part of road resurfacing and repairs. Tamarack itself is responsible for roadway and stormwater maintenance and improvements within the plat.

13. How can a privately maintained stormwater system be improved?

It is the responsibility of the property owner(s) to maintain a privately owned stormwater system. The Zackuse Basin Plan (ZBP) did not plan for improvements within Tamarack as part of a City project (ZBP 7.2 *Public vs. Private Projects*). Privately maintained stormwater systems are often improved as a result development activity or infrastructure replacement, both of which require the stormwater system to be brought up to current standards and regulations. In a residential area, improvements to a privately maintained stormwater system are often funded through a Homeowner's Association (HOA) through the formation of a Utility Local Improvement District (ULID), or other mechanism/agreement amongst the property owners. Staff has met with Tamarack residents multiple times and has found little appetite within Tamarack for a stormwater ULID.