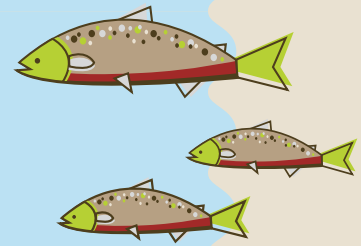
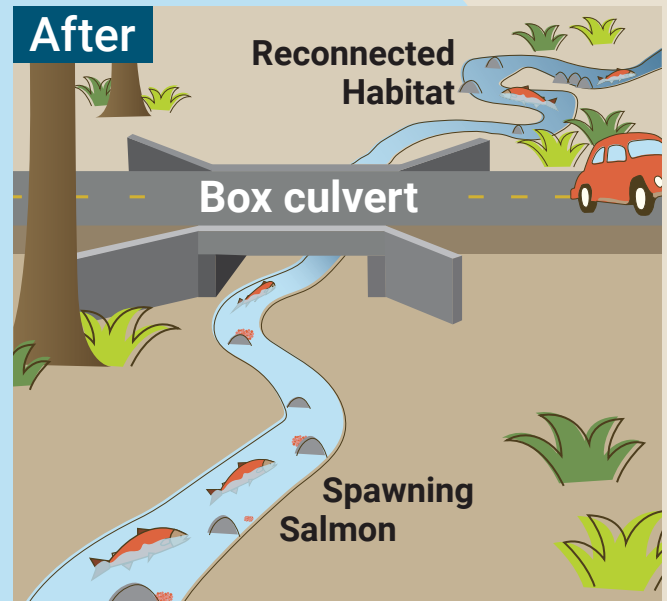
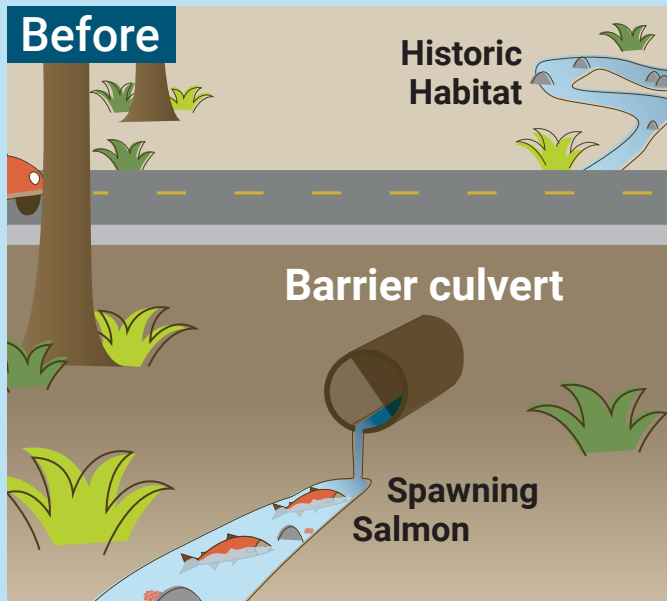


King County Fish Passage Restoration Program



STRATEGIC PLAN



After: Green to Cedar Rivers Trail crossing



September 2025



King County



Clean Water
Healthy Habitat

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2 Executive Summary

The Fish Passage Restoration Program (FPRP) Strategic Plan provides a summary of the background and proposed actions King County plans to implement to restore passage for salmon and steelhead to habitats that are currently blocked by non-natural obstructions in county streams. The FPRP is a key element of King County's commitment to the protection and restoration of salmon stocks. It also reflects King County's recognition of Tribal Treaty rights. Launched in 2018, the FPRP seeks to restore fish passage to historic habitat through strategic interventions. To date, the program has assessed more than 3,000 potential barriers, identified nearly 1,000 County-owned barriers, and restored salmon access to more than 40 miles of upstream habitat since 2019. Other accomplishments include construction of 24 fish passage projects and establishment of capital project teams, comprised of staff in three divisions, focused on delivery of fish passage projects.

This strategic plan responds to both a 2024 King County Auditor's report and an action item in the 2024 King County Comprehensive Plan. The 2024 audit recommended clarification of program goals and the consolidation of processes, and the strategic plan integrates the responses to the audit recommendations. In late 2024, the King County Council (the Council) adopted the 2024 King County Comprehensive Plan. The new comprehensive plan included an action to file a strategic plan for the Fish Passage Restoration Program with the Council in 2025. The strategic plan integrates program accomplishments since 2018 with updated data, Tribal input, clear goals and objectives, new performance metrics, and implementation actions to set a foundation for outcome-driven restoration efforts.

The FPRP's mission is to reconnect salmon to their historic habitats by addressing non-natural barriers such as culverts, small dams, and deteriorated fishways. The program prioritizes high-value habitats and fosters collaboration across jurisdictions to catalyze more efficient reconnection of salmon to stream habitat.

The strategic plan establishes three key goals. First, it aims to accelerate salmon habitat restoration by removing barriers to at least half of blocked habitats by 2039, supported by securing necessary funding. Second, it seeks to streamline project delivery by standardizing permitting, design, and construction processes, including building a fish passage community of practice in the county, proactively addressing failing infrastructure with fish passage benefits, and implementing a priority transfer program to optimize habitat gains. Third, the program emphasizes partnerships to expand fish passage restoration efforts throughout King County by enhancing outreach and providing technical support to address non-County barriers.

The program aligns with the County's work to improve equitable delivery of habitat restoration and infrastructure programs. Through partnerships, targeted outreach, and informed project prioritization, the FPRP addresses historical environmental inequities while supporting underserved communities. To achieve better outcomes for the community, the FPRP integrates and implements pro-equity practices through planning, policies, and budgeting; community partnerships; and communication and education. For the FPRP, the most relevant determinants of equity are economic development and jobs, environment and climate, and transportation and mobility. Relative to environment and climate, particularly, restoring salmon access to upstream areas brings numerous positive ecological effects to the

watershed. Projects on the current fish passage work plan focus on priority in terms of benefits for salmon habitat.

Most of the planned projects occur in areas of the county that tend to be less urban, which corresponds with streams with better potential salmon habitat because the stream has not already been subject to adverse impacts associated with heavy urbanization. At the same time, historically marginalized or underserved communities in King County tend not to co-occur with streams with the highest potential for habitat restoration and salmon recovery needs. As the County completes the highest habitat priority projects by 2039, the barrier prioritization will need to apply non-habitat factors to project selection since more than 100 barriers currently score similarly in the next tier of projects based on priority scoring. Equity analysis will provide an important factor to differentiate selection of fish passage work for the future generations of the Fish Passage Work Plan.

Central to the FPRP is routine engagement with Native American Tribes on projects that might impact tribal government, land, territory, or resources. Restoring fish passage at barriers is essential to honor tribal treaty rights, ensuring better outcomes for Tribal communities that have relied on salmon harvest for cultural sustenance and nourishment since time immemorial. The County's efforts to remove fish barriers in recognition of these Treaty rights address historical impacts and support salmon recovery.

This strategic plan describes a suite of three metrics for measuring progress restoring fish passage: county habitat gain potential, immediate habitat gain, and subbasin barrier density. These metrics are employed to track progress and ensure transparency and accountability while enabling data-driven adjustments to practices and strategies.

Achieving the FPRP's goals requires robust implementation strategies. Comprehensive assessments have identified 1,000 County-owned barriers, prioritizing those with the highest habitat benefits. Ongoing work to maintain the inventory and periodically update the barrier prioritization will ensure alignment with current regional strategies and allow data-driven decisions on future program direction.

FPRP staff will develop streamlined processes for capital project delivery, supported by standardized tools and collaboration with regulatory agencies to help reduce project timelines and costs while ensuring compliance. Early engagement and coordination with partners and landowners will smooth acquisition of real estate interests that are essential to project construction. FPRP staff will pursue innovations in design and construction methods, including the use of prefabricated structures to improve project timelines, cost-efficiency, and habitat outcomes. Additionally, FPRP staff will develop a priority transfer program to allow allocation of resources consistent with a focus on projects that remedy high-habitat-gain barriers. This work will start with pilot projects to showcase the potential for priority transfer to accelerate habitat benefits from fish passage restoration.

Construction of fish passage projects would physically fulfill the program mission: connecting salmon to historic habitat. The strategic plan includes a work plan identifying dozens of fish passage projects slated for completion by the County by 2039. The work plan incorporates feedback from workshops held with each of the five county Tribes, updated data from inventory and prioritization, and an assessment of

progress on fish passage projects since 2019. When complete, the work plan will achieve at least half of the total county habitat gain potential from the entire county barrier inventory.¹

Collaboration is central to the FPRP's success. Partnerships with Tribes, state and federal agencies, and local organizations enhance data sharing, align restoration priorities, and leverage funding opportunities. Outreach initiatives strengthen community support and encourage non-county barrier remedies essential to fully restore salmon to county streams.

The total cost to complete the updated 2023-2039 fish passage work plan is estimated to be at least \$253 million (in 2025 dollars). Since 2019, the capital program has received at least \$47 million in county revenues (a combination of revenues from the Surface Water Management, SWM, Fee and the Real Estate Excise Tax, REET), with a generally increasing trend of annual funding over the four budget cycles. The King County Parks Levy has also provided funding for fish passage projects. The passage of the Parks Levy in August 2025 will provide an estimated \$20 million to fish passage work by Parks between 2026 and 2031. County Roads funding remains limited due to the state's one percent limit on revenue growth.

The FPRP estimates that County funding will support no more than half of the estimated costs for the fish passage work plan. Given the gap between County funding and program cost estimates, the FPRP work plan remains highly dependent on securing grant funding that is increasingly uncertain in the current federal and state funding context. Securing additional funding through continued grant support, together with new public-private partnerships and innovative financing mechanisms, is essential for program success.

Identifying a funding stream dedicated to fish passage work would ensure program sustainability better than past funding provided primarily from King County's SWM Fee and REET revenue, which fluctuates over time depending on real estate market and funds a wide variety of needs. Additionally, King County's SWM fee and REET revenues are collected only in unincorporated King County, which limits the amount of potential revenue. Also, regional fish passage projects not located within unincorporated King County may not be eligible for these revenue sources.

The FPRP Strategic Plan represents a bold, data-driven approach to restoring salmon habitats and addressing environmental and social equity challenges. By focusing on high-value habitats, streamlining processes, and fostering partnerships, King County's FPRP provides a robust framework for long-term ecological and community benefits. With sustained investment and collaboration, the program will reconnect salmon to their historic habitats, ensuring both environmental restoration and cultural resilience for future generations.

3 Current and Historical Context

King County is salmon country. In addition to being icons for the region, healthy salmon stocks are key indicators of the health of the Salish Sea, watersheds, and rivers and streams. Protecting and recovering salmon runs and the habitat they rely upon is essential to honoring the Treaty rights and culture of Puget Sound Tribes, and is vital to Washington's economy and culture.

¹ See Section 9.1 for details on county habitat gain potential.

King County has a longstanding commitment to the protection and restoration of salmon stocks. The County has passed ordinances aimed at protecting rivers and streams from degradation, safeguarding the shoreline and its abundant natural resources, and responsibly managing stormwater. The County's Comprehensive Plan affirms the County's commitment to salmon recovery and also reflects its recognition of Tribal Treaty rights.² The County's Clean Water Healthy Habitat Strategic Plan, released in 2020, reinforces protection and restoration of clean water and healthy habitat and recovery of threatened salmon.³ Finally, in partnership with other local governments and Tribes (Snoqualmie Watershed Forum only), the County hosts staff leading implementation of salmon recovery plans for the Green-Duwamish, Lake Washington-Cedar-Sammamish, and Snoqualmie watersheds.⁴

In recent decades, the County has completed many capital projects that benefit salmon and their habitat.⁵ The County, through its Land Conservation Initiative, has acquired properties for preservation and restoration of riverine habitat.⁶ Together, these actions place King County at the forefront of salmon recovery work in Puget Sound and the State of Washington.

Since 2013, federal court decisions have highlighted the impact of fish passage barrier culverts on salmon populations in the region. The courts found that fish passage barrier culverts contribute to salmon habitat degradation and the declining salmon population and held that the state of Washington's construction, operation, and maintenance of these culverts under state roadways infringed on the Tribe's treaty-based right to take fish.⁷ The *United States v. Washington* federal court case involved the State of Washington and not local jurisdictions, like King County. The legal outcome of this case is not binding for the County but has informed the County's approach to recognizing Tribal Treaty rights. Considering these legal rulings and broader salmon protection and restoration efforts, King County launched the Fish Passage Restoration Program (FPRP) in 2018.

Restoring fish passage to historic habitat is one of the most effective ways to help salmon populations recover and endure. Often, structures like culverts under roads block salmon from swimming upstream to historic stream habitats that provided spawning and rearing habitat. In 2020, County-owned barriers contributed to impeding salmon from accessing more than 700 miles of upstream habitat.⁸ Restoring fish passage allows salmon to immediately access high-quality habitats necessary for different life stages,

² 2024 King County Comprehensive Plan [\[LINK\]](#). The Comprehensive Plan includes policies specific to fish passage in the Salmon subsection of the Environment chapter (E-338 and E-342), the Climate Change, Air Quality, and the Environment subsection of the Transportation chapter (T-130), and the Shoreline Use subsection of the Shorelines chapter (S-744).

³ Clean Water Healthy Habitat Strategic Plan 2020-2025 [\[LINK\]](#).

⁴ Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Salmon Recovery Council [\[LINK\]](#); Green/Duwamish and Central Puget Sound Watershed [\[LINK\]](#); Snoqualmie Watershed Form [\[LINK\]](#)

⁵ Habitat restoration planned and completed by the County can be found online at the website for the Habitat Restoration Unit in WLRD's Capital Delivery Section [\[LINK\]](#).

⁶ King County Land Conservation Initiative [\[LINK\]](#).

⁷ *United States v. Washington*, No. 13-35474 (9th Cir. 2017).

⁸ County barriers and non-county barriers are interspersed on county streams. Full restoration of salmon passage will involve remedy of county and non-county barriers (see Section 10.4).

which are essential for their survival and reproduction. Removal of fish passage barriers also helps to restore more natural water flows, sediment transport, habitat formation, and nutrient cycling.

The FPRP proactively addresses the problem of fish passage barriers blocking salmon from reaching productive upstream habitats. Of note, the County owns only a fraction of the fish passage barriers blocking salmon. The FPRP focuses on restoring fish passage for salmon within King County. A primary objective is to remedy County-owned fish passage barriers (see Section 6.1). Between 2019 and 2024, county fish passage projects restored salmon access to more than 40 miles of upstream habitat since 2019. Another program objective focuses on technical assistance and partnering with others to increase fish passage restoration regardless of barrier ownership.

Starting in 2019, King County has conducted a field inventory to assess more than 3,000 locations with potential County-owned structures in streams with salmon habitat. Assessments continue to reflect new information, fish passage projects, and property acquisition. Out of more than 1,600 locations with a County-owned asset in a stream with potential salmon habitat, the inventory identifies roughly 1,000 County-owned fish passage barriers (637 county-owned structures are assessed as fully fish-passable).

Working with Tribes and other partners in 2020 and 2021, King County finalized a scoring system to prioritize barriers that prevent salmon passage to the highest-priority stream habitats. After initial prioritization of the full county barrier inventory in 2022, the County has updated barrier scoring several times to reflect inventory updates. Based on the most recent scoring and analysis of the full county barrier inventory, the County determined that fixing about 6 percent of the barriers currently blocked by county roads and trails — fewer than 60 fish passage projects — would reopen access to at least half (or 50 percent) of the potential salmon habitat blocked by county barriers.

This prioritization provides the foundation for King County's fish passage capital project planning and partnership coordination. By prioritizing fish passage projects based on the greatest benefits for salmon, the FPRP can prioritize investments where they can significantly accelerate habitat gains from fish passage restoration compared to random project selection.⁹

Current data identify about 3,600 barriers to salmon passage in all of King County (this total includes County-owned barriers, so there are about 2,600 barriers in the county that are owned by non-county entities).¹⁰ Reconnecting salmon to currently blocked stream habitats will require coordination and collaboration to address these barriers. The FPRP serves as a central point of contact for collaboration with other agencies and groups involved in fish passage work. The program also coordinates technical assistance for non-county barrier remedies in collaboration with local, state, and federal agencies, salmon recovery organizations, nonprofits, and landowners. The goal is to connect salmon to historic

⁹ Without prioritization analysis, achieving half of the habitat benefit would require remedies at half of the county-owned fish passage barriers, or about 500 fish passage projects.

¹⁰ Of the roughly 3,600 known barriers in King County, about 1,000 are owned by the County; another 1,330 are owned by cities, the state, Tribes, or federal agencies; and 1,260 are owned by other entities. Of these categories, the most remaining structures yet to be assessed likely are privately owned. Since 2018, the comprehensive county barrier inventory identified hundreds of passage barriers. Other work by the state has helped improve the inventory of city-owned barriers.

river and stream habitats much faster than would occur without prioritization, coordination, and collaboration.

4 Strategic Plan Development Process

The FPRP Strategic Plan development originated from a March 2024 report by the King County Auditor on the program.¹¹ This audit provided eight recommendations, including the development and implementation of a strategic plan. The audit recommended that the strategic plan clarify the goals and objectives of the program. In late 2024, the King County Council (the Council) adopted the 2024 King County Comprehensive Plan. The new comprehensive plan included a Work Plan Action to file a strategic plan for the Fish Passage Restoration Program with the Council in 2025.

In response to these recommendations, the Department of Natural Resources and Parks (DNRP) has developed this strategic plan to inform the goals, objectives, strategies, and actions to advance county fish passage and salmon recovery efforts. The strategic plan also summarizes the programs' evolution since its inception in 2018, detailing how data informs project selection, budgeting, and sequencing of fish passage capital projects over time, along with current program status, priority actions, and performance.

In the summer of 2018, the County hired a program manager for the new fish passage program. Since then, significant achievements include:

- Completing a comprehensive inventory of over 1,600 county-owned assets in streams with potential salmon habitat;
- Prioritizing roughly 1,000 County-owned fish passage barriers;
- Constructing 26 fish passage projects that restored fish passage at 30 fish passage barriers;
- Forming fish passage capital project teams in the King County Department of Local Services (DLS) Roads Services Division (Roads), DNRP's Parks Division (Parks), and DNRP's Water and Land Resources Division (WLRD), and
- Developing a fish passage work plan to guide capital projects for fish passage restoration from 2023 to 2039.

The strategic plan integrates all elements of the FPRP and outlines current and planned efforts using the latest available information. This includes current information on the county barrier inventory, barrier prioritization scoring, Tribal consultation, work plan revisions, new progress metrics, and procedural updates.¹²

Through collaboration by the WLRD, Parks, and Roads divisions, the three primary County agencies responsible for fish passage restoration in the county, the strategic plan unifies discrete bodies of work that make up the FPRP elements. It also incorporates coordination with the DLS Permitting Division

¹¹ Daily, G. and Z. Nejadi. 2024. Fish Passage Restoration: Opportunities to Increase Impact, Transparency, and Collaboration. King County Auditor's Office. [[LINK](#)]

¹² Recent inventory updates include assessments of:

- Sites where conditions have changed since prior field visits;
- County assets on newly acquired parcels, and
- Newly identified instream county-owned assets.

(Permitting), the Office of Performance, Strategy and Budget (PSB), and the County's Clean Water Healthy Habitat (CWHH) initiative.

The FPRP relies on a steering committee for guidance and decision-making. The DLS and DNRP department directors, the WLRD and Roads division directors, the DNRP Tribal Liaison, the Parks Capital Section Manager, and a representative for PSB make up the steering committee. The committee meets quarterly to review progress, address emerging issues, and provide strategic direction.

5 Mission Statement

Since the 19th century, property owners, companies, utilities, and local, state, and federal governments have constructed numerous structures across King County's streams and rivers, many of which block native fish, including salmon, from swimming upstream to access historic habitat.

The mission statement of the FPRP is "Connecting salmon to their historic habitat." This requires addressing structures in streams that prevent or impede native salmon from swimming upstream to the streams that would otherwise be accessible in the absence of the non-natural structure.

The FPRP restores fish passage at blockages caused by instream structures, enabling salmon to move freely in streams, just as people move freely on roads and trails. The program focuses on barriers associated with non-natural structures such as culverts, small dams, stormwater control facilities, and weirs. Where possible, the program seeks to remove barriers that no longer serve a purpose, including road crossings and culverts on properties that the County has acquired to conserve open space or natural areas.

The program charter from 2019 outlined the program's scope as follows:

- Inventorying and prioritizing County-owned fish passage barriers based on the habitat value of removing or replacing them to restore fish passage;
- Designing and constructing projects to restore fish passage;
- Developing procedures to expedite barrier remedies while optimizing ecosystem benefits and asset management responsibilities;
- Collaborating on fish passage restoration at known barriers, regardless of ownership, by providing technical assistance to King County agencies and with external partners, and
- Advancing funding strategies to support fish passage barrier remedies at county assets.

Since 2019, the program has evolved, clarifying its scope and needs. For example, in 2019, the County lacked data on the number of fish passage barriers at County-owned assets. Consequently, capital projects addressing fish passage before 2020 were reactive, driven by asset condition issues and failures. The comprehensive barrier inventory, combined with asset management data, enables the County to proactively plan repairs and prioritize projects for maximum habitat benefits. By focusing on high-priority habitats, the FPRP aims to achieve habitat benefits by 2039 that would have otherwise taken more than a century to accomplish with more random project selection.

6 Vision and Desired Outcomes

This section of the strategic plan will outline the goals and objectives of the FPRP. These goals drive the scope and execution of program elements.

Table 1 summarizes the FPRP goals and objectives.

Table 1. Goals and Objectives of the King County Fish Passage Restoration Program

<p>Goal 1: Accelerate benefits for salmon by restoring fish passage.</p> <p><i>Objectives</i></p> <ul style="list-style-type: none">A. <i>By 2039, restore fish passage to at least half of the salmon habitat blocked by county-owned barriers in 2020 to achieve habitat gains that otherwise would have taken more than a century to achieve.</i>B. <i>Ensure adequate funding to support the fish passage work plan.</i> <p>Goal 2: Streamline fish passage projects from conception through successful completion.</p> <p><i>Objectives</i></p> <ul style="list-style-type: none">A. <i>Build a King County fish passage community of practice to share knowledge while identifying and implementing efficiencies for design, permitting, and construction of projects.</i>B. <i>Proactively identify and remedy failing infrastructure in fish-bearing streams and provide fish passage when it would provide access to meaningful upstream salmon habitat.</i>C. <i>Work with regulators and consult with tribal governments to formalize a priority transfer program.*</i> <p>Goal 3: Partner to increase fish passage restoration throughout King County.</p> <p><i>Objective</i></p> <ul style="list-style-type: none">A. <i>Enhance outreach and engagement of fish passage restoration and opportunities for technical assistance, funding, and partnering.</i>B. <i>Collaborate with owners of fish passage barriers on prioritization and sequencing of fish passage projects within stream basins to reopen potential habitat more quickly and to identify opportunities for coordinated permitting and contracting.</i>
<p>*Priority transfer would allow the County to fund investment in high-habitat-gain barrier remedies to mitigate for deferring fish passage restoration during repair or replacement of failing infrastructure at locations where providing fish passage would not provide meaningful gains of upstream salmon habitat.</p>

6.1 Goal 1: Accelerate benefits for salmon by restoring fish passage.

The overarching goal of the FPRP is to prioritize fish passage restoration at existing barriers to generate the significant habitat benefits substantially earlier than would occur in the absence of a prioritized approach based on potential habitat gains (such as a more typical approach, where fish passage is addressed based on when infrastructure is being replaced or upgraded in a more random manner based mainly on risk of failure and corridor improvement work along). This applies most specifically to restore

fish passage at projects within the County's direct control — at County-owned fish passage barriers, while also relevant to coordination of prioritization and sequencing of fish passage projects on county streams with other owners (see Goal 3 in Section 6.3).

The fish passage barrier inventory and prioritization identify that the County owns roughly 1,000 barriers to salmon passage. The county inventory assessed the barrier status of structures using methods outlined by the Washington Department of Fish and Wildlife (WDFW 2019).¹³ The inventory provides the results from a rigorous and comprehensive field-based effort to assess more than 3,000 locations where mapping analysis indicated that a county-owned asset may exist in a waterway that could provide potential salmon habitat. Based on field measurements, the county inventory team found about 1,600 locations that meet these conditions — a County-owned asset in a stream with potential salmon habitat, with about 1,000 partial or total fish passage barriers among them.^{14, 15}

There's a huge range of potential upstream habitat gain for County-owned fish passage barriers. Relatively few barriers in the county inventory have very high potential upstream habitat benefits (based on the amount of upstream salmon habitat). The inventory and prioritization analysis shows that repairing less than 60 of the County-owned barriers would together generate about half of the identified total possible habitat gain.¹⁶ Conversely, hundreds of County-owned barriers occur in locations on very small streams where there is very little meaningful upstream habitat. In the county inventory, about 700 barriers cumulatively block less than 10 percent of the total possible upstream habitat gain.

Figure 1 shows the habitat gain curve for the county barrier inventory.¹⁷ The curve demonstrates the diminishing habitat returns associated with the county barriers. Three hundred barriers would provide 90 percent, or almost all, of the potential habitat gain. The remaining 700 barriers collectively block only 10 percent of the potential habitat gain.

¹³ Washington Department of Fish and Wildlife. 2019. Fish Passage Inventory, Assessment, and Prioritization Manual. Olympia, Washington.

¹⁴ Potential salmon habitat refers to stream or river areas that would be accessible for salmon use for a portion of their life cycle. It includes rivers and streams downstream of natural barriers (like waterfalls). Determination of potential salmon habitat can be based on observations of salmon use, review of reliable mapping data, or measurements of stream width and gradient.

¹⁵ A partial fish passage barrier obstructs some fish from swimming upstream under some flow conditions when fish passage would be possible in the absence of the in-stream feature. A total fish passage barrier is a feature that totally prevents most fish from swimming upstream when fish passage would be possible in the absence of the in-stream feature. Note that fish passage barrier severity is a qualitative measure, so individual fish may be able to make it upstream past even a total barrier based on their swimming ability, flow conditions, etc.

¹⁶ Total possible habitat gain is based on the best available estimate of the amount of salmon habitat upstream of known County-owned fish passage barriers. More information about habitat gain is provided in Section 9.

¹⁷ Some high gain barriers may be upstream of other county barriers, meaning that to generate the high habitat gain, remedy of the high-gain barrier plus all downstream county barriers would be necessary. Habitat gain in this figure is based on County Habitat Gain Potential (see Section 9.1).

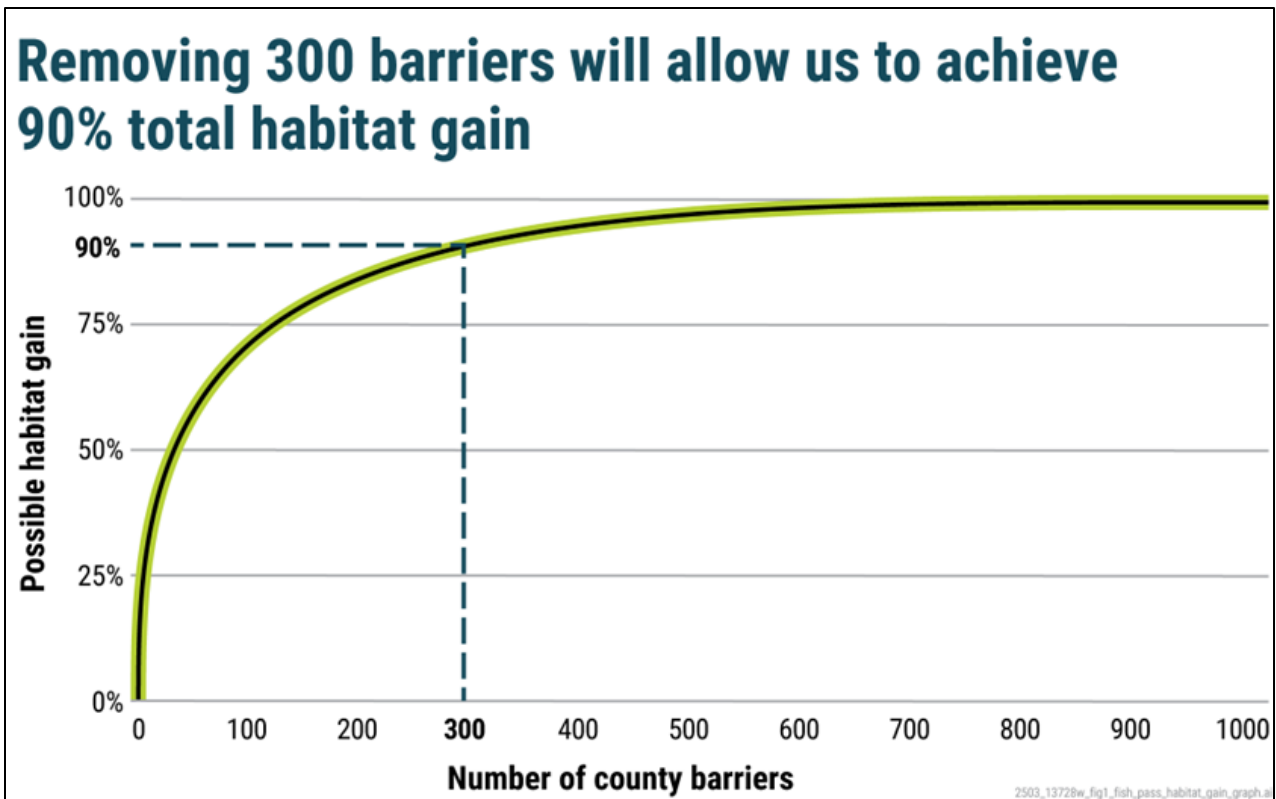


Figure 1. Salmon Habitat Gain Curve for the King County Fish Passage Barrier Inventory

The data provided by the inventory will allow work to focus on remediating high-priority, high-habitat-gain, County-owned barriers to significantly accelerate benefits for salmon. The data also provide more insight into projects involving barrier culverts at risk of damage or failure, where it is possible for proactive repair and replacement of at-risk structures to have meaningful habitat benefits for salmon, although they may not fall within the highest tier of habitat benefits.

Finally, where the inventory and prioritization data show a barrier repair would provide little to no meaningful benefits for salmon, the County seeks to collaborate with Tribes and regulatory agencies to consider priority transfer, which would defer fish passage restoration during repair or replacement of the low-benefit barrier, with mitigation for the deferral occurring at a higher benefit barrier nearby (see Section 6.2).

The inventory, prioritization, and project identification processes work together to accelerate achievement of habitat benefits for salmon through a relatively small number of fish passage restoration projects at lower cost, achieving a higher cost/benefit efficiency compared to a more random approach.

6.1.1 Objective 1A: By 2039, restore fish passage to at least half of the salmon habitat blocked by County-owned barriers in 2020.

In preparation for the 2023-2024 biennium, the FPRP drafted a roster of fish passage projects proposed for completion by the end of the 2038-2039 biennium. The original fish passage work plan encompassed projects already under way and new projects proposed for funding starting in 2023 (see Section 10.3).

Completion of ongoing projects delivers on commitments in prior budgets to complete early action fish passage projects (the FPRP identified these projects for the 2019-2020 and 2021-2022 budgets before full inventory and prioritization data became available in 2022). In many cases, these projects also aligned with the high-priority barriers in the prioritization analysis. Some of the early action projects did not score among the highest-priority barriers but still would have meaningful fish passage benefits.

FPRP staff have recently updated the fish passage work plan to reflect the most current barrier inventory information, the 2024 audit recommendations, additional Tribal feedback from recent consultation meetings, changes to the County biennial budget calendar, prioritization updates, and a review of estimated timelines for future projects based on actual timelines for completed projects since 2019. The updated work plan extends through 2039 to reflect ambitious yet realistic project sequencing together with the new biennial budget calendar, ending the biennium on odd-numbered years starting with the 2026-2027 biennium. Analysis indicates that the planned projects would result in removing enough county barriers to unblock at least half of the salmon habitat that is currently blocked by all county barriers.¹⁸

The work plan includes tracking all county fish passage restoration work. This includes:

- Completing early action projects that have already started and received funding in prior adopted budgets;
- Projects identified as high priority for habitat benefits based on data analysis from the inventory and prioritization;
- Remedies of county barriers downstream of the high-habitat-priority projects;
- Projects to address at-risk infrastructure that also have fish passage benefits;
- Capital projects with a fish passage component, and
- Projects to restore fish passage through barrier removal or with small-scale construction activities.

The Capital Project section below (see Section 10.3) provides more details on the updated work plan and estimated habitat gains.

There are roughly 1,000 county-owned fish passage barriers on watercourses with potential upstream salmon habitat.¹⁹ In the absence of prioritization data, remedies for at least half of the county barriers, or 500 fish passage projects, would be necessary to achieve half of the total habitat benefit for salmon. Even at an accelerated pace of about four fish passage projects per year, this would take 125 years to achieve.

¹⁸ Half of the potential habitat gain is based on the County Habitat Gain Potential metric calculated with salmon habitat units (see Section 9.1). The baseline year for the habitat gain is 2020.

¹⁹ Potential salmon habitat is based on methods outlined in the WDFW (2019). Criteria defining the use potential of a stream by salmon or trout can be biological (visual observation of salmon or trout during a field visit); mapped (waterbodies listed as salmonid-bearing by a reliable mapping data source), physical (based on measurements of waterbody gradient and width of the active channel), or other reliable source that confirms use by salmon or trout. For small streams in King County, field crews most often rely on physical indicators to determine whether a waterbody provides potential habitat for salmon or trout. Streams with an active channel width of at least two feet meet physical criteria for potential salmonid use.

As indicated in Figure 1, prioritizing the remediation of high-habitat-gain barriers significantly reduces the number of projects required to achieve half, or 50 percent, of the total habitat gains. The updated fish passage work plan targets 74 projects for completion between 2023 and 2039 (see Appendix C). This adds to 13 fish passage projects with salmon benefits that the County completed between 2020 and 2022 (see Appendix B). Based on a baseline year of 2020 (from the County’s Clean Water Healthy Habitat Strategic Plan goals for Better Fish Habitat), the County estimates reaching at least half of the total possible habitat gains by 2039, or in 20 years, instead of more than a century based on recent investment levels and without habitat-based priorities.

Figure 2 illustrates progress toward the habitat outcome goals for 2039. In the five years between 2020 and 2024 (or 25 percent of the 2020-2039 performance period), the County has completed 18 projects, or 21 percent of the 87 total projects planned for completion by 2039. The habitat gain outcomes show less progress toward the goal of restoring fish passage to half of the habitat blocked by County barriers (county habitat gain potential; see Section 9 for more information on habitat gain metrics). This reflects that most of the projects already completed started planning and design prior to availability of comprehensive inventory and prioritization data that forms the basis for future work, which allowed identification of where the largest habitat gains could be achieved.²⁰ Immediate habitat gain by habitat units tracks closely with the metrics for county habitat gain potential. Note that immediate habitat gain can fluctuate greatly depending on the distribution and correction status of other barriers near a completed county fish passage project at any given point in time.

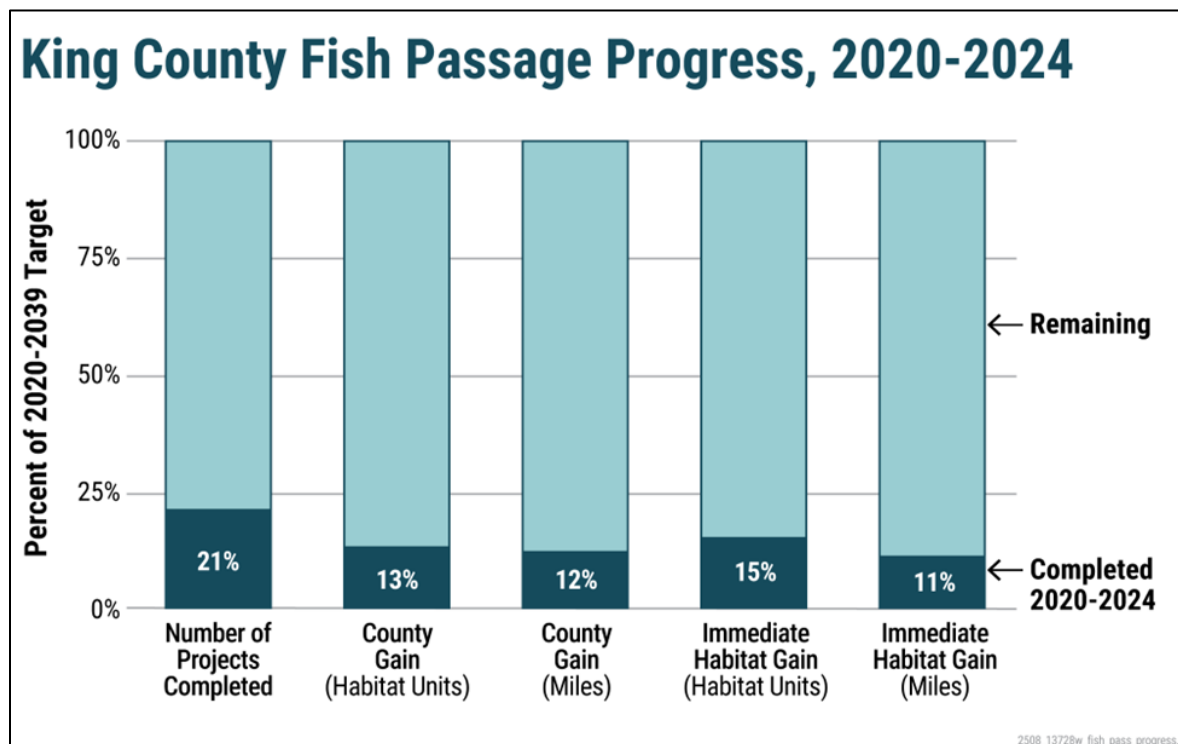


Figure 2. 2020-2024 Progress Toward Program Habitat Outcomes

²⁰ Once funded and started, fish passage capital projects can take three to seven years to build.

6.1.2 Objective 1B. Ensure adequate funding to support the fish passage work plan

Successful implementation of the county fish passage work plan relies on program funding in sufficient amounts and at the right times via County budgeting and external sources, such as grants. Identifying and securing reliable, adequate, and sustainable funding sources is essential to achieve program goals. Key objectives for the program seek local and regional funding at the scope and scale to deliver benefits at a watershed scale, considering work by multiple entities on fish passage restoration.

Since 2019, the capital program has received at least \$47 million in County revenues (a combination of revenues from the SWM Fee and the REET), with a generally increasing trend of annual funding over the four budget cycles since 2018. However, the FPRP work plan has been and will remain highly dependent on securing grant funding that is increasingly uncertain in the current federal and state funding context. County fish passage projects often have multiple grant funding sources for a single project. Heavy reliance on grant funding from multiple sources can add uncertainty to project feasibility and timing, costs for grant application and administration, and can introduce sometimes conflicting design and site use criteria. County Roads funding remains limited due to the state's one percent limit on revenue growth. Cities face similar challenges with limited local stormwater funding and reliance on grants funding. For private landowners, the cost of replacing culverts is far out of reach without grant assistance.

The FPRP program is ramping up to include more construction phase projects, which will cost more in the coming years. Identifying and obtaining predictable and sustainable funding is a key focus area for the FPRP.

The 2023-2039 fish passage work plan identifies funding needs for capital project delivery. Estimates for funding are adapted each biennium to reflect current information. The current estimate to complete the work plan is \$253 million (in 2025 dollars). Extrapolating past County funding averages forward, substantial non-county funding will be required to deliver the work plan.

For the FPRP, understanding grant funding opportunities and planning to position County projects as competitively as possible are essential to program success. To date, local, state, and federal grants have been the primary non-county revenue opportunity. The grant landscape is constantly changing. Federal legislation between 2021 and 2024 provided significant amounts of funding to several federal grant programs that can support fish passage projects. The federal grant outlook has changed drastically in 2025, with impacts still uncertain. At the state level, funding for ecosystem restoration, including fish passage, has benefitted from funding from the Climate Commitment Act in recent cycles. At the same time, state budget projections for the next several years indicate a substantial state deficit. FPRP also must continue to explore innovative funding options for fish passage, including public/private partnerships and private sponsorship of fish passage work by the County.

The FPRP estimates that County funding will support no more than half of the estimated costs for the fish passage work plan. State limits on revenue growth for property taxes, which include funding for KC Roads, continue to significantly limit sustainable investment in asset management and capital projects that often include fish passage improvements. Securing additional funding through grants, public-private partnerships, and innovative financing mechanisms is essential for program success. Identifying and

establishing local or regional funding streams dedicated to fish passage work would ensure program sustainability better than past funding, provided primarily from the SWM Fee, the Parks Levy, and the REET revenue (which fluctuates over time depending on real estate market and funds a wide variety of needs). Future voter-approved levy funding that includes fish passage funding provide another possible opportunity and could mirror the example of the King County Parks Levy.

6.2 Goal 2: Streamline fish passage projects from conception through successful completion.

Although each fish passage project presents unique opportunities and constraints, standardizing procedures, developing programmatic approaches, and enhancing collaboration can mitigate risks and increase effectiveness while reducing the duration and cost of fish passage capital projects. Efficiencies in project execution benefit the full range of fish passage restoration efforts.

Consistent with Goal 1, the FPRP's Goal 2 will support accelerating the completion of high-priority, county-owned fish passage barriers that block the most upstream habitat. As the program matures, county funding and efforts have increasingly focused on habitat priorities. Simultaneously, aging infrastructure — culverts and instream structures nearing the end of their service life — require repair or replacement activities, often triggering regulatory fish passage restoration requirements during state and federal permitting.²¹ While some of these barriers may not rank high in habitat potential, providing fish passage at them often provides meaningful benefits for salmon. The objectives under Goal 2 address County efforts for all fish passage projects, including those driven by regulatory needs.

6.2.1 Objective 2A. Build a King County fish passage community of practice to share knowledge while identifying and implementing efficiencies for design, permitting, and construction of projects.

King County possesses expertise across Roads, Parks, and WLRD to plan, design, build, and monitor capital projects, such as fish passage projects. The FPRP also coordinates with external parties engaged in similar work. Leveraging internal expertise to identify efficiencies in design procedures, contracting, and construction can help ensure faster and better projects at less cost. Sharing knowledge across divisions via the establishment of a community of practice that includes team members working on fish passage projects holds great promise toward increasing the County's ability to implement best practices and learn from past projects.

Building projects in rivers and streams requires permits from local, state, and federal agencies, along with permissions from adjacent landowners and coordination with utilities. Streamlining these approvals and permissions will improve project planning, design, and construction efficiency. While each project

²¹ The primary trigger to restore fish passage after rehabilitation or replacement of a culvert (or water crossing) is due to WAC 220-660-190 stating that water crossing designs must provide unimpeded passage for all species and life stages. If an existing water crossing structure currently does not comply with current fish passage requirements as outlined in WAC 220-660-190, the repair/rehabilitation of that crossing to extend its serviceable life would be a temporary modification that would delay the replacement of the crossing with one that is fish passable, unless the new work at the existing crossing brings the crossing into compliance with WAC 220-660-190 with regard to fish passage.

has unique characteristics, many share common needs that could benefit from programmatic solutions, such as standardized regulatory interpretations or blanket code revisions.

Opportunities include standardizing procedures for Tribal consultation and coordination for fish passage projects, acquisition of real estate interests, collaboration on utility relocation, and situations that are addressed by Objective 2C (see Section 6.2.3). For instance, clear procedures for landowner coordination would improve efficiency in project design — a critical path for many project schedules. Consistent outreach and engagement efforts with landowners also mitigate schedule and cost risks, as well as increase understanding and transparency for county landowners.

Some fish passage work is part of larger projects, such as roadway improvements, trail construction, flood risk reduction work, or ecosystem restoration projects. In these cases, tools developed for stand-alone fish passage projects may be less helpful, but experiences from permitting processes can still inform County code updates and comments, as well as state and federal policies, rules, and regulations that apply to habitat restoration and flood risk reduction projects. For example, the County has commented on federal flood hazard regulations that have the effect of extending timelines for habitat restoration projects, including fish passage projects.

6.2.2 Objective 2B. Proactively identify and remedy failing infrastructure in fish-bearing streams and provide fish passage when it would provide access to meaningful upstream salmon habitat.

The FPRP will include projects addressing failing infrastructure associated with County-owned fish passage barriers. These efforts will leverage funding, grant opportunities, and programmatic tools to maximize efficiency. When meaningful upstream habitat exists, these projects can also contribute to progress toward Goal 1 targets and objectives.

Proactively tracking deteriorating barriers helps the County anticipate future needs and avoid costly temporary repairs followed by full replacements. Avoiding rework saves resources, improves scheduling and predictability, and accelerates habitat restoration at both project and program levels.

6.2.3 Objective 2C. Work with regulators and tribal partners to formalize a priority transfer program.

As detailed in Goal 1, the County owns hundreds of barriers with little to no meaningful upstream habitat for salmon. In situations where a low-habitat-gain barrier presents a high risk of failure and requires repair or replacement, providing full fish passage may be required by regulations during repair or replacement, but would not provide meaningful benefits for salmon. In addition, if a culvert fails unexpectedly, the County may need to quickly replace it in-kind to preserve critical functions (e.g., roadway use) and then later fund, design, permit, and construct a fish passage project at the same location to replace the initial repair. This approach diverts staff time and funding toward a project without meaningful habitat benefits and delays work on high-habitat-benefit fish passage projects.

Priority transfer would provide an avenue for the County to replace or repair the asset with a deferral of a fish passage remedy at the low-habitat-gain barrier at generally lower cost than a fish-passable design. To mitigate for deferral of fish passage at the low-gain barrier, the County would invest in fish passage

restoration at a nearby barrier with significantly higher habitat gains. This approach would better focus resources on restoring fish passage at the high-habitat-gain barriers sooner, which would accelerate the pace of habitat gains from fish passage restoration compared to the status quo.

Implementing this program requires coordination with regulatory agencies and local Tribes. State regulations for water-crossing structures over fish-bearing waters (WAC 220-660-190) assume fish passage restoration for any work at a barrier that extends the service life of the structure. Priority transfer would not necessarily absolve the County of restoration responsibilities at some time in the coming decades, but it would sequence the work to transfer resources to high-habitat-gain sites in the near-term. This can greatly accelerate habitat benefits for salmon (by investing in projects on the steep portion of the habitat gain curve in Figure 1). The mitigation at high-habitat-gain barriers may involve work at other County-owned sites or at non-county barriers. These details would be part of programmatic and project-specific coordination with Tribes and regulators.

The desired outcome is an improved ability to better manage aging assets at existing infrastructure while focusing funding and effort on addressing high-priority fish passage barriers in the near term.

6.3 Goal 3: Partner to increase fish passage restoration throughout King County.

Whether a barrier blocks salmon from freely swimming upstream or not is independent of ownership of the barrier. With more than 3,000 salmon passage barriers known to exist in King County, connecting salmon to upstream habitat requires collaboration among all barrier owners. Connecting salmon to the most valuable habitat blocked by existing barriers will require sustained work, taking advantage of opportunities presented by planning, outreach and engagement, funding availability, landowner willingness, and sponsor capacity. Over time, collaboration can more fully re-connect salmon to miles of upstream habitat, with benefits to salmon spawning, incubation, and rearing. Returning adult salmon also benefit the streams by bringing nutrients from the ocean to fertilize streams and adjacent trees, shrubs, and other riparian vegetation.

6.3.1 Objective 3A. Enhance outreach and engagement of fish passage restoration, and opportunities for technical assistance, funding, and partnering.

The FPRP has a great deal of information and expertise to help other entities interested in fish passage restoration. The fish passage work plan also provides a reference showing where remedies of non-county barriers can help multiply habitat benefits for salmon. FPRP program staff can identify situations in which a planned County fish passage project may be close to another non-county barrier. In these situations, WLRD staff will work to communicate with the barrier owner, potential project sponsors, and granting agencies to catalyze planning and construction of a new barrier remedy. County lead agencies will also engage interested parties involved in land management activities near County fish passage projects to share information that could help restore fish passage more efficiently and faster.

This work takes sustained effort. Building relationships and partnering with Tribal staff, salmon recovery groups, fisheries enhancement groups, environmental groups, community associations, and agency staff will be essential to capitalize on opportunities. Ongoing communication and engagement with groups in each major watershed will help leverage available data and planning resources to optimize and

coordinate fish passage and other restoration work, while incorporating benefits for transportation, flood risk management, and public safety.

Coordination on outcomes of completed projects also provides an opportunity to document successes and adapt future projects to lessons learned. WLRD's work on unified monitoring of habitat restoration work provides a framework for future improvements that will benefit understanding of project performance.

6.3.2 Collaborate with owners of fish passage barriers on prioritization and sequencing of fish passage projects within stream basins to reopen potential habitat more quickly and to identify opportunities for coordinated permitting and contracting.

Outreach and engagement support collaboration and partnering with other barrier owners to coordinate priorities and sequencing of fish passage projects to achieve benefits more quickly. This includes coordinating work to complete multiple nearby projects (on the same stream or in the same subbasin) to leverage cooperation opportunities toward increased efficiencies, achieve better economies-of-scale, and coordinate construction (including temporary detours and closures) to minimize short-term impacts to county residents. This objective overlaps with Objective 2A since programmatic approaches for cooperation will facilitate application on specific project clusters. Efficiencies can be achieved through integrated design and permitting, contracting, grant applications, and construction procedures (such as access, staging, detours and closures, dewatering, and planting).

Collaboration can also involve sustained efforts along the same streams to incrementally address barriers to allow salmon to access significantly more upstream habitat. A good example of sustained work to benefit salmon through multiple fish passage projects is occurring on Langlois Creek near Carnation. Between 2018 and 2025, multiple entities have remedied six barriers on the lower three miles of the creek, including fish passage restoration at two County-owned barriers.²² One partial barrier owned by a private entity remains in this reach. Remedy of the remaining private barrier is the last action to completely restore unimpeded salmon access to the full creek segment. Remedy of all downstream barriers also increases the potential benefits of addressing some of the more upstream passage barriers, which will soon be the most downstream blockages in the system — quite a contrast to the pre-2018 situation, where these barriers would have been upstream of seven other barriers.

6.4 Relationship with the Clean Water Healthy Habitat Initiative

The 2020-2025 Clean Water Healthy Habitat (CWHH) Strategic Plan established “a shared vision of a healthy environment providing equitable benefits to all people of the County.”²³ The 2020 CWHH Strategic Plan provides a framework to “focus investments on actions that bring the most cost-effective gains for our environment now.”

The FPRP Strategic Plan weaves the principles of CWHH throughout. As a countywide effort with major efforts occurring in three divisions across two County departments, the FPRP provides an integrated

²² Projects on the stream have been led by WSDOT, the Snoqualmie Watershed Improvement District, and King County, in cooperation with local landowners.

²³ Clean Water Healthy Habitat Strategic Plan, 2020-2025 [\[LINK\]](#).

approach to better align investments toward outcome-driven work, provides a framework for sharing lessons and efficiencies, and leverages broad expertise toward innovation that improve project delivery and performance. Equity considerations are fundamental to County work and inform project selection and implementation procedures. Fish passage work remains an important element for salmon recovery, adaptation to changing hydrology resulting from climate change, and sustainable county infrastructure on streams and rivers.

Better Fish Habitat is one of six 30-year goals around which the strategic plan centers. Per the 2020 plan:

Reaching the 30-year goal of Better Fish Habitat means:

- *Native, wild fish populations are thriving, widespread, and self-sustaining, with ample healthy habitat in streams, lakes, and bays.*
- *People can enjoy locally caught fish in abundance to provide spiritual, cultural, subsistence, economic, and recreational value.*
- *Tribes have abundant salmon to provide for their personal, economic, cultural, and spiritual prosperity.*

The 2020 CWHH strategic plan outlines that the Better Fish Habitat goal will be evaluated by the following two provisional success measures:

- Juvenile salmonid survival will be increasing throughout all major watersheds.²⁴
- Restored access to two-thirds of King County's salmon habitat and all the kokanee habitat.

The genesis of the fish passage success measure is based on the FPRP metric for County Habitat Gain Potential (see Section 9.1). County Habitat Gain Potential reflects benefits from actions under the control of the County. At the same time, work with partners on fish passage is a key element of the FPRP (see Sections 6.3.1 and 10.4). Enhanced partnerships, outreach, and engagement will help address private and other non-county barriers on streams where the County plans fish passage projects to more fully connect stream segments between existing passage barriers (see below for more discussion).

Analysis of the inventory and prioritization data helps inform the CWHH success measure to restore access to blocked salmon habitat in the county. Current data indicates that restoration of fish passage at less than 100 of the county barriers blocking the most habitat would restore salmon access to about 70 percent of the habitat blocked by county barriers (reference Figure 1), which fulfills the CWHH provisional success measure. Given the target to complete 74 fish passage projects between 2023 and 2039 (see Section 10.3), maintaining a similar project completion rate shows the County completing about another 50 fish passage projects by 2050. Preliminary estimates indicate that this would result in restoring salmon access to 70 to 80 percent of the habitat that county barriers blocked as of 2020 (the baseline year for the CWHH strategic plan goals).

County barriers in known kokanee salmon habitat occur primarily on streams along the east side of Lake Sammamish. The 2023-2039 work plan would fully remedy all county barriers on known kokanee streams. The County's work with the Lake Sammamish Kokanee Work Group will continue to coordinate

²⁴ Juvenile salmonid survival monitoring is outside of the scope of the FPRP and the FPRP Strategic Plan. Thus, no further discussion of this measure is provided.

additional kokanee recovery work, including promotion and tracking of fish passage work by cities, the state, and fish habitat enhancement groups on other kokanee streams.^{25, 26}

By virtue of the thousands of fish passage barriers on county streams, restoration of salmon access to the full extent of potential habitat will be incremental. With so many barriers, the benefit of the remedy of a single barrier among many can look negligible. This is a challenge for fish passage, since any one barrier owner could point to lack of action on other nearby barriers as justification for not pursuing remedies of their barriers on the same streams. However, the reality is that completion of each individual fish passage project increases the justification and rationale for owners of nearby barriers to move ahead with fish passage at their facilities that block salmon passage. This is even more important for streams with substantial potential salmon habitat. The FPRP's plan to remedy key county barriers that are known to have large potential benefits for salmon will increase the rationale and benefit for addressing nearby non-county passage barriers.

To catalyze regional work on fish passage restoration, cooperation, transparency, technical assistance, and sustained focus on remedies over time are essential (see Section 6.3.2). Each fish passage project on larger streams in the county has an individual value that also contributes to the cumulative benefit of past, ongoing, and future fish passage and habitat restoration work across the county.

Work has begun on the 2026-2031 CWHH Strategic Plan. The updated CWHH plan will align with this FPRP Strategic Plan, including clearly illustrating the linkage between the success measures for Better Fish Habitat and FPRP goals, objectives, and success metrics for habitat gain. Additionally, the CWHH Strategic Plan will continue to support the principles that are at the heart of fish passage work: addressing the most impactful barriers first, working across jurisdictional lines with a systems approach, integrating across departments to working more efficiently, and working with partners to develop innovative funding and financing approaches.

7 Equity and Social Justice Alignment

Projects on the current fish passage work plan focus on priority in terms of benefits for salmon habitat. Most of the planned projects occur in areas of the county that tend to be less urban, which corresponds with streams with better potential salmon habitat because the stream has not already been subject to adverse impacts associated with heavy urbanization. At the same time, historically marginalized or underserved communities in King County tend not to co-occur with streams with the highest potential for habitat restoration and salmon recovery needs. As the County completes the highest habitat priority projects by 2039, the barrier prioritization will need to apply non-habitat factors to project selection since more than 100 barriers currently score similarly in the next tier of projects based on priority

²⁵ Blueprint for the Restoration and Enhancement of Lake Sammamish Kokanee Tributaries, August 2014. [\[LINK\]](#)

²⁶ Kokanee recovery in recent years focuses on preservation and recovery of late-run native kokanee in streams draining directly into Lake Sammamish. Recent research on kokanee indicates that kokanee runs may also persist in tributaries to the Sammamish River. These runs may be remnants of middle-run native kokanee, a strain that was thought to be extinct. If future work expands kokanee recovery work into more streams (such as Bear Creek), the FPRP will work with the Lake Sammamish Kokanee Work Group to determine how to reflect this new information in implementation of the FPRP and the CWHH Strategic Plan.

scoring. Equity analysis will provide an important factor to differentiate selection of fish passage work for the future generations of the Fish Passage Work Plan.

The County has a Pro-Equity Policy Agenda aimed at expanding access to the County's determinants of equity: child and youth development, economic development and jobs, environment and climate, health and human services, housing, information and technology, justice system, and transportation and mobility. For the FPRP, the most relevant determinants of equity are economic development and jobs, environment and climate, and transportation and mobility. Relative to environment and climate particularly, restoring salmon access to upstream areas brings numerous positive ecological effects to the watershed. These include transport by the salmon of ocean nutrients to forests throughout King County, which contributes to the growth of trees and forest canopy along streams and results in a healthy natural environment that is a key determinant of equity. Ensuring fish passage also restores natural stream processes up- and downstream of the structure, which enhances the function of county streams while improving resilience of county roads, trails, and other infrastructure to flooding.

To achieve better outcomes for the community, the FPRP integrates and implements pro-equity practices in the following major functions:

- **Plans, policies, and budgets:** Equity analyses inform budget development and project prioritization, helping to identify how County investments benefit underserved communities.
- **Community partnerships:** Collaborations with Tribes, residents, nonprofits, and community groups enhance trust and program success.
- **Communication and education:** Outreach efforts, ranging from individual conversations to workshops, expand awareness and engagement.

These functions often overlap. For example, equity analysis based on project locations relative to underserved communities shapes work plan development. Implementation relies on strong community partnerships and trust-building. Communication channels, such as social media posts and targeted workshops, further strengthen relationships and improve transparency. Project teams complete Equity Impact Reviews for all fish passage capital projects consistent with King County's Green Building Ordinance.²⁷

Countywide efforts to integrate equity in hiring, workplace culture, and employee development underpin the FPRP's implementation. Pro-equity contracting practices also play a vital role in ensuring equitable and just outcomes, even though these efforts extend beyond the program's direct scope.

Each County division also works consistent with Equity and Social Justice (ESJ) action plans. The ESJ action plans operationalize priority actions that staff and project teams integrate into their daily work. The action plans identify measures for evaluating progress and desired outcomes.

8 Tribal Consultation

Central to the FPRP is routine consultation with Native American Tribes on projects that might impact Tribal government, land, territory, or resources. Restoring fish passage at barriers is essential to honor

²⁷ King County Ordinance 194012 [\[LINK\]](#) and King County Code 18.17 [\[LINK\]](#).

Tribal Treaty rights, ensuring better outcomes for Tribal communities that have relied on salmon harvest for cultural sustenance and nourishment since time immemorial. The County's efforts to remove fish barriers in recognition of these Treaty rights address historical impacts and support salmon recovery.

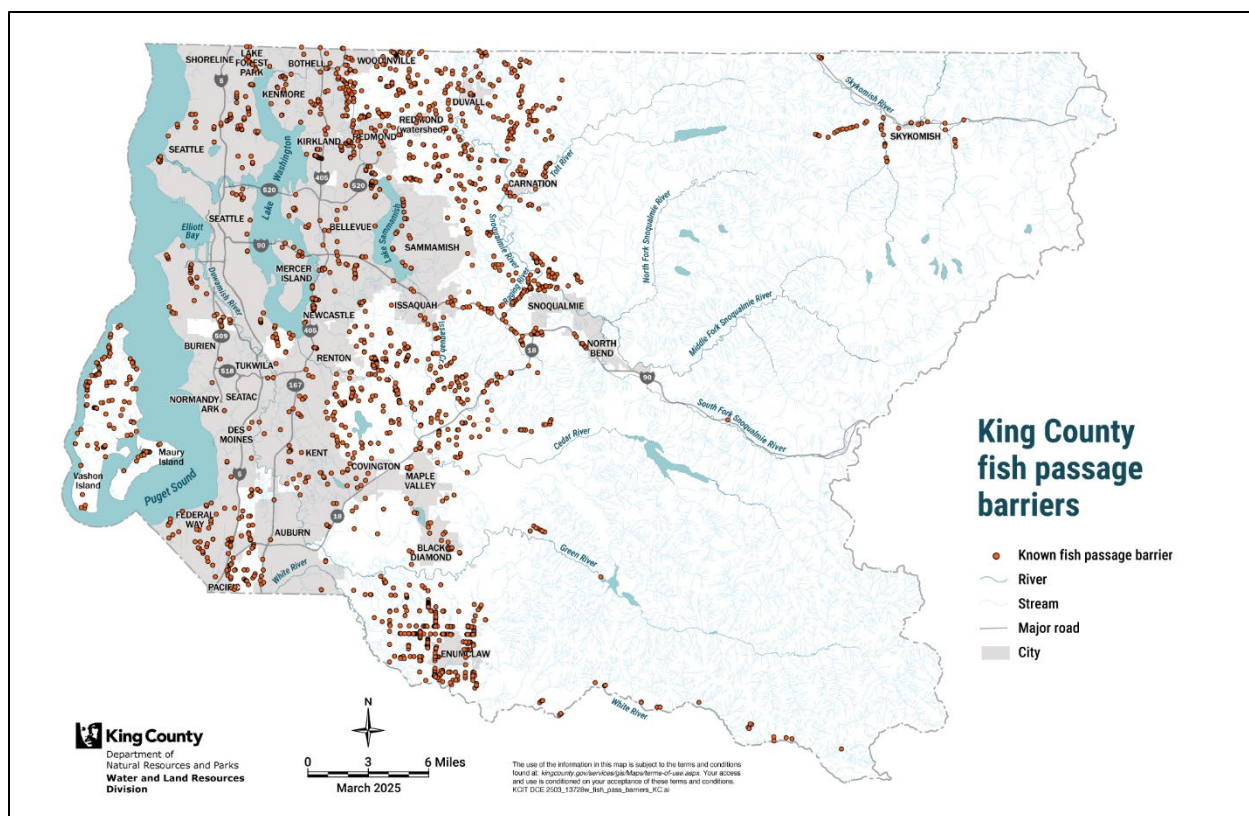
Restoring habitat and removing barriers to salmon accessing historic habitat is foundational to realizing Tribal Treaty rights. The County has been and will continue to consult with five Tribes that have Treaty fishing rights and/or trust lands within King County's geographic boundaries in the planning and execution of the FPRP. Section 10.5 details specific procedures for fish passage work by the County.

9 Measuring Success and Habitat Outcomes

Fundamentally, remedy of existing passage barriers blocking salmon from potential habitat represents program success. Program goals (see Section 6) provide targets for different program objectives.

Tracking capital project implementation provides data on the number of completed projects in comparison to progress estimated in the FPRP capital work plan. Close monitoring of active projects provides status checks on the accomplishment rate of projects prior to construction. This includes comparison of the estimated work plan timelines to actual accomplishment for starting projects and moving through the design process. Tracking of capital project progress focuses on county-led work.

Metrics to assess habitat outcomes include several different ways of measuring upstream habitat gain. For fish passage work, the length of upstream salmon habitat is commonly used to express the amount of habitat gain. For the FPRP, the barrier prioritization scoring also looks at upstream habitat gain for salmon based on upstream length together with measurements of the habitat value provided by the streams (also known as the intrinsic habitat potential of the stream for salmon). This measurement produces habitat units that can provide a better way to measure habitat gain since it relates the potential habitat quantity and quality. Stream length alone doesn't distinguish between stream size or setting (for example, stream length counts 100 feet of a two-foot-wide stream the same as 100 feet of a 15-foot-wide stream, where the wider stream has substantially more potential habitat for salmon). For tracking the gain potential for County-owned barriers, the FPRP evaluates upstream gain based on length (in miles) and habitat units.



As shown in Figure 3, many barriers occur on streams in King County. Based on the available data, the County owns 1,005 of the roughly 3,600 known salmon barriers within its borders (or about 28 percent of the total known salmon barriers are County-owned). The FPRP measures habitat gain using two methods to characterize habitat outputs.

9.1 County Habitat Gain Potential

For evaluating the potential habitat gain from county fish passage restoration, measuring the amount of upstream habitat is based on the length and habitat units upstream to the next partial or full county barrier or, if there is no upstream county barrier, to the estimated upstream extent of potential salmon habitat. This metric does not consider intervening barriers not owned by the County. However, it is the best way to determine the amount of upstream habitat potential released by remedy of barriers that fall under the direct responsibility of the County. This measurement technique is also consistent with the methods used in the Washington State Department of Transportation (WSDOT) fish passage program. Since the County has direct control of the inventory and remedy of county barriers, this technique provides a way to consistently track habitat outcomes over long time periods as new barriers are identified and some barriers are removed. The FPRP tracks this as the “County Habitat Gain Potential” (see Figure 4).

For the 2023-2039 work plan, the County Habitat Gain Potential totals about 350 miles of salmon streams that are currently blocked by county barriers. In coho salmon habitat units, the County Habitat Gain Potential equates to 1,570 coho salmon habitat units currently blocked by county barriers.

9.2 Immediate Habitat Gain

To salmon trying to swim upstream in a system blocked by a barrier, the ownership of the barrier is immaterial. To reflect habitat gain from a salmon's perspective, the FPRP will calculate the upstream gain to the next passage barrier of any ownership or, if there is no upstream barrier, to the upstream extent of potential salmon habitat. The FPRP tracks this measurement as "Immediate Habitat Gain," which represents the immediate habitat benefit of a barrier remedy, as experienced by salmon in the stream (see Figure 4).

Immediate Habitat Gain is based on a snapshot of conditions based on known passage barriers at one point in time. Immediate Habitat Gain could be as much as the County Habitat Gain Potential but, in many cases, it will be less; for instance, if a non-county passage barrier is closer than the next upstream county barrier.

While Immediate Habitat Gain provides the best snapshot of the amount of habitat opened up by a fish passage project when the project is completed, it is exceedingly difficult to track updated data over time on all non-county barriers. The metric will also change as upstream barriers are removed, which makes it less useful for prioritization. Over many years, evolving data on the hundreds of non-county barriers creates a likelihood of missing or double-counting habitat gains, making it difficult to compare habitat gains over the decades.

For the 2023-2039 fish passage work plan, the Immediate Habitat Gain (based on known barriers in spring 2025) is about 155 miles of salmon streams, compared to the County Habitat Gain Potential of about 350 miles.

For all habitat gains, note that the existence of a salmon barrier downstream does not factor into habitat gain methods. Fish passage restoration is an incremental business, with barrier remedies driven by opportunities created by landowner willingness, funding availability, and organizational capacity. Stream systems with the potential for large habitat gains from barrier remedies often have numerous barriers obstructing salmon passage. Sustained effort in important stream systems will target work on the most downstream barriers first, but the focus of work is to clear most barriers in the system over time. This occasionally results in upstream barriers being remedied before downstream barriers. However, completion of multiple fish passage projects over time results in significant increases in the length and amount of valuable habitat for salmon, even on reaches blocked by multiple barriers with multiple owners at the start.

County habitat gain potential vs. Immediate habitat gain




Fish passage barrier owned by King County



Fish passage barrier not owned by King County

County habitat gain potential

is the gain upstream of a given county-owned barrier to the next county barrier, or the upstream limit of salmon habitat in the stream. Existence of intervening non-county barriers is not considered.

If this county-owned barrier is removed, **county habitat gain potential** is area with green dots. 

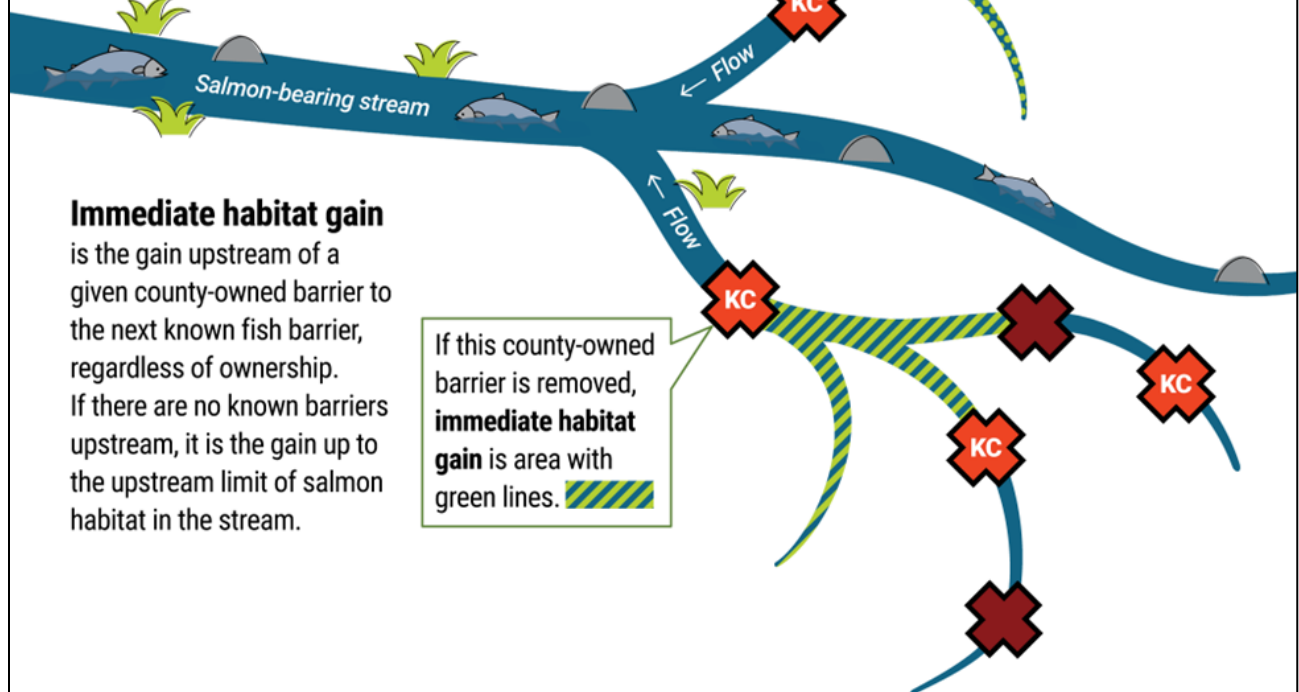


Figure 4. Graphic depicting County Habitat Gain Potential and Immediate Habitat Gain.

9.3 Subbasin Barrier Density

To get a picture of progress on fish passage efforts countywide, the program also tracks the density of salmon passage barriers in each of 60 subbasins in the county containing existing or potential salmon-bearing streams. Looking at the density of barriers over time allows the County to evaluate trends in recovering connectivity for salmon in our streams. For comparability across subbasins, this metric will be based on the number of barriers averaged over the total stream length in each subbasin. Changes in the

barrier density will occur with both fish passage projects to restore fish passage and identification of new barriers as field assessments occur on newly identified crossings or with future barrier inventory work. Tracking trends in barrier densities in each subbasin will be helpful to understand progress on fish passage restoration countywide and where investments in fish passage projects can be most effective. Tracking the geography of fish passage barriers will also provide a way to better incorporate equity into the County's capital work program.

The County plans to evaluate biennial trends in barrier density in each subbasin and to display trends in a color-coded map. Figure 5 shows the current barrier density by subbasin in 2024. This map provides a baseline to evaluate changes in barrier densities for each subbasin over time.

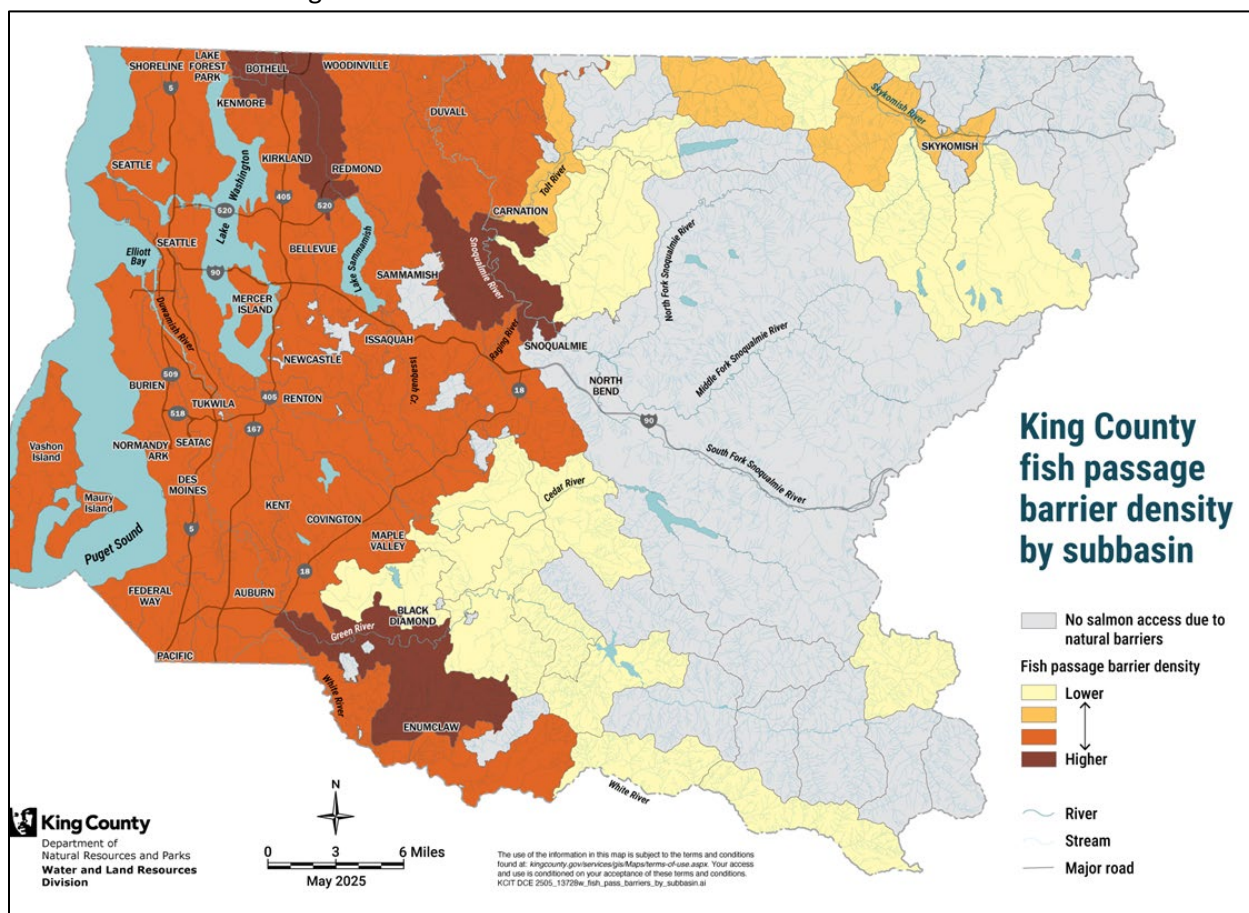


Figure 5. 2024 Fish Passage Barrier Density (barriers per stream length) for Subbasins with Existing or Potential Salmon Habitat.

10 Strategy and Implementation Actions to Achieve the Outcomes

10.1 Inventory and Prioritization

10.1.1 Inventory and Prioritization Strategy

The inventory and prioritization of County-owned barriers provides a foundation for other program elements. This data allows the County to identify and target fish passage investments in projects that will have large benefits for salmon, instead of taking a more random approach. The data-driven approach

aligns with Goal 1 in that targeting investment on better habitat outcomes results in more habitat benefits more quickly.

Inventory is also essential to coordination with partners, as it provides a common starting point for identifying where multiple barriers warrant collaboration to more fully connect salmon to habitat. Inventory also illustrates where priority barriers coincide with regulatory jurisdictions and permitting requirements, which informs efforts to streamline permitting while ensuring sufficient regulatory scrutiny to protect important resources.

Since 2019, WLRD has completed a comprehensive inventory of King County assets on streams and rivers to determine which are barriers to salmon passage.^{28, 29} The County's inventory assessment has been based on the procedures outlined in the 2019 Fish Passage Inventory, Assessment, and Prioritization Manual (2019 WDFW manual).³⁰ WLRD completed the focused inventory work in early 2022.

All data are stored in the WLRD geospatial database, which allows for mapping of barrier locations, cross-referencing with other county data and maps and data analysis. For example, the database indicates where there are concentrations of county fish passage barriers; how many county barriers are located in specific watersheds, community service areas, along a given road, or in proximity to landmarks; and how county barriers relate to locations of known non-county barriers. King County shares county barrier data with WDFW for incorporation into its statewide database on fish passage in Washington.³¹ For consistency and analysis purposes, the County also incorporates the WDFW barrier data on all identified barriers into the county geospatial database.

Per the 2019 WDFW manual, barrier determinations are based on the ability of a six-inch salmon or trout to migrate through, around, or over an instream structure like those assessed by the county inventory.³² For an instream structure to be considered a non-barrier, it should not obstruct upstream

²⁸ In brief, the inventory identified sites for field assessment based on intersections of County infrastructure with streams and rivers. Types of structures representing County assets in streams include culverts or pipes, bridges, catch basins, dams, various kinds of fish ladders, and structures to prevent debris from blocking other types of county assets. With these sites identified in a Geographic Information System (GIS) database, a team of four County staff visited each site to determine if a County asset existed on a stream that provides potential salmon habitat. Where that was the case, the team collected information on the dimensions of the structure and on the watercourse. The team then applied analysis protocols outlined in the 2019 WDFW manual to determine whether the asset posed a barrier to fish passage.

²⁹ Consistent with the geographic scope of the *United States v. Washington* case (the culvert case) related to salmon passage and the state's road culverts, the scope of the County inventory includes areas of the county that provide potential salmon habitat. It does not address areas upstream of natural fish passage barriers, such as Snoqualmie Falls, which provide habitat for trout but not migratory salmon species (the state barrier database has some data on barriers in these areas). Field inventory work includes assessment of whether a site may be upstream of a natural barrier that would prevent salmon from reaching the site. Some sites may be assessed for barrier status but later found to be upstream of a natural barrier.

³⁰ 2019 Fish Passage Inventory, Assessment, and Prioritization Manual [\[LINK\]](#).

³¹ WDFW Fish Passage and Diversion Screening Inventory webmap [\[LINK\]](#).

³² Barrier assessment is based on the swimming and leaping abilities of a six-inch salmon. New or replacement culverts and other instream structures typically must provide conditions that would allow unimpeded passage for all species of adult and juvenile fishes (WAC 220-660-190(3)(a)), which is a more rigorous criterion.

migration of a six-inch salmon at stream flows when they would be expected to attempt to swim upstream.³³ For sites determined to be fish passage barriers, the 2019 WDFW manual typically assigns “percent passability” as a qualitative indicator of the barrier severity during fish passage flows.³⁴

Figure 6 summarizes the results of the inventory of county-owned structures in streams with potential salmon habitat.

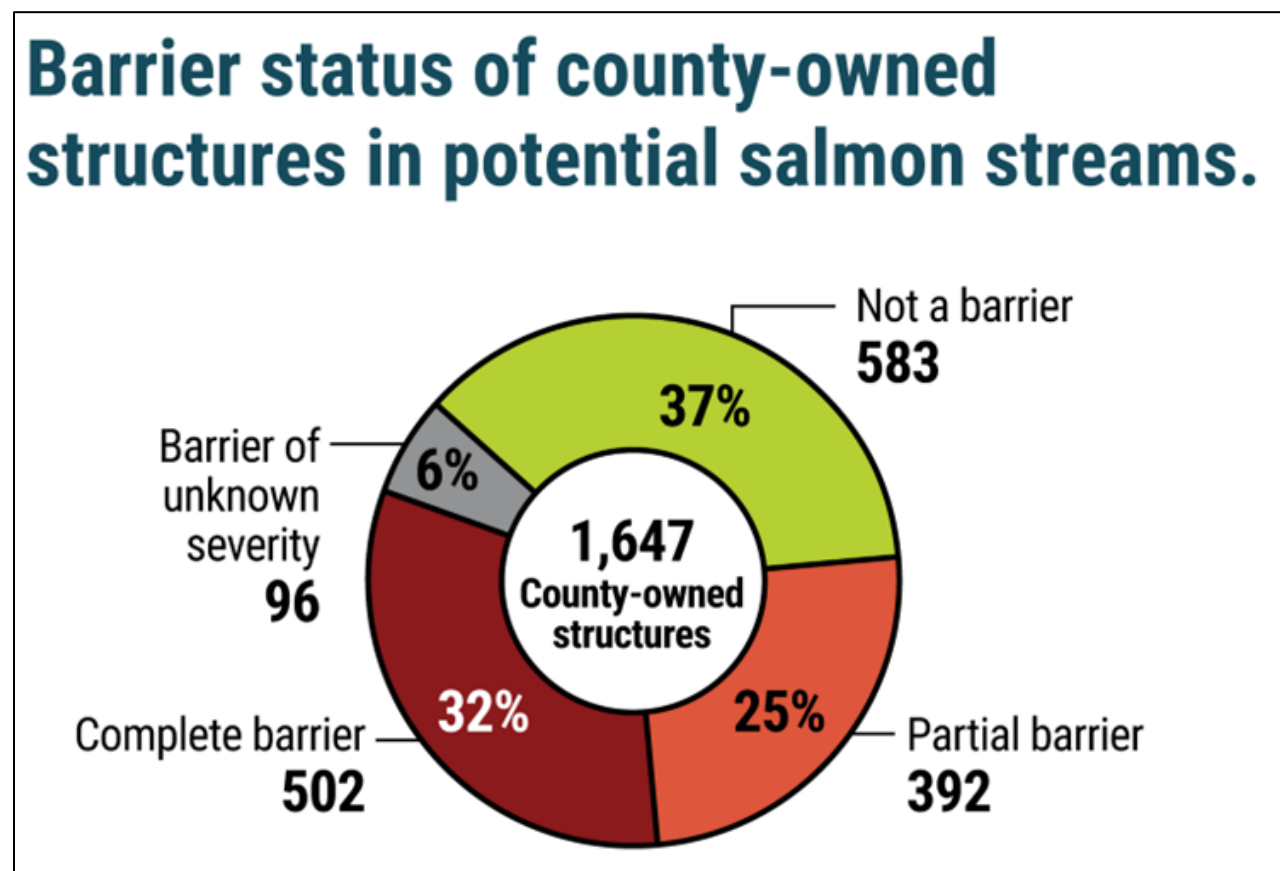


Figure 6. Summary of Barrier Status of County-Owned Structures in Potential Salmon Streams (as of August 2025).

Prioritization of identified county barriers occurs by scoring the barriers based on the potential habitat benefits that a barrier remedy would provide (Figure 7). Prioritization scoring for each barrier evaluates the amount of upstream habitat, the number and severity of other barriers located near the barrier (stream connectivity), the salmon habitat quality of the basin of the barrier, and the potential benefit of the barrier to Chinook or Lake Sammamish kokanee. Scoring reveals that only 70 County-owned barriers score higher than 50 points (out of a possible 100 points). This indicates that the County can achieve

³³ Upstream salmon migration typically would occur at flows lower than the 10 percent exceedance flow and more than the 95 percent exceedance flow, both determined based on the months when upstream salmon migration would occur. “Fish passage flows” fall within the interval between the 10 percent and 95 percent exceedance flows.

³⁴ It is not a quantitative measure of the proportion of flows that allow fish passage through a feature, nor is it the percentage of fish that are able to successfully negotiate a feature.

large habitat gains by targeting this small group of high-scoring barriers. This analysis of the county barrier inventory data is integral to development of the FPRP capital work plan (see Section 10.3).

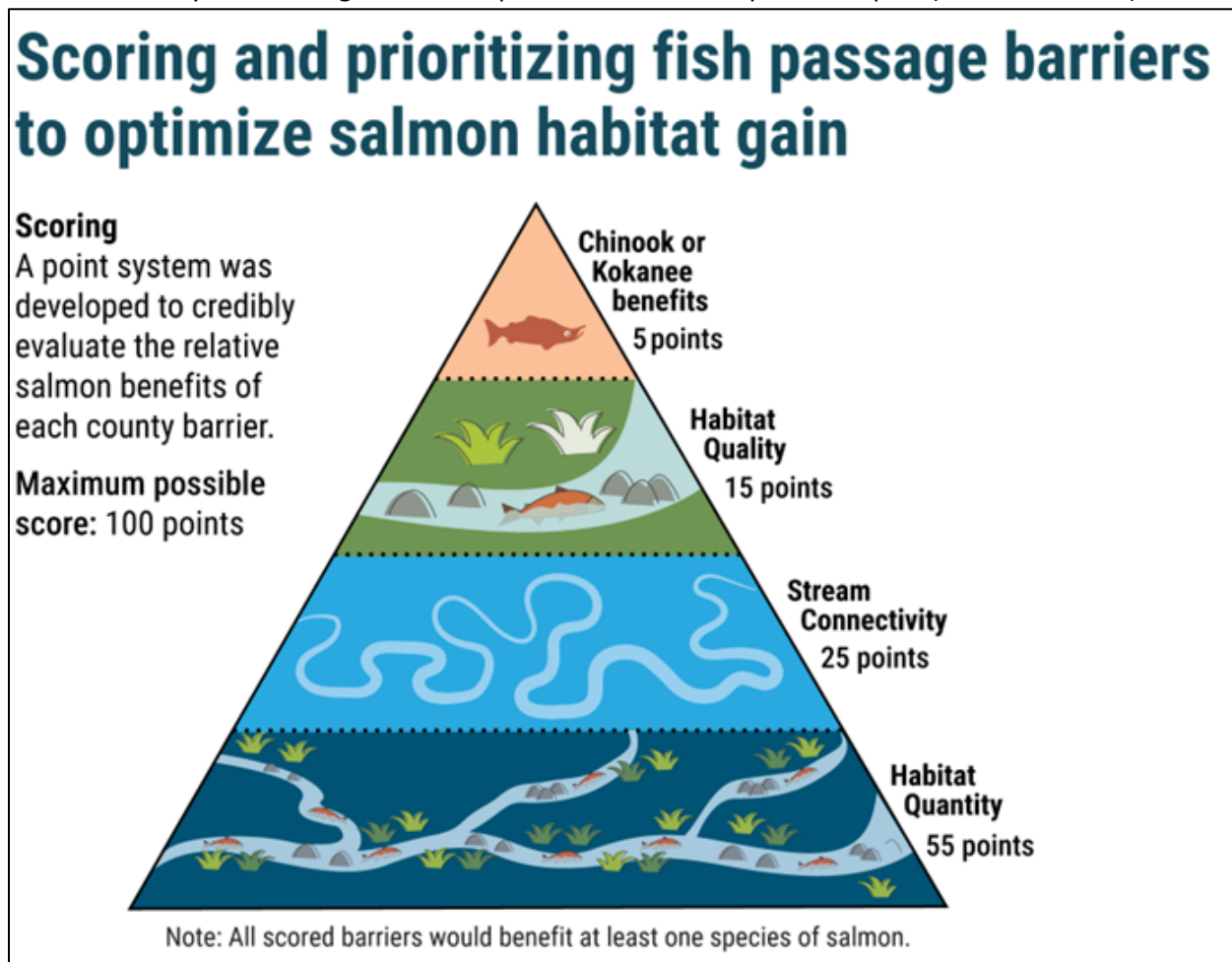


Figure 7. Prioritization Scoring Summary.

10.1.2 Inventory and Prioritization Implementation Plan

Most of the inventory and prioritization has already been accomplished. Future inventory work involves a low level of ongoing effort by WLRD staff to assess barrier status of newly identified barriers (either newly discovered or on newly acquired properties) and at sites where conditions have changed since the initial assessment (for example, due to removal or accumulation of sediment or debris in a culvert or completion of a fish passage project).

The FPRP plans to update prioritization scoring at least every four years to best reflect current conditions and barrier data.³⁵ Updates will incorporate changes in data used to score barriers, such as new barriers, remedied barriers, changed barrier status, improved mapping of streams, and updates of the extent of potential salmon habitat. For a given barrier, the priority scores for habitat quality and Chinook/kokanee

³⁵ For example, prioritization last occurred in late 2022 for 955 barriers. Since then, additional inventory has identified about 50 more County-owned barriers, most on small streams, which will be scored for priority at the next prioritization update.

benefits will not change substantially over time, but scoring for habitat quantity and stream connectivity may change over time.

The prioritization formula bases the points for habitat quantity on the percentage of upstream habitat for each barrier compared to the barrier with the maximum amount of upstream habitat. In the current county barrier inventory, about 20 County barriers have immensely more upstream habitat than the remaining barriers. All 20 of these barriers are slated to be remedied over the next 10 years. Once they are, it will take a lower amount of upstream habitat to get a high score, meaning remaining barriers with relatively more upstream habitat will float to higher scores.³⁶ For connectivity, as new barriers are identified and others are remedied, the scoring will change.³⁷ Updating prioritization scoring every four years will reflect conditions and barrier data as they evolve with program implementation.

Updated prioritization may also include improvements to the scoring formula made possible by improvements in data availability (for example, possibly incorporating additional species for intrinsic habitat potential) or improved technology. For example, Washington is currently developing a statewide fish passage prioritization strategy. From the state project's website:

*The goal of the comprehensive statewide strategy is to help 'prioritize and reduce barriers to fish passage in a way that benefits depressed, threatened, and endangered stocks, and that is informed by the best available science.'*³⁸

The statewide strategy has proposed a statewide optimization approach to prioritization that would maximize the amount of accessible high-quality salmon habitat based on variables and constraints that could include barrier severity, the relation of a barrier to other barriers, the length of upstream anadromous habitat, benefits to Chinook/orca, and the number of threatened, endangered, or depressed salmon and steelhead stocks. The state has developed a method for the optimization strategy. Next steps occurring into 2026 will test and finalize the optimization methodology to ensure meaningful and useful outputs. The strategy proposes that regional scoring-and-ranking prioritization methods, like King County's, incorporate the statewide optimization into their scores. The FPRP will closely follow the development of the statewide strategy to monitor and adjust the County's prioritization as necessary.

³⁶ For example, habitat scores are normalized based on an upstream habitat value of 30 habitat units. Currently, a barrier with at least 30 habitat units upstream gets the full 55 points for habitat quantity. A barrier with 15 habitat units upstream would be normalized to a percentage of the maximum value of 30 habitat units and would get half of the full score, or 27.5 points, for habitat quality. The formula to calculate this score is:

$$\frac{15 \text{ habitat units}}{30 \text{ max. habitat units}} \times 55 \text{ max. pts} = 27.5 \text{ points}$$

³⁷ For example, one element of the connectivity scoring assigns 15 points to the most downstream barrier on a stream system, with lower scores for barriers further upstream. As more downstream barriers get fixed, the scoring for upstream barriers will increase. Similarly, if new barriers are found in the future, it is possible that the connectivity score may decrease to reflect the existence of more known barriers impairing salmon access on the stream.

³⁸ Statewide fish passage prioritization strategy, Washington Department of Fish & Wildlife [\[LINK\]](#).

10.2 Program Procedures

The County's ambitious plan for fish passage restoration relies on completing many fish passage projects, which requires substantial effort and funding. Finding ways to streamline planning, design, construction, and monitoring for fish passage projects is essential to move fish passage restoration work forward. Developing and clarifying standard approaches for common project elements will be essential factors in making progress toward program success. Key processes identified for programmatic support include permitting, contracting and procurement, acquisition of real estate interests, engineering methods and practices, and priority transfer.

10.2.1 Project Permitting Strategy

This strategy aligns with Objective 2A (see Section 6.2.1, which summarizes permitting for fish passage projects). Work to optimize the permitting process, streamline application submittals and reviews, and establish more general approvals will help ensure predictability of the regulatory process and minimize time and effort involved in iterations between regulatory agencies and project teams. The strategy for permitting combines actions to update and streamline regulatory requirements with work to improve best practices of County staff who coordinate project permitting.

Current work to update regulatory requirements focuses on aspects of local floodplain development permitting. County codes are required to be consistent with federal standards for minimum flood hazard regulations so that county residents can purchase flood insurance through the National Flood Insurance Program (NFIP). They are also subject to review by the Washington State Department of Ecology. Currently, more than half of county fish passage projects experience delays and increased costs due to the county flood code. WLRD, with FPRP support, has received grant funding to update the county flood code to ensure compliance with federal and state requirements while improving clarity, streamline the local permitting process for habitat and for fish passage projects, and maintain flood safety. That project is expected to be complete in 2027.

At the state level, permitting for county fish passage projects typically can utilize a streamlined Fish Habitat Enhancement Project (FHEP) permitting path. This pathway is more challenging for projects not sponsored by a public agency or Tribe, but coordination with other applicants can help ensure broader application of the FHEP streamlining. The FHEP process provides a waiver from most local permit requirements, except for floodplain development permits. The previously mentioned coordination to revise County code dovetails with this aspect of the state process to leverage streamlining benefits.

The FPRP also provides a central point of contact for state agencies related to updates to the Washington Administrative Code (WAC) and the Revised Code of Washington (RCW) with impact on fish passage work, as well as interpretation and updates to the WDFW Water Crossing Design Guidelines.³⁹ For example, in 2024, County projects started to receive feedback from WDFW regulatory staff regarding freeboard of the replacement culvert on several projects, with WDFW referencing freeboard recommendations in the 2013 Water Crossing Design Guidelines.⁴⁰ Prior to 2024, similar County project

³⁹ The current edition of this document is the 2013 WDFW Water Crossing Design Guidelines [\[LINK\]](#).

⁴⁰ Freeboard is the height between the water surface during a severe flood event and the underside of the crossing above the creek (such as the bottom of bridge superstructure or the top of culvert).

designs had not raised concerns. The FPRP is providing technical support to help understand the state's concerns in relation to county constraints toward a programmatic resolution that will benefit future fish passage projects.

Currently, federal requirements for compliance with the Endangered Species Act can usually be covered by existing programmatic consultations, and Clean Water Act compliance generally involves review via a streamlined general permit process. Close attention on changes in federal permitting pathways and requirements will allow the FPRP to shape future updates and to better ensure a smooth federal review in the future. This work would occur in concert with the broader habitat restoration capital unit in WLRD.

For local permitting, the County expedites review of county fish passage projects via Permitting's Agency Review Team (ART), a dedicated team prioritizing County projects. The ART benefits all fish passage projects, and particularly those that are not eligible for a streamlined permitting path under the state Fish Habitat Enhancement Project process and therefore require a full suite of County reviews and authorizations. Since Roads, WLRD, and Parks all lead capital projects for fish passage, coordination among the FPRP agencies helps sequence and prioritize fish passage projects within the larger suite of permit applications for County projects. Future work includes improved coordination of fish passage projects to smooth workload for the ART and avoid situations where permitting review results in delays in delivering construction.

At the federal level, the County has entered into an agreement with the U.S. Army Corps of Engineers (USACE), pursuant to the Water Resources Reform Development Act 214, which allows the USACE to accept funds to expedite permit application review on County projects. Similar to the ART, this arrangement helps expedite project permitting, and the FPRP will work toward early submittal of applications that will help ensure permits are in hand well before the permit review threatens to affect construction timing.

10.2.2 Project Permitting Implementation Plan

Improving project permitting will involve multiple actions, including:

- Continue to catalyze work to update County code to streamline local permitting requirements for fish passage projects. Code updates to benefit fish passage work will be part of a comprehensive revision to local flood code with a tentative target for final updates in 2027.
- Increase outreach and engagement with County teams working on fish passage and habitat restoration capital projects to identify opportunities for streamlined programmatic review processes and continue to work to improve processes.
 - In April 2025, County staff in WLRD, Roads, Parks, and PSB assessed several risks with the highest likelihood and impacts on fish passage project delivery. A workshop of key staff outlined actions to improve efficiency and outcomes. These actions range from easier to complex. Moving through 2025 and into 2026, FPRP staff and management will continue to advance identified actions to implementation. The County will also coordinate to improve programmatic tools for Endangered Species Act compliance and clarification of technical requirements for fish passage project designs to ensure that they qualify for streamlined WDFW Hydraulic Project Approvals.

- Work with project ecologists and permitting specialists (local, state, federal) to ensure timeliness, adequacy, and quality of permit application submittals. This may include development of standard operating procedures, checklists, or improved templates.
- Continue to actively participate with the County ART and USACE Water Resources Reform Development Act liaison to fully leverage these dedicated resources toward timely and more efficient permit issuance for fish passage projects. This includes engaging regulatory staff at a pre-application stage to identify project issues earlier so that design and permit applications better incorporate regulatory requirements from the start (avoiding costly design iterations).
- Share policy or interpretation changes from regulatory agencies with all departments and design teams to minimize conflicts and ensure that submittals meet requirements in place at the time of permit submittals.

10.2.3 Acquisition of Real Property Interests Strategy

Culverts carrying salmon streams under County roads comprise 78 percent of known County fish passage barriers. Roads leads roughly 70 percent of projects targeted for completion by 2039. Work to replace culverts with fish-passable structures almost always requires temporary or permanent access on adjacent parcels outside of the County-owned road right-of-way (ROW). WLRD fish passage projects can also require acquisition of real property interests beyond county-owned property. For example, some county barriers managed by WLRD are long pipes that run under property that is not County-owned. While there may be easements for the pipe, work to repair or replace the asset often requires more room for activities not covered by existing easements. Although Parks fish passage projects generally occur on land owned entirely by the County, easements or access rights may be necessary for project elements or effects extending beyond publicly owned property lines. This may be less typical than for WLRD or Roads projects, but where a Parks project does require additional real estate, principles that apply are like those for Roads or WLRD.

Common work outside the County ROW or existing easements includes site surveys during design, temporary stream diversion, streambed grading, site access for equipment, and on-site crossing detours. The County negotiates with the owners of adjacent parcels to obtain the necessary real estate interests. Under current County norms, landowner agreement is necessary to obtain permission to use areas beyond the ROW boundaries.⁴¹ Real property interests depend on the project and site characteristics and can include rights-of-entry to gather site data, temporary construction easements, permanent easements, or purchase of property to acquire additional ROW.

The acquisition process is not entirely under the control of the County. Landowner willingness to participate in negotiations plays an essential role. Early coordination can help establish better relationships with landowners, but existing processes may demand deferring outreach during early project phases. For example, on projects with funding by the Federal Highways Administration (FHWA, often administered by the Washington Department of Transportation, WSDOT), the County may need to

⁴¹ WSDOT projects benefit from RCW 47.01.170, which outlines that “the department or its duly authorized and acting assistants, agents, or appointees have the right to enter upon any land, real estate, or premises in this state, whether public or private, for purposes of making examinations, locations, surveys, and appraisals for highway purposes.” There is not any similar authority for County agencies.

delay starting the real property acquisition process to comply with federal funding conditions regarding when landowner contact can start.

10.2.4 Acquisition of Real Property Interests Implementation Plan

Working through the constraints and opportunities of real property acquisition holds promise to make the County's work more efficient. Most of the work will be looking internally for opportunities to work within external constraints that can be programmatic (such as FHWA funding) or project-specific (such as landowner opposition to working with the County). A general goal will be to move acquisition work as early in the project design process as possible. The strategy may result in different approaches based on project specifics. For example, if project funding likely will not include FHWA, the project schedule for real property acquisition may be different than for a project seeking future FHWA funding.

10.2.5 Design and Construction Methods and Practices Strategy

In the 2023-2024 biennium, the County hired staff for fish passage capital delivery teams in Roads, Parks, and WLRD. These new positions focus on design and construction of County fish passage projects. Although the teams generally work on barrier types on assets managed by their respective agency, there are commonalities in the design and construction methods and practices. The practice of constructing similar projects presents opportunities to leverage expertise to inform future work and to standardize as much work as possible.

Fish passage projects involve decisions on project performance that affect scope, schedule, and budget. As the County accelerates the pace of fish passage projects, the FPRP will work with internal and external experts to investigate opportunities for innovation and standardization at key decision points. For example, how do box culverts compare to bridges in terms of life-cycle costs and performance for fish passage, transportation, and resilience to estimated impacts from high flows in the future? In another example, how do higher initial costs for a longer span across the waterway that has more room for the stream relate to life-cycle costs compared to a shorter span?

The FPRP will also work to identify project types where standard designs, including prefabricated bridges, could help improve project delivery and performance (which could include collaboration between regulatory agencies and Tribes toward consensus on standards and applicability based on different site conditions). The FPRP would then support work to develop tools to implement identified opportunities.

Improvements in design and construction methods and practices hold promise to also benefit the larger fish passage community, including other jurisdictions, private barrier owners, and community organizations (such as drainage districts, fisheries enhancement groups, or environmental groups).

10.2.6 Design and Construction Methods and Practices Implementation Plan

The FPRP will establish a forum for cross-team collaboration that shares lessons learned, process improvements, and best practices in a continuous improvement framework. Outcomes include improved staff skills, more efficient problem solving, and opportunities for helpful standardization of common practices and project elements. As an example, staff are already reviewing active projects to incorporate

lessons learned on expected minimum freeboard to ensure designs address this key design feature for future projects.

The FPRP will also work to identify project types where standard designs, including prefabricated bridges, could help improve project delivery and performance. The FPRP will then support work to develop tools to implement identified opportunities.

The FPRP will also lead coordination on design innovations on fish passage projects. This includes continuing work to evaluate the costs and benefits of upsizing crossing structures to provide more room for the stream running underneath.

10.2.7 Priority Transfer: Fish Passage Mitigation Strategy

Not all fish passage barriers are created equal for potential habitat benefits. Analysis of the county barrier inventory reveals diminishing returns in habitat quantity across all County-owned barriers. Review of Figure 1 shows that 100 of the top county barriers cumulatively block about 70 percent of the total habitat blocked by all county barriers. Said another way, remedy of 100 — or 10 percent — of county-owned barriers would restore salmon access to 70 percent of the currently blocked salmon habitat. The rate of habitat gain slows after that (e.g., the gain curve gets flatter). To restore salmon access to add another 10 percent of habitat, to 80 percent of the currently blocked salmon habitat, another 70 barrier remedies are necessary (meaning 170 barrier remedies to achieve 80 percent of the total possible habitat gain).

Looking at the right side of Figure 1 reveals another aspect of diminishing returns. Beyond 90 percent habitat gain, there are about 700 county-owned barriers. Together, these barriers cumulatively block only 10 percent of the currently blocked salmon habitat. This reflects the rigor of the barrier inventory and also highlights that investments in restoring fish passage on these barriers will not generate nearly as much habitat benefit as focusing on the barriers with significantly more upstream habitat (the left side of Figure 1).

At the state and federal levels, permits for repair or replacement of any existing fish passage barrier require restoration of fish passage. In cases where there is meaningful upstream habitat, providing fish passage makes sense. However, in the case of the hundreds of County-owned barriers with little to no meaningful upstream habitat, requiring fish passage results in substantial investments in a fish-passable structure with little to no benefit for salmon. Many County-owned barriers are old and in poor condition. While this includes some barriers with meaningful habitat gains (the work plan includes many of these barriers), hundreds of County-owned barriers have very little to no upstream habitat benefit.

Priority transfer involves working with regulatory agencies and tribes toward a process to better align investments in fish passage with actual habitat gains. Where the County needs to repair or replace a passage barrier culvert with little to no meaningful upstream salmon habitat, priority transfer would allow work on that site to replace the asset more cheaply without constructing a larger structure for fish passage. To mitigate for deferral of fish passage remedy at the low-habitat-gain barrier, the County would invest in remedy of another passage barrier with much more habitat gain. These procedures would restore fish passage to significantly more habitat more quickly and focus limited fish passage funding at remedies with the most important upstream habitat. The priority transfer concept is analogous to off-site mitigation for wetland impacts.

Establishing priority transfer procedures requires complex collaboration within the county and with Tribes and regulatory agencies. State regulatory requirements require project proponents to provide fish passage when work would extend the life of or replace an existing structure that is a fish passage barrier (see Section 6.2.3). A priority transfer program would be pioneering to find solutions that accelerate fish passage benefits while facilitating repair and replacement of county assets.

10.2.8 Priority Transfer: Fish Passage Mitigation Implementation Plan

Over the next three years, the FPRP will work toward programmatic implementation of priority transfer for King County. The County has already had one successful pilot project on the WLRD Reinig Road Revetment Repair project, accomplished in 2021 and 2022. In this case, the off-site barrier remedy opened up 1.5 miles of upstream habitat, compared to only 250 feet of potential upstream habitat at the primary construction site. Pilot projects like this can help demonstrate the win-win nature of priority transfer that significantly increases habitat benefits while streamlining needed repair and replacement of instream structures on small waterways without meaningful fish habitat.

The work program for priority transfer includes:

- Engage state and federal agencies and Tribal leadership at the policy level to underwrite staff collaboration.⁴²
- Staff collaboration with potentially interested tribes and regulatory agencies includes:
 - Collaborate to achieve a consensus on the scope of the priority transfer concept.
 - Using examples of sites for potential fish passage deferral and fish passage mitigation, create sound methods to assess potential habitat impacts and benefits of projects. This could include advancing actual pilot projects to work through procedural details with broader application.
 - Seek consensus on review procedures for proposed priority transfers.
 - Develop a framework for priority transfer commitments of the proposing entity with regulatory agencies and others.
 - Implement priority transfer for fish passage projects.

10.3 Capital Project Delivery

10.3.1 Capital Project Delivery Strategy

Since the inception of the FPRP in 2018, the program has evolved through several iterations of capital project selection and delivery. The primary driver for updates has been acquisition of better data as the comprehensive barrier inventory and prioritization progressed. In the 2019-2020 biennium, the first capital budget after program initiation, early action fish passage projects received funding as an initial investment to accelerate fish passage restoration. The 2019-2020 early action project list predates the start of the comprehensive barrier inventory. In the absence of inventory information, Roads, WLRD, and Parks identified a list of early action fish passage projects through review of known locations where a county asset on a fish-bearing stream needed repair or replacement, project lists in salmon recovery plans, and projects already under way where regulations would require fish passage. Selection of the projects for funding included estimates of upstream habitat potentially blocked by the County asset. The County funding in the 2019-2020 adopted budget supported planning, design, and construction of many

⁴² WAC 220-660-190(3)(b) and WAC 220-660-200(2) address mitigation for fish passage at water crossing structures.

projects at barriers that would later be identified as high priority based on habitat benefits. The original early action project list also included projects that the program later found would not provide substantial habitat benefits. To follow through on commitments made with initial investments starting in 2019, subsequent budgets have continued to fund most of these projects to completion.

As the inventory advanced into 2020, the program began to use the inventory data to identify other County barriers with substantial upstream habitat. The partial inventory data informed a refined capital project list for the 2021-2022 budget, which continued funding for many of the 2019-2020 projects with funding also provided for new projects. The 2021-2022 budget involved evaluation of potential projects based on three project tiers, as shown in Table 2. All Tier 1 projects either received new funding in 2021-2022 or remained active using carryover funding from prior adopted budgets.⁴³ Six of 17 Tier 2 projects received funding. No Tier 3 projects received new funding. The 2021-2022 fish passage budget evaluation factors and proposal show how the program started to pivot toward more habitat-focused outcomes based on available data.

Project Tier	Tier Rationale
1	<i>Project with Chinook or kokanee benefits.</i>
2	<i>Project that would have more than marginal benefit for coho/steelhead but not benefit kokanee or Chinook.</i>
3	<i>Project that would have little to no benefits for salmon and steelhead due to type of stream (extreme seasonality of flow; small size of stream; negligible amount of potential habitat upstream; located upstream from a natural fish passage barrier), degree of degradation of the subbasin (including extensive closed conveyances), or number/severity of barriers up- or downstream of the project site that do not have prospect for remedy in the next 10 years.</i>

Table 2. Project Tiers Developed for 2021-2022 Fish Passage Budget Proposal.

By the time of the budget proposal development for the 2023-2024 biennium, inventory and prioritization data provided the opportunity for more rigorous screening and identification of proposed capital projects and funding levels. The comprehensive inventory concluded in late 2021 and initial project prioritization was available by spring 2022.⁴⁴ The prioritization data allowed differentiation of past and future fish passage projects into two main project categories: (1) habitat-focused, and (2) infrastructure with fish passage.

⁴³ Since adoption of the 2021-2022 budget, the County has restored fish passage at nine of the 15 barriers included as active projects for the 2021-2022 biennium.

⁴⁴ Note that the budget proposal for the 2023-2024 budget was able to use prioritization scores that covered roughly 70 percent of all known County barriers. Full prioritization scoring was not possible for many barriers. For example, the field inventory identified several hundred County-owned barriers on streams that had been field-verified as potential salmon habitat but located in areas without mapped streams. The lack of stream mapping prevented scoring for some of the metrics in the prioritization formula. Since 2022, the FPRP updated stream mapping to connect all known County-owned barriers to the stream network.

The availability of 2022 prioritization scoring improved the ability to identify and propose funding for fish passage projects with better habitat outcomes. Habitat-focused projects have a high prioritization score or are downstream of barriers with high prioritization scores. The primary driver for infrastructure with fish passage projects is to address an asset with a significant risk of failure and with meaningful potential habitat benefits for salmon. The infrastructure with fish passage projects provides fewer habitat benefits than habitat-focused projects, but the benefits for salmon from these projects would be more than marginal.⁴⁵

The capital project work plan guides budget development, grant applications, and project delivery. Starting for the 2023-2024 biennium, analysis of the county barrier inventory and prioritization revealed that remedy of only 10 percent of all County-owned barriers would be sufficient to restore fish access to at least half of all of the salmon habitat blocked by County-owned barriers (with 2020 as the baseline year and based County Habitat Gain Potential, see Section 9.1). The resultant work plan comprised completion of Tier 1 and Tier 2 projects funded through 2022, coupled with new projects focused on remedy of the high-habitat-priority County barriers. The work plan targeted restoring fish passage at enough county barriers to restore salmon access to at least half of the habitat blocked by County barriers.

In mid-2022, the FPRP drafted a fish passage work plan identifying 62 fish passage projects that conceptually targeted completion by the end of the 2031-2032 biennium. Analysis revealed that some of the original early action projects were high-habitat-priority (“habitat-focused” projects), while urgency for repairs drove others (“infrastructure with fish passage”). To follow through on prior funding and ensure proactive repairs of barriers at risk of failure, the work plan recommended funding sufficient to complete infrastructure with fish passage projects that had been funded previously as Tier 1 or Tier 2 projects. Suspending work at these sites presented a high risk of a reactive approach to fix failures when they occur, with increased impacts to the public and natural resources and higher overall costs. At the same time, the addition of new habitat-focused projects in the 2023-2024 budget continued the programmatic pivot to accelerate habitat gains, which become evident in the subsequent iterations of the work plan.⁴⁶ Completion of the infrastructure with fish passage projects in a planned manner helps avoid emergency work at these sites that is more expensive and time-consuming than a planned project, with the benefit of helping conserve resources to deliver habitat-focused projects.⁴⁷

In spring 2024, updated prioritization scoring provided scores for the complete county barrier inventory. Since it’s based on much-improved stream mapping, the new prioritization also provided updated

⁴⁵ See Section 10.2.7 for more details on the range of habitat benefits for the county barrier inventory, where many barriers have little to no upstream habitat benefit.

⁴⁶ The work plan sequences each phase of included projects from design through construction. From starting through completion of construction, a project is scheduled to take three to six years, based on project complexity (a more complex project will take longer). So, a project that starts design in 2025 could be completed between 2027 and 2030. A key driver for project complexity is whether the project occurs entirely on County-owned land. If the County owns the entire project area (such as if the project is entirely on a Parks-owned parcel), lengthy acquisitions of easements or other landowner permissions are not necessary.

⁴⁷ As discussed in Section 6.2.3, current regulatory practice means that emergency repairs often lead to a later project to fund, design, permit, and construct a fish passable project at the same location that replaces the “temporary” emergency repair.

information on the amount of potential salmon habitat upstream of each county barrier, which improves the data on potential habitat gain from fish passage projects. The improved prioritization informed the proposed budget request for 2025 fish passage capital projects. Similar to the 2023-2024 biennium, funded projects also include funding to complete infrastructure with fish passage projects continuing from the prior budget cycle, with several infrastructure-with-fish-passage projects added, reflecting newly identified work necessary for safety and resilience of county assets. The 2025 budget for fish passage capital projects is based on the same concepts as the 2023-2024 biennium, with improved prioritization data incorporated into the analysis.

The 2026-2027 budget proposal development involved updates to the long-term fish passage work plan, which included a review of project progress, staff capacity, funding needs, and Tribal coordination, as discussed in more detail below.

The current fish passage work plan outlines fish passage capital projects from 2023 through 2039 (which now includes completed projects in 2023, 2024, and 2025). The project roster includes 74 County capital projects, eight of which have already been completed.

10.3.2 Capital Project Delivery Implementation Plan

The 2024 audit report recommends updating the fish passage work plan to ensure it is aligned with County and program goals and objectives (see Section 6). Since the audit, the FPRP has worked within the County and with Tribes to review available information to refresh and update the work plan. Data analysis includes an updated prioritization of County-owned barriers, updated habitat gains based on improved mapping of streams and rivers, updated inventory on newly discovered sites or sites on newly acquired parcels, and updated barrier assessments on some of the barriers on prior work plan versions. County agencies have also reviewed project timeline estimates to determine an aggressively realistic project sequencing based on recent experience of completed fish passage projects. Note that the work plan timing is based on continuation of current program practices and policies. Many of the current schedule drivers have been addressed for improvement in Section 10.2, which would help ensure the work plan meets or beats the estimated timelines.

In 2024, FPRP staff also held individual workshops on the work plan with natural resources staff from the Muckleshoot Indian Tribe, Puyallup Tribe of Indians, Snoqualmie Indian Tribe, Suquamish Tribe, and The Tulalip Tribes. In preparation for the workshops, the FPRP shared the fish passage database, slides of the existing work plan sites and proposed sites under consideration for removal, addition, and reconsideration, and the existing work plan project roster. At the workshops, County staff discussed the program status, presented the proposed work plan changes, and recorded Tribal feedback on the program and at the project level. In general, tribal feedback on the program was positive. Tribal staff generally endorsed the proposed changes and provided meaningful input on several questions about specific sites under consideration for addition or removal from the work plan.

The updated 2023-2039 work plan identifies 74 fish passage projects to remedy County fish passage barriers for completion between 2023 and 2039. Of the 74 projects on the work plan, eight have already been built. The remaining 66 projects would be built between 2026 and 2039. See Appendix C for the detailed work plan.

Consistent with Better Fish Habitat goals in the Clean Water Healthy Habitat Strategic Plan, the work plan would restore salmon access to at least half of the stream habitat that County barriers blocked in 2020 (based on habitat units calculated as County Habitat Gain Potential, see Section 9.1). Combined with fish passage work completed in 2020, 2021, and 2022, the County estimates that it will open up about 370 miles of salmon habitat (based on the County Habitat Gain Potential metric) by 2039.

Out of the 74 planned projects, the work plan includes 57 habitat-focused projects. Some barriers with high-priority scores are not included in the work plan. Reasons for excluding top-priority scores from the work plan include a combination of factors, such as:

- Numerous other nearby barriers that will be complex to address, including barriers not owned by the County;
- Low value of upstream habitat due to location of the stream directly adjacent to Peasley Canyon Road at the bottom of the narrow canyon;
- Likely ability to restore and maintain fish passage through diligent maintenance of sediment that frequently accumulates at the barrier (instead of structure replacement), or
- Tribal input indicating that remedy of several high-scoring barriers should be addressed only as part of a more comprehensive habitat restoration effort that is not currently planned.

The work plan sequences projects through 2039. The sequencing is based on completion of projects with prior investments in the near term, with a plan to start other projects to balance annual workload with the capacity of project teams in Roads, Parks, and WLRD, and in consideration of funding needs and estimated budget amounts. The project roster or sequencing in the work plan may change, particularly later in the planned period, based on new information, project progress, available funding, and partnership opportunities.

Project sequencing in the work plan reveals a pivot toward more emphasis on habitat-focused projects over time. This reflects a commitment to complete projects started prior to full availability of barrier prioritization, as well as tracking and facilitating needed infrastructure projects that also have meaningful fish passage benefits.⁴⁸ Moving toward to 2039 and beyond, attention to repair and replacement of at-risk fish passage barriers will continue to be an important element of the County's fish passage restoration work, which will benefit from increasing expertise and implementation of best practices for fish passage work.

10.4 Coordination with Partners

10.4.1 Coordination with Partners Strategy

With thousands of known fish passage barriers on King County streams, coordination with partners is essential to reconnect salmon to blocked habitat. Cooperation is necessary to coordinate and accelerate work on multiple barriers on high-priority streams, ensure access to remedy the highest-priority passage barriers, leverage available funding toward the most benefit, share best practices, and demonstrate how fish passage provides tangible benefits to salmon in the region.

⁴⁸ This includes accounting for the fish passage habitat benefits and working with the project lead on funding strategies for these projects, as necessary.

The FPRP has collaborated with the co-managers of salmon fisheries (WDFW and Tribes) since the program's inception. WLRD has worked closely with the co-managers through the inventory, prioritization, early action, and program procedure elements. WLRD will continue this work on both a project and program level to ensure that the County identifies and implements projects and programmatic processes that have co-manager support. Through the development and implementation of the program, the County has built mutual trust that will be the foundation for future gains in the pace of and benefits from fish passage restoration.

Consultation and collaboration with King County Tribes will have a large influence on the program and projects. Early coordination and consultation to fully engage the tribal communities represents an essential underpinning for the County's fish passage efforts. This includes incorporating Tribal staff in planning and training for the barrier inventory, sharing the inventory data with the Tribes, full engagement with Tribes to develop the barrier prioritization method, and upcoming work with Tribes on the priority transfer procedures. In response to feedback from county Tribes and the audit finding, the FPRP has established standard procedures for project-level coordination with tribal staff (see Appendix A).

The County is also in close coordination with WSDOT. Coordination with WSDOT benefits the County in multiple ways:

- In several cases where a county road is directly adjacent to a state road such that they share culvert systems, the WSDOT fish passage project has also remedied the county portion of the culvert as well. For example, in 2024, WSDOT replaced a culvert under both State Route (SR) 202 and the directly adjacent, County-owned SE Fish Hatchery Road with separate new bridges on roadways. This project also re-routed a tributary to flow under the new bridges, which addressed another passage barrier culvert that extended under the state highway and the county road. Another similar example is WSDOT's ongoing project on SR 203 that remedies one long barrier culvert that also extends under County-owned 324th Way NE. Close coordination with Roads allowed these projects to benefit from use of the county road as a detour to help with construction sequencing and traffic flow. In 2022, WSDOT completed construction of a joint project with Parks that remedies three nearby passage barriers on Ravensdale Creek, resulting in a new county trail bridge, a new highway bridge, and removal of an unneeded culvert under a former road alignment within the Black Diamond Open Space. Future fish passage work in Kenmore involving work on the lower reaches of Cat Whisker Creek between SR 522 and Lake Washington includes close coordination between WSDOT, the city of Kenmore, and Parks, and the likely remedy of a County barrier adjacent to the Burke-Gilman Trail that is in between fish passage work proposed by WSDOT (upstream of the trail) and Kenmore (downstream of the trail).
- County fish passage projects on the same stream system as recent or planned WSDOT fish passage projects will typically rank higher for state grant funding.
- County projects can learn from and adapt process, design, and construction improvements tested on WSDOT projects.

Successful fish passage restoration requires extensive collaboration with other local jurisdictions. Many cities share the County's interest in directing limited resources to the best-possible habitat outcomes. The County is closely coordinating with cities to understand where it is possible to work together to remedy more fish passage barriers on the highest-priority streams. This includes cooperating in development of programmatic procedures, which hold promise to improve the project sequencing by working from downstream to upstream.

Cities and nonprofit organizations with a salmon recovery focus are also key partners for fish passage restoration. The County's barrier prioritization can inform future plans for salmon recovery in county watersheds. Mutual support will help identify opportunities to leverage county funding and make grant applications for barrier remedies more competitive. Examples include outreach and engagement with the Mid Sound Fisheries Enhancement Group and a landowner toward removing a privately owned small dam immediately upstream of an upcoming Roads fish passage project. WLRD staff, including the basin steward, made the initial contact with the landowner and Mid Sound Fisheries since the private dam would be the only remaining passage barrier after completion of the Roads project, and the dam was less than 150 feet upstream of the Roads project. Coordination of nearby projects like this benefit from a more compelling rationale for grant funding and efficiencies obtained during design and construction (such as survey coordination, sharing areas for staging and access during construction, etc.).

Partnership with the corporate community is another key avenue for expanding funding for fish passage restoration. This could be associated with environmental stewardship programs in the business community or with helping companies meet regulatory requirements of their projects in a more cost-effective and environmentally beneficial manner. Working with the local business community to match its interests and resources to deserving fish passage projects holds promise to provide meaningful funding to the overall fish passage restoration program in the county.

Partnerships include sharing credit for successful projects to build awareness and support for fish passage work. The outreach and engagement for the FPRP necessarily includes extensive work with partners working in the same areas where the County has fish passage barriers. Support for broader fish passage work includes establishment of relationships with these groups to share information, build understanding of opportunities and constraints, and cooperate toward seeking funding (such as providing support letters for grant applications).

Restoring salmon requires work to address factors limiting salmon survival throughout their life cycle. The FPRP work includes projects that would benefit spawning salmon and also some projects to improve access to valuable habitat for juvenile salmon that is currently impaired due to fish passage barriers.

10.4.2 Coordination with Partners Implementation Plan

Coordination with partners is an ongoing effort. The County anticipates that engagement and communication will facilitate some future collaboration. Proactive coordination plans include:

- The FPRP website provides a convenient and informative entry point for anyone interested in fish passage, including opportunities to contact and work with the FPRP staff. Since spring 2024, FPRP staff have updated the website to state the current program mission ("Connecting Salmon to their Historic Habitat") and ensure that site content aligns with this mission. The website

content has been updated to new County standards for format, plain language, and accessibility. Updates in mid2024 supported migration of the website to the current web platform. In summer 2025, WLRD staff updated the website to align with this strategic plan. This includes incorporating the latest information on planning for capital projects. Upon finalization and adoption of this strategic plan, the final strategic plan will be posted on the website. Moving forward, the program plans to incorporate regular updates on performance metrics and interactive features on completed and planned fish passage work.

- The FPRP will target outreach to key cities, watershed forums, and salmon enhancement groups in 2025 and 2026 to publicize the program and seek opportunities to cooperate.
- Recurring consultation meetings are planned with Tribes to seek input, engage their expertise, and guide program direction. This includes invitations to an annual meeting to review active county fish passage projects (this would supplement project-specific coordination by project teams). Tribal consultation and subsequent communication will include seeking Tribal support for County grant applications.
- The WLRD fish passage team will continue to work with WSDOT, the Snoqualmie Valley Watershed Improvement District, and the Mid Sound Fisheries Enhancement Group to remedy private barriers in conjunction with planned County fish passage projects.
 - Partnerships will include working to integrate County efforts with other salmon recovery projects by others into compelling integrated grant application packages.
- The WLRD Capital Delivery Section, formed in March 2024, aligns the major habitat restoration capital units in WLRD. Implementation includes more comprehensive portfolio management that holds promise to facilitate internal and external cooperation on salmon recovery work, resulting in acceleration of beneficial habitat outcomes and salmon recovery.
- In recent years, WLRD has provided several letters of support for grant applications for non-county fish passage projects. FPRP staff will continue to serve as a central point-of-contact for non-county sponsors seeking County support of fish passage projects.
- FPRP staff participate in regional conferences, workshops, and meetings that bring together practitioners in a collaborative environment. This includes watershed planning, the Puget Sound Action Agenda, regional transportation coordination (such as the Puget Sound Regional Council, Washington State Association of County Engineers, and Washington State County Road Administration Board), state rulemaking, the Washington Brian Abbott Fish Barrier Removal Board, and associated ecosystem and fish passage restoration conferences.

10.5 Consultation, Outreach, and Engagement

10.5.1 Tribal Consultation Strategy

Consultation with Tribes on fish passage occurs at the project and program levels. Project teams lead coordination on specific projects with the goal of incorporating Tribal input into the project design and construction. To the maximum extent possible, the goal of project teams is Tribal consensus with the project design. This helps ensure a smooth design and permitting process. At the program level, FPRP staff have been coordinating and seeking Tribal input since 2018 on barrier inventory procedures, barrier prioritization, fish passage work plan development, and technical considerations for project design. In particular, the prioritization method has consensus approval from the Muckleshoot Indian Tribe, the Puyallup Tribe of Indians, the Snoqualmie Indian Tribe, the Suquamish Tribe, and The Tulalip Tribes. In 2024, FPRP staff met with staff from the Muckleshoot Indian Tribe, Puyallup Tribe of Indians, Snoqualmie

Indian Tribe, Suquamish Tribe, and The Tulalip Tribes to review ideas for updating the County’s fish passage work plan and seek Tribal input. The updated 2023-2039 fish passage work plan incorporates Tribal feedback related to newly added projects as well as removing some projects that were included on the original work plan.

10.5.2 Tribal Consultation Implementation Plan

Appendix A provides the expectations for Tribal consultation and collaboration for County fish passage projects, with a focus on project-level engagement. Key to successful implementation will be balancing meaningful and proactive outreach and engagement with Tribal staff to maintain project schedule and scope. Consistent with the Tribal consultation and collaboration procedures, the County will host an annual meeting with county Tribes to provide program and project updates and seek Tribal input. Project teams will also engage Tribes at key points in project design and construction, seeking input, guidance, consensus, and understanding.

10.5.3 Outreach and Engagement Strategy

The FPRP provides information to the public via its website.⁴⁹ Since the release of the audit in spring 2024, the website has been updated to reflect the direction outlined in this strategic plan. This includes prominently featuring the updated program mission statement: “Connecting salmon to their historic habitat.” This phrase aligns with the FPRP mission, goals, and objectives (see Sections 5 and 6). In 2024, the website content has also been updated to use simpler, plain language and moved to a new format consistent with WLRD-wide migration of websites to a new platform. The website provides background information about the program, resources to learn more about the FPRP (including detailed reports on program status, the prioritization methodology, and access to the County’s fish passage geodatabase), and news and announcements regarding the program. As detailed in Section 10.4.2, website updates in 2025 will include posting the final strategic plan, along with resources on the plan’s goals, objectives, strategies, and performance metric tracking.

Outreach to and engagement with partners by FPRP staff has historically been focused on project planning, design, funding, and project management. Frequent coordination occurs with WSDOT, WDFW, the Wild Fish Conservancy, the Snoqualmie Valley Watershed Improvement District, various landowners seeking technical assistance, and salmon recovery groups organized by Water Resource Inventory Areas (WRIAs). The FPRP has also periodically coordinated with cities and neighboring counties on particular issues or projects. Since 2021, FPRP staff in WLRD have provided technical review for the King County Flood Reduction Grant Program, which has provided an opportunity to engage a variety of applicants working on fish passage and keep abreast of ongoing fish passage work by others in the County.

The FPRP Strategic Plan and the clear goals and objectives it outlines will inform future outreach and engagement. Continued coordination with regional sponsors of fish passage and salmon recovery projects is essential to leverage county resources toward more comprehensive project benefits. Coordination also facilitates identification of opportunities for innovative funding strategies for projects. Ongoing communication with local or state staff working on grant programs has and will continue to proactively position County projects to compete well for grant funds.

⁴⁹ Fish Passage Restoration Program website [\[LINK\]](#).

The FPRP also plans to work with division grant specialists, legislative liaisons, and the County Executive's office to increase communication with state and federal legislative staff. Since 2018, County staff with the FPRP have coordinated several field trips and media events for federal representatives focused on fish passage and habitat restoration for salmon recovery. Leveraging the relationships established in these venues could help the County better lobby for earmarked state and federal funding in future legislation.

The FPRP has also served as the point of contact for several project sponsors seeking County support for funding proposals via grant programs or specific legislation. This role will continue and will also provide an avenue for increased engagement with other jurisdictions working on fish passage.

WSDOT currently has the largest fish passage restoration program in the region. The FPRP closely monitors progress and updates on the WSDOT program, looking for opportunities to learn from WSDOT work and coordinate nearby County and WSDOT projects. To date, few WSDOT projects planned or under way occur near County fish passage work. However, where WSDOT and County plans coincide, staff coordinate to ensure project compatibility, to share information, and coordinate timing and construction plans. One such instance occurs at a future Parks project on the Foothills Trail just north of the White River Bridge that is downstream of two planned WSDOT culvert replacements. Other sites involving close county/state cooperation include two 2024 state construction projects that remedied fish passage barriers under both a state highway and an adjacent county road (these both occurred in the Snoqualmie Valley on SR 202 and SR 203). The County is working with WSDOT on other fish passage projects, including Mud Creek on SR 202 and Hylebos Creek on SR 161.

10.5.4 Outreach, and Engagement Implementation Plan

Actions to implement the outreach and engagement strategy include:

- Update the FPRP website to post the final strategic plan.
- Regularly update the FPRP website to incorporate the most current information on program and project status and County contact information.
- Work with WLRD, Roads, and Parks staff to ensure web content, fish passage capital projects, and the FPRP is appropriately aligned and cross-referenced.
- By 2026, work with division grant specialists, legislative liaisons, and the Executive's office to develop procedures for engaging state and federal legislative staff and seek specific appropriations for important County fish passage projects.
- FPRP staff will continue to closely monitor and coordinate with state (WSDOT, WDFW, WDNR) and other local fish passage programs (cities, counties, non-profits).

11 Risk Assessment

The FPRP maintains a comprehensive risk profile that assesses risks across various threats with a qualitative analysis of the likelihood and threat of each risk (see Appendix D). The highest threats are associated with property acquisition, permitting, and contracting challenges. Proactive early engagement with landowners and regulatory agencies will help mitigate these risks. Investments in developing programmatic procedures represent one way to help address regulatory hurdles and contracting bottlenecks, although this often requires substantial up-front effort. The work on the flood code is an example of pursuit of programmatic approaches to address a regulatory constraint. Improved training of

County staff can also help mitigate actual and perceived burdens associated with real property acquisition, contracting, and permitting.

Mid-level threats also include other permitting and acquisition issues plus concerns about sufficient funding, staff capacity, and internal processes (project management processes, grant management expertise, and delays leading to cost increases). The formation of dedicated County teams for fish passage in WLRD, Roads, and Parks has already started to mitigate some of these concerns. Training, oversight, and tracking will help these teams reach optimum efficiency for project delivery in the near term. Funding will remain a concern that currently can only be mitigated by aggressive pursuit of external funding through all available sources. Work on FPRP funding also includes working internally to address severe structural funding limits faced by Roads due to reduced revenue; increases in costs for labor, materials, and equipment; a statutory limit of the growth in property tax revenue, and growing demand for services.

Another risk relates to the urgency to reverse declining salmon populations quickly so that adequate numbers of salmon exist to take advantage of improved access to more habitat. Salmon face pressures throughout their life cycle, with impacts from loss of habitat only part of the reason for their decline. Climate change impacts create an unprecedented challenge for salmon and King County ecosystems. Water quality also has a major impact on salmon. Given the high urbanization of the Puget Sound lowlands, the County's most developed and polluted streams are closest to Puget Sound, and salmon must pass through these areas early in their lives and also later on, when they return to spawn. Remedies of fish passage barriers are essential to allow salmon to access higher and more pristine habitats that presumably will continue to provide the cold, clear stream habitat that salmon need to spawn. At the same time, warming rivers and oceans, combined with changed precipitation patterns, may create challenging conditions for salmon during their life cycle, which creates a risk that salmon may not be able to reach the restored fish passage sites since there simply are not enough fish left to surmount challenges in other habitats. County work to address water quality threats, like runoff from roadways containing tire particles that are lethal to young coho salmon, help to mitigate risk. The County's current update to critical areas regulations will strengthen protection of aquatic areas, including riparian areas, where fish passage projects are located.

Low-risk issues center on internal processes over which the County has more control. Mitigation for these risks include internal collaboration and development of standard processes to streamline actions and define expectations for project teams to ensure implementation of best practices and collaboration across divisions.

The FPRP Steering Committee provides guidance and decision-making for the program. WLRD, Roads, and Parks staff closely track implementation of capital projects in the fish passage work plan to identify issues to raise for steering committee consideration and action. Future issues could include re-sequencing work plan projects based on schedule delays, funding constraints, and other project delivery risks. An example of adaptive management includes the process for updating the fish passage work plan for this strategic plan. Staff analysis identified concerns about the pace of project delivery, given funding constraints, staff capacity, and project complexities. Steering committee guidance manifested in the April 2025 workshop to move ahead with action plans for the highest-priority program risks, and direction to

take a closer look at project sequencing and the work plan timelines. Program staff coordinated to outline the new work plan that balances completion of active projects in the near-term, to allow more focus on fewer projects in future years. New projects planned to start in the next two biennia pivot the program toward habitat-focused projects consistent with the evolution of prioritization data and the program mission. Since 2024, WLRD, Roads, and Parks have all formed dedicated teams working on fish passage projects, which will help accelerate project delivery. This is important to more efficient delivery of some of the more complex habitat-focused projects in the next decade.

12 Funding and Financing Strategy

Total cost to complete the updated 2023-2039 fish passage work plan is estimated to be at least \$253 million.⁵⁰ The FPRP estimates that county funding will support no more than half of the estimated costs for the fish passage work plan. Since 2019, the capital program has received at least \$47 million in county revenues, with a generally increasing trend of annual funding over the four budget cycles. Budget appropriations for fish passage have been higher, reflecting the program seeking outside revenues focused primarily on local, state, and federal grant programs.

County Budget	Years in Budget Cycle	County Revenue for Fish Passage Capital Projects	Average Annual Fish Passage Capital Funding
2019-2020	2	\$12.55M	\$6.28M/year
2021-2022	2	\$11.32M	\$5.66M/year
2023-2024	2	\$12.92M	\$6.46M/year
2025	1	\$10.52M	\$10.52M/year
Total County Fish Passage Funding Since 2019		\$47.31M	\$6.58M/year

Table 3. County Funding Adopted for Fish Passage Capital Projects since 2019.

To date, the main sources of County funding for fish passage have been the Surface Water Management (SWM) fee, Real Estate Excise Tax (REET) revenue, and the Parks Levy. The SWM fee funding remained stable at about \$6 million per biennium from 2019 through 2024. In 2025, the SWM fee funding budgeted for fish passage increased to \$6.5 million for the single budget year, a substantial increase. SWM fee revenues likely cannot sustain this level of fish passage funding, given multiple programs funded by SWM (such as stormwater permit compliance, stormwater capital funding, other habitat restoration work, and funding for stormwater operational work). Nevertheless, the program anticipates that SWM will remain an important source of county funding for fish passage in future budgets.

In the most recent budget cycles, budget guidance for REET revenues has included fish passage as one of the priorities. In recent adopted budgets, REET funding comprises an important component of the fish passage budget. REET revenues also support other important priorities, and there is considerable uncertainty on future revenues, given the volatility in the real estate market in recent years that could continue in the future. For estimating purposes in the strategic plan, estimates for program funding forecast REET funding consistent with levels in prior adopted budgets. As noted in the risk assessment, this assumption comes with moderate risk.

⁵⁰ This cost estimate does not include costs for fish passage restoration at county barriers that are part of larger capital projects or being pursued by non-county partners.

Parks Levy funding has supported work on larger regional trail (shared use paths) projects that include fish passage (such as the East Lake Sammamish Trail). Parks-led fish passage work relies on either Parks Levy or REET revenue from the County plus grant sources. The King County Parks Levy Renewal approved by the Council for the August 5, 2025, ballot includes \$20 million of dedicated funding for fish passage over the six-year levy period (2026-2031). In August 2025, voters approved the levy, thus securing this funding for the next six years.

Establishing a local or regional funding stream dedicated to fish passage work would ensure program sustainability better than past funding provided primarily from the SWM fee and the REET.

Funding estimates for the FPRP work plan forecast that current and future county budgets could support about half of the costs for county fish passage projects, subject to Council budget authority. Grant funding is currently assumed as the probable revenue source for the remainder of the estimated project costs. To date, the program has seen successful grant applications on track with the program estimates and needs. Grant funding received comes from local, state, and federal programs. Table 4 provides the grant funding the County has received since 2019 for fish passage capital projects, totaling more than \$31 million.

Project(s)	Grant Award Amount	Year of Award	Grant Program (Funding Agency)	Project Lead
Ravensdale Creek Fish Passage	\$2,513,614	2019	Brian Abbott Fish Passage Restoration Board (Washington Recreation and Conservation Office)	Parks
NE Auburn Creek Fish Passage Project	\$200,000	2020	Cooperative Watershed Management Grant (King County Flood Control District via WRIA 9)	WLRD
Carey Creek at 276 th Ave. SE	\$758,000	2021	Brian Abbott Fish Passage Restoration Board (Washington Recreation and Conservation Office)	WLRD
Chinook Bend Fish Passage Project	\$100,000	2021	Open Space River Corridors Grant (King County Parks)	WLRD
Tolt MacDonald Fish Passage Project	\$100,000	2021	Open Space River Corridors Grant (King County Parks)	WLRD
Langlois Creek at NE 24 th St.	\$950,000	2021	Flood Reduction Grant (King County Flood Control District)	Roads
NE Auburn Creek Fish Passage Project	\$300,000	2021	Cooperative Watershed Management Grant (King County Flood Control District via WRIA 9)	WLRD
SE 384th St. at 172 nd	\$1,035,000	2021	County Road Administration Board Rural Arterial Program	Roads

Project(s)	Grant Award Amount	Year of Award	Grant Program (Funding Agency)	Project Lead
NE 24th St. Culvert Fish Passage	\$950,000	2021	Flood Reduction Grant (King County Flood Control District)	Roads
SE Reinig Road (culvert replacement)	\$1,465,000	2022	County Road Administration Board Rural Arterial Program	Roads
Tributary to Horseshoe Lake at the Snoqualmie Valley Trail	\$480,000	2022	Flood Reduction Grant (King County Flood Control District)	Parks
Daniels Creek at 185th Ave. NE	\$200,000	2022	Flood Reduction Grant (King County Flood Control District)	Roads
Bear Creek Basin (Cottage Lake Creek at Avondale Road NE and NE 144th Pl.; Daniels Creek at 185th Ave. NE; and NE 165th St. at 176th Ave. NE)	\$6,849,816	2023	National Culvert Removal, Replacement, & Restoration (Federal Highway Administration)	Roads
Langlois Creek at the Snoqualmie Valley Trail	\$1,219,166	2023	Brian Abbott Fish Passage Restoration Board (Washington Recreation and Conservation Office)	Partner (Snoqualmie Valley Watershed Improvement District)
Langlois Creek at the Snoqualmie Valley Trail	\$240,329	2023	Flood Reduction Grant (King County Flood Control District)	Partner (Snoqualmie Valley Watershed Improvement District)
Daniels Creek at 185th Ave. NE	\$895,000	2023	Flood Reduction Grant (King County Flood Control District)	Roads
NE Auburn Creek Fish Passage Project	\$450,000	2023	Flood Reduction Grant (King County Flood Control District)	WLRD
NE Auburn Creek Fish Passage Project	\$750,000	2023	Cooperative Watershed Management Grant (King County Flood Control District via WRIA 9)	WLRD
Culvert Removal on North Fork Newaukum Creek at the Foothills Trail	\$335,000	2023	Flood Reduction Grant (King County Flood Control District)	Parks
Jenkins Creek at Kent-Black Diamond Road*	\$3,719,500	2023	FHWA STBG (Surface Transportation Block Grant) funding administered by Puget Sound Regional Council	Roads
NE Auburn Creek Fish Passage Project	\$461,925	2023	Salmon Recovery Funding Board (Washington Recreation and Conservation Office)	WLRD

Project(s)	Grant Award Amount	Year of Award	Grant Program (Funding Agency)	Project Lead
NE Auburn Creek Fish Passage Project	\$500,987	2023	Puget Sound Acquisition and Restoration Program (Washington Recreation and Conservation Office, Puget Sound Partnership)	WLRD
SE Mud Mountain Dam Road Culvert Replacement	\$1,300,000	2024	Flood Reduction Grant (King County Flood Control District)	Roads
NE Auburn Creek Fish Passage Project	\$272,363	2024	Cooperative Watershed Management Grant (King County Flood Control District via WRIA 9)	WLRD
SE High Point Way Fish Passage Project	\$1,307,000	2025	Brian Abbott Fish Barrier Removal Board Grant	WLRD
Carey Creek at 276th Ave. SE	\$500,000	2025	Cooperative Watershed Management Grant (King County Flood Control District via WRIA 8)	WLRD
Avondale Road NE at Cottage Lake Creek Project	\$659,479	2025	Cooperative Watershed Management Grant (King County Flood Control District via WRIA 8)	Roads
Tuck Creek Confluence Fish Passage Project	\$600,000	2025	Flood Reduction Grant (King County Flood Control District)	WLRD
S. 370th Street Culvert Replacement	\$1,000,000	2025	Flood Reduction Grant (King County Flood Control District)	Roads
Total	\$30,112,179			

Table 4. Grants Received for King County Fish Passage Projects since 2019.

The grant funding depends on continuing to aggressively identify and pursue relevant program opportunities and to build on past successes. Federal grant programs for fish passage and ecosystem restoration stemming from substantial new funding provided by legislation passed in 2021 and 2022 likely are not going to have future awards past 2025. County staff will continue to monitor the evolution of future grant funding. Experience gained in the last three years puts the County in a good position to pursue new grant funding opportunities should they become available in the future.

Success for the program relies on aggressive identification and pursuit of funding additional to budgeted county revenues. The FPRP will continue to work collaboratively across WLRD, Roads, and Parks to track capital project delivery in relation to available funding, funding need, and grant opportunities. This work includes close coordination between WLRD, Parks, and Roads to identify the best candidate projects to submit for different grant programs, as well as reciprocal support preparing the highest-quality grant applications.

In addition to seeking grants, work will include coordination with Roads, Parks, and PSB on potential opportunities for including fish passage capital projects in levies or initiatives put to voters.⁵¹ Investigation into program funding from public-private partnerships and market-based approaches will be pursued as part of outreach and engagement.

Work will also continue with WLRD and Roads finance and administration staff, PSB, and the County Executive seeking opportunities to increase state funding for county fish passage and transportation capital projects. Support for state grant programs will continue. Work also includes continued county lobbying at the state level to adjust statutory limits on the growth of property tax revenue.⁵² This would benefit fish passage restoration by increasing funding for Roads maintenance and preservation that is commensurate with needs identified in the Roads Strategic Plan, which would increase funding available to replace aging and substandard culverts that are also fish passage barriers.

WLRD is also monitoring the status of mediation between the Western Washington Tribes and Washington state regarding the compliance with the *United States v. Washington* federal court case. The mediation outcomes could include opportunities for funding of non-state fish passage projects, including county projects, on streams or areas found to provide better habitat outcomes for the state's investment. Additionally, County collaboration with partners will include working with WSDOT, cities, and other entities to outline funding needs and identify funding strategies to align regional work on fish passage. Funding constraints are a common issue across the fish passage and salmon recovery communities, and ongoing coordination can help move the region toward sustainable funding in the amount necessary to better support salmon recovery.

13 Conclusion

The FPRP strategic plan outlines a comprehensive and effective strategy to accelerate fish passage restoration in King County, with corresponding benefits to salmon over the next decade and beyond. Providing salmon access to existing stream habitat represents one of the best ways to conserve and restore salmon populations. Focus on King County will help ensure that it remains salmon country for future generations.

The strategic plan updates and clarifies the program objectives, vision, desired outcomes, and goals. The program goals are ambitious yet achievable with a dedicated and concentrated effort over the coming years. The actions identified in the strategic plan provide the framework to guide the County's work toward fulfilling the program's vision.

County staff in WLRD have updated program web pages to reflect the finalized strategy. Program outputs will be displayed on the website and updated at least biannually (including updated program metrics that evaluate progress). The most recent website updates occurred in the summer of 2025 just prior to finalization of the strategic plan.

⁵¹ In August 2026, voters approved the 2026-2032 Parks Levy. King County voters have approved parks levies five times since 2003, the first time such a measure was placed on a ballot.

⁵² Even with an increase in the allowable growth of property taxes, any increase in property taxes would likely require voter approval via ballot measure.

The strategic plan will form the basis for future budgeting for fish passage restoration, with the updated work plan used, starting with the development of the 2026-2027 biennial budget proposal. The updated work plan also drives work to fund the projects with external revenues such as grants.

Program procedure improvement work is ongoing and will continue to improve the implementation tasks. Plans include establishing a framework for fish passage practitioners across Roads, Parks, and WLRD to share best practices and collaborate on problem-solving. Where possible, lessons learned in this forum will provide the basis for written guidance.

The FPRP continues to pursue priority transfer pilot projects to inform specific coordination with regulatory agencies and tribal staff, with the goal to leverage experiences toward a more programmatic approach.

This strategic plan is based on the best currently available information. Where new information indicates opportunities for updates to strategies or implementation tasks, the FPRP will coordinate with the FPRP Steering Committee toward strategic plan modification, with appropriate documentation to record any updates.

14 Acknowledgments

Many King County staff members contributed to the development of the Fish Passage Restoration Program Strategic Plan. We are grateful for the time and insights contributed by staff from the Muckleshoot Tribe (Martin Fox), Tulalip Tribes (Kurt Nelson, Brett Shattuck, Natasha Coumou), Suquamish Tribe (Alison O'Sullivan, Steve Todd), Puyallup Tribe of Indians (Russ Ladley, Eric Marks), and Snoqualmie Tribe (Matt Baerwalde, Kelsey Payne, Jennifer Hartke). Additional thanks to those inadvertently not listed who were involved.

Fish Passage Restoration Program Steering Committee

John Taylor, Department of Natural Resources and Parks (DNRP) Director

Leon Richardson, Department of Local Services (DLS) Director

Josh Baldi, DNRP WLRD Director

Lindsey Miller, DNRP Parks Division, Capital Improvement Program Manager

Tricia Davis, DLS Roads Services (Roads) Division Director

Jim Chan, DLS Permitting Division Director

Elena Davert, Office of Performance Strategy and Budget (PSB), Analyst

Quanah Spencer, DNRP Tribal Relations, Government Relations Officer

Fish Passage Restoration Program Technical Team

Dan Brubaker, formerly Roads, Fish Passage Unit Supervisor (former)

Jon Cassidy, Roads, Drainage and Fish Passage, Managing Engineer (retired)

Lica Dulan, Roads, Fish Passage Unit Supervisor (current)

Joann Kosai-Eng, Roads, County Road Engineer

Rose LeSmith, Roads, Engineering Section Manager

Zachary Moore, WLRD Fish Passage Unit, Ecologist

Susan Olive, Roads, Project Control Officer

Tri Ong, Parks, Capital Projects Managing Supervisor

Jon Polka, Parks, Fish Passage Unit Supervisor

Brett Randle, WLRD Data and Analytics, Geographical Information System Specialist

John Velimesis, WLRD Fish Passage Unit, Capital Project Manager

Contributors and Reviewers

José Carrasquero, Roads, Environmental Unit Supervisor

Ashley Evans, WLRD Policy and Government Relations Manager

Chris Jensen, PSB, Comprehensive Planning Manager

Megan Smith, DNRP Government Relations Officer

Tessa Harvey, DNRP, Government Relations Analyst

Katherine Taylor, DNRP, Government Relations Administrator

Randy Woods, DNRP, Technical Editor

Production Team

Evan Lewis, Fish Passage Restoration Program Manager, WLRD

Wendy Gable Collins, KCIT/Design and Civic Engagement

Alternative formats available upon request

Please call 206-477-4800 or TTY: 711

Appendix A. Tribal Consultation and Coordination Procedures

Fish Passage Restoration Program (FPRP) Capital Project Tribal Communication and Consultation Standard Operating Procedures

Tribal Communication and Consultation Purpose:

Tribal communication and consultation entail the County seeking advice, information, and/or guidance from a tribe about a proposed county action to best assure that the proposed action:

- Will support the Treaty rights of Tribes and Tribal members to their territories, lands, and resources, the exercise of Treaty rights, and fundamental freedoms of Tribal members;
- Will ensure fair and equitable treatment of Tribal members to ensure consistency with King County non-discrimination policies;
- Will receive the benefit of traditional and contemporary knowledge that Tribal people find appropriate to share;
- Will acknowledge, and when reasonable and appropriate, will integrate the culture, tradition, and history of the Tribe;
- Will sustain the Tribe's ability to autonomously administer its internal and local affairs;
- Will maintain the Tribe's distinct political, legal, economic, social, and cultural institutions;
- Will promote Tribal self-determination via self-governance, and
- Will strengthen the County-Tribal government-to-government relationship.

Background:

As a result of the treaties and other long-standing federal laws, federal agencies are obligated to protect and preserve Tribal government, land, territory, and resources.¹ This federal trust obligation applies to federal actions, including issuance of federal permits or approvals for county projects. To honor Tribal treaty rights and to assist federal agencies with meeting their trust responsibility, the County will routinely engage directly and indirectly with Tribes regarding county projects that might impact Tribal government, land, territory, and/or resources.

State law, rules, and regulations require the County to coordinate with Tribes and with the Washington Department of Archaeology and Historic Preservation whenever the County plans to engage in an undertaking that is funded by the state and/or which might impact cultural resources, archaeological sites, historic structures, and tribal sacred places.²

Several parts of county code require the County to notify certain Tribes about county actions. King County Code 21A.01.025 directs the County to "provide notice to any federally-recognized Tribes whose Treaty fishing rights would be affected by an action undertaken pursuant to this title, including but not limited to: development of wetlands, stream and river banks, lakeshore habitat of water bodies, or development directly or indirectly affecting anadromous bearing water bodies...." King County Code 21A.25.240 requires notification to concerned Tribes if a known archaeological site or traditional cultural place is affected by a development proposal.

¹ *Cherokee Nation v. Georgia*, 30 U.S. 1, 17 (1831); *Seminole Nation v. U.S.*, 316 U.S. 286, 296-297 (1942); Presidential Memorandum (29 Apr 1994) Government-to-Government Relations with Native American Tribal Governments. [\[LINK\]](#)

² RCW 27.53. [\[LINK\]](#)

Fish Passage Restoration Program (FPRP) Capital Project Tribal Communication and Consultation Standard Operating Procedures

Tribal Communication and Consultation Principles

Tribal Co-Management on fish passage projects intends to engage Tribal staff sufficient for project teams to incorporate valuable tribal input into project designs and to meet obligations for tribal consultation. The objectives of tribal communication and consultation are to:

- Build trust by working in good faith to incorporate Tribal input into project design, construction, and implementation of county fish passage projects;
- Communicate and consult early to minimize later design iterations; and
- Identify and address Tribal concerns being raised during project permitting reviews associated with:
 - Hydraulic Project Approval: most stand-alone fish passage projects are expected to receive a Fish Habitat Enhancement Project HPA [Washington Department of Fish and Wildlife]
 - Water Quality Certification: fish passage projects that qualify for Nationwide Permit 27 generally will not require an individual water quality certification [Department of Ecology]
 - Department of the Army Permit: most stand-alone fish passage projects are expected to qualify for a nationwide or regional general permit. [U.S. Army Corps of Engineers]

Tribal Natural Resources Input is Essential and Requested on:

- Project selection.
- Project purpose and scope.
- Alternatives analysis and preferred alternative (as recorded in the Conceptual Design Report, Alternatives Analysis Report, Basis of Design Report, or other documentation).
- Technical analyses of interest to Tribal staff (i.e., bankfull width and floodplain utilization ratio, hydrology and hydraulics analysis, geomorphic analysis, critical areas surveys, etc.).
- Proposed channel design (i.e., channel width and slope, sediment gradation, woody material quantity and placement, channel configuration, etc.).
- Major changes during construction.
- Monitoring implementation.
- Post-construction maintenance and adaptive management.

Tribal Cultural Resources Input is Essential and Required for:

- Definition of the project's Area of Potential Effects (APE).
- Scoping of potential cultural resources (archaeological, cultural, ceremonial) within project's APE.
- Cultural resources field surveys and their results.
- Avoidance and minimization of adverse effects on cultural resources in the APE.
- If adverse impacts are unavoidable, participation in development of a memorandum of agreement (MOA) identifying mitigation for adverse effects to cultural resources and signing of the MOA.

Fish Passage Restoration Program (FPRP) Capital Project Tribal Communication and Consultation Standard Operating Procedures

Tribal Communication and Consultation Procedures for King County Fish Passage Projects

- Annually between October and January, the FPRP will meet with area Tribes to provide them with an update of county fish passage projects planned for activity the following year. This includes projects just starting work and projects under way that will continue (including projects planned for construction in the next summer). The Tribes will be asked to indicate their desired level of communication and consultation on each new project, and for their feedback on how well project teams are communicating and consulting with them on ongoing fish passage projects.
- Incorporating information coming from the annual meeting, project teams will reach out to Tribal staff at appropriate project phases to invite feedback on questions relevant to the phase of the respective projects. The King County Historic Preservation Program can provide recommendations for Tribal contacts as part of its review of County projects. Generally, project teams should seek Tribal consensus on key project information and milestones such as:
 - Determination of the APE, cultural resources survey methods and results, the determination of effect on cultural resources, and mitigation for unavoidable adverse effects on cultural resources (King County Executive Policy for Cultural Resources Review and Protection ([LUD 16-1-1-EP](#)) details cultural resources, procedures, and requirements);
 - Determination of the design approach for the project, including bankfull width, floodplain utilization ratio, site hydrology and hydraulics, sediment transport, and proposed channel configurations;
 - Selection of a recommended alternative;
 - Final design;
 - Substantial adaptations of the project during construction, and
 - Implementation of post-construction monitoring and maintenance.
- County teams working on fish passage projects will proactively engage Tribal feedback to inform key project milestones. Early and proactive coordination will assist in obtaining essential information from Tribes, which can reduce costly and time-consuming iterations of input and response at later project phases. Project teams will keep track of communication and consultation efforts.
- Project teams will notify tribes of opportunities for field visits throughout the project lifecycle and facilitate Tribal participation. Key opportunities include field determination of the bankfull width, critical areas field surveys, site visits during project construction, and post-construction monitoring.
- Where Tribes have provided feedback but there isn't full tribal concurrence on the project or project features, the project team will document where the project decision is consistent with and where it differs from Tribal input. Differences from Tribal recommendations will be recorded in project documentation as a risk to future project phases and implementation.

Fish Passage Restoration Program (FPRP) Capital Project Tribal Communication and Consultation Standard Operating Procedures

- When project teams invite communication and consultation, and Tribes do not respond within reasonable time periods, the project team will document outreach efforts and that no feedback from the tribe has been received.³ A lack of response at one point in the project is not grounds to reduce or eliminate communication and consultation with Tribes in future phases. In the event of numerous yet unsuccessful attempts to contact Tribal staff, project teams should contact Quanah Spencer, the DNRP Tribal Liaison, for assistance.
 - Project teams should follow up any correspondence or invitations to consult with a phone call, email, fax, etc. Tribal staffs face heavy workloads and may not respond quickly to requests. Do not treat nonresponse from a Tribe as an indication of its disinterest in the project. Project teams should continue to reach out to the Tribe(s) until reaching a representative who can convey the Tribe's level of interest.

³ As a general rule, project teams should allow a minimum of two weeks for Tribal response and reviews. Whenever possible, providing more than two weeks can better ensure meaningful Tribal input that minimizes the chance for input later that could result in more lengthy consultation and re-design. In rare cases, emergent issues may arise where response timelines need to be shorter (for example, unexpected changes during project construction due to weather or inadvertent discoveries). These instances typically will be due to unforeseen events out of the county's control.

Appendix B. 2020-2024 Completed County Fish Passage Projects

FPS #	Location	Stream Name	Tributary To Name	Project Lead	Habitat Priority Score	Completion Year	County Habitat Gain (Habitat Units)	County Habitat Gain (Miles)	Immediate Habitat Gain (Habitat Units)	Immediate Habitat Gain (Miles)
99	Green River Rd., Auburn	Mary Olsen Crk	Green R	Roads	n/a	2020	11.2	4.7	0.7	0.7
2493	SE 180th Pl.	Molasses Creek	Cedar R	Roads	n/a	2020	7.2	1.4	0.7	0.1
10198	Eastrail	Unnamed	Lk Washington	Parks	n/a	2020	0	0	0	0
10205	Eastrail	Unnamed	Lk Washington	Parks	n/a	2020	0	0	0	0
1925	SR169 & Cedar River Trail, Cedar Grove	Unnamed	Cedar R	WLRD	n/a	2021	0.6	0	0.6	0
2437	Kelly Rd. NE, Duvall	Unnamed	Harris Crk	Roads	n/a	2021	6.7	2	4.1	1.8
919, 1307	Northshore Athletic Fields, Woodinville	Derby Crk	Sammamish R	Parks	n/a	2022	4.7	1.8	2.1	0.4
975	E. Lake Sammamish Trail	Pine Lake Crk	Lk Sammamish	Parks	n/a	2022	44.0	5	36.0	4.3
1000	E. Lake Sammamish Trail	Unnamed	Lk Sammamish	Parks	n/a	2022	0.6	0.2	0	0
1290, 1957	Green-to-Cedar Trail, Maple Valley	Ravensdale Crk	Lk Sawyer	Parks	n/a	2022	16.6	3.4	8.6	0.4
2046	SE 380th Pl. near Muckleshoot Reservation	Charlie Jones Crk	White R	Roads	n/a	2022	9.0	0.9	9	0.9
2112	E. Lake Sammamish Trail	Ebright Crk	Lk Sammamish	Parks	n/a	2022	21.0	2.4	9	1.1
4171	E. Lake Sammamish Trail	Unnamed	Lk Sammamish	Parks	n/a	2022	5.0	0.5	5.0	0.5
2058	284th Ave. SE	Unnamed	Boise Crk	Roads	67	2023	7.9	1.4	2.0	0.8
2226	NE Woodinville-Duvall Rd	Tuck Crk	Snoqualmie R	Roads	55	2023	4.0	1.2	4.0	1.2
2089	Foothills Trail ROW	North Fork Newaukum Crk	Newaukum Crk	Parks	90	2024	30.8	7.5	13.7	2.6
1921, 2123	SE 432nd	Watercress Crk	Newaukum Crk	Roads	80	2024	41.4	9.7	18.0	2.0
1953	Snoqualmie Valley Trail	Langlois Crk	Snoqualmie R	Parks	77	2024	10.0	1.7	10.0	1.7
2020-2039 TOTALS							220.7	43.8	123.5	18.5

Appendix C. 2023-2039 Fish Passage Work Plan

FPS #	Location	Stream Name	Tributary To Name	Project Lead	Habitat Priority Score	Estimated Completion Year	County Habitat Gain Potential (Habitat Units)	County Habitat Gain Potential (Miles)	Immediate Habitat Gain (Habitat Units)	Immediate Habitat Gain (Miles)	Total Project Cost Estimate (2025 Dollars)
2058	284th Ave. SE	Unnamed	Boise Crk	Roads	67	2023	7.9	1.4	2.0	0.8	Completed
2226	NE Woodinville-Duvall Rd.	Tuck Crk	Snoqualmie R	Roads	55	2023	4.0	1.2	4.0	1.2	Completed
2089	Foothills Trail ROW	North Fork Newaukum Crk	Newaukum Crk	Parks	90	2024	30.8	7.5	13.7	2.6	Completed
2123	SE 432nd	Watercress Crk	Newaukum Crk	Roads	80	2024	41.4	9.7	18.0	2.0	Completed
1953	Snoqualmie Valley Trail	Langlois Crk	Snoqualmie R	Parks	77	2024	10.0	1.7	10.0	1.7	Completed
106	26124 SE 472 St.	Unnamed	White R	Roads	58	2025	17.6	2.8	17.1	2.7	\$2,005,878
2130	NE 24th St.	Langlois Crk	Snoqualmie R	Roads	42	2025	9.5	5.5	1.6	0.1	\$1,944,434
2125	SE 384th St. West of 176th	Charlie Jones Crk	White R	Roads	36	2025	4.1	0.6	4.1	0.6	\$1,818,550
2142	East Lake Sammamish Trail	George Davis Crk	Lake Sammamish	Parks	75	2026	30.2	6.5	0.0	0.0	\$-
9632	Mouth of Auburn Creek	NE Auburn Crk	Green R	WLRD	69	2026	21.5	4.4	21.5	4.4	\$11,900,000
2737	Margaret's Way Entrance	Unnamed	May Crk	Parks	47	2026	n/a	n/a	n/a	n/a	\$3,745,000
2099	Avondale at NE 144	Unnamed	Cottage Lake Crk	Roads	39	2026	6.2	1.7	0.5	0.2	\$1,979,568
11577	Chinook Bend Natural Area	Unnamed	Snoqualmie R	WLRD	37	2026	1.2	0.1	1.2	0.1	\$200,000
165	NE 128th Way	Unnamed	Cottage Lake Crk	Roads	29	2026	0.3	0.7	0.3	0.7	\$1,768,048
2296	NE 165th St.	Unnamed	Cold Crk	Roads	21	2026	1.6	0.7	1.6	0.7	\$1,929,289
2002	276th Ave. SE	Carey Crk	Issaquah Crk	WLRD	96	2027	24.9	9.3	24.9	9.3	\$10,425,000
1997	17401 SE 240th St.	Little Soos Crk	Big Soos Crk	Roads	80	2027	19.2	3.8	17.9	3.1	\$5,295,000
9628	Dutchman Row Revetment	Unnamed	Snoqualmie R	WLRD	61	2027	0.6	0.0	0.6	0.0	\$-
2373	Snoqualmie Valley Trail n. of NE Carnation Farm Rd.	Unnamed	Horseshoe Lk	Parks	58	2027	10.5	2.1	10.5	2.1	\$2,335,000
2537	238th Ave. NE & NE 70th St.	Unnamed	Evans Crk	Roads	42	2027	4.6	1.3	3.7	1.0	\$1,941,000
2582	Tolt MacDonald Park	Unnamed	Snoqualmie R	WLRD	40	2027	0.2	0.2	0.2	0.2	\$1,600,000
1671	Mouth of Tuck Creek	Tuck Crk	Snoqualmie R	WLRD	93	2028	37.2	7.2	27.6	5.1	\$6,760,000
1754	180th Ave. SE	Pussyfoot Crk	White R	Roads	83	2028	27.1	4.0	12.4	1.9	\$4,477,000
408	185th Ave. NE	Daniels Crk	Cottage Lk	Roads	80	2028	7.0	1.0	4.5	2.1	\$5,726,703
8175	Trib to Boise Creek at Foothills Trail	Unnamed	Boise Crk	Parks	67	2028	10.2	1.4	6.0	0.6	\$3,320,000
5851	Mouth of Molasses Creek	Molasses Crk	Cedar R	WLRD	58	2028	0.9	0.9	0.9	0.9	\$1,100,000
1006	Burke Gilman Trail adj. to 61st NE	Cat Whisker Crk	Lk Washington	Parks	49	2028	13.2	3.8	0.4	0.0	\$1,125,000
2258, 1513	Red Town Trailhead Culverts	Coal Crk	Lk Washington	Parks	25, 5	2028	0.0	0.2	0.0	0.2	\$3,320,000
340	8402 W. Snoqualmie Valley Rd. NE	Unnamed	Ames Crk	Roads	19	2028	1.2	1.1	0.4	0.7	\$2,248,000
1284, 1215	Grinder Trail Crossings Over Judd Creek	Unnamed	Judd Creek	Parks	43 & 38	2029	6.1	1.5	6.1	1.5	\$2,380,000
4355	Black River Pump Station	Black R	Duamish R	WLRD	85	2029	238.9	54.8	138.2	27.8	\$-
13689	Trib to Newaukum Ck.	Unnamed	Newaukum Crk	Parks	53	2029	4.4	1.1	4.4	1.1	\$2,380,000
650, 1902	Petrovitsky at 134 SE	Molasses Crk	Cedar R	Roads	32	2029	2.3	0.2	1.3	0.2	\$5,506,000
2124	S 370th St. & 24th Ave. S	Unnamed	Hylebos Crk	Roads	19	2029	1.3	0.1	1.3	0.1	\$1,558,000

FPS #	Location	Stream Name	Tributary To Name	Project Lead	Habitat Priority Score	Estimated Completion Year	County Habitat Gain Potential (Habitat Units)	County Habitat Gain Potential (Miles)	Immediate Habitat Gain (Habitat Units)	Immediate Habitat Gain (Miles)	Total Project Cost Estimate (2025 Dollars)
101, 2604, 1771	156th Ave. SE & SE 240th St.	Unnamed	Big Soos Crk	Roads	7	2029	0.8	0.2	0.8	0.2	\$5,445,144
2110	Kent Black Diamond Rd. SE (W of Thomas Rd.) (part of Berrydale Bridge Replacement Scope)	Jenkins Crk	Big Soos Crk	Roads	72	2030	138.7	35.2	6.1	1.3	\$4,649,000
2644	26214 SE Mud Mountain Dam Rd.	Unnamed	White R	Roads	74	2030	12.8	2.2	12.8	2.2	\$8,981,620
158	212th Ave. SE	Pussyfoot Crk	White R	Roads	72	2030	7.4	1.3	4.1	0.7	\$2,442,200
942	West Sammamish Trail ROW @ Willows Run Golf Course	Unnamed	Sammamish R	WLRD	52	2030	11.2	2.8	10.1	2.0	\$3,000,000
365	25414 SE 424th St.	Unnamed	Newaukum Crk	Roads	34	2030	2.0	0.6	2.0	0.6	\$3,429,000
1814, 1815	SE 384th St. & 176th SE – FCD	Charlie Jones Crk	White R	Roads	27	2030	15.7	2.5	1.3	0.1	\$2,548,000
1764	SE Ravensdale Way	Rock Crk	Cedar R	Roads	0	2030	n/a	n/a	n/a	n/a	\$6,293,000
12456, 12472	Trib to Paradise Lake	Unnamed	Paradise Lk	Parks	43 & 43	2031	2.6	1.2	2.6	1.2	\$2,380,000
2285	236th SE	Unnamed	Newaukum Crk	Roads	81	2031	12.0	2.1	12.0	2.1	\$3,225,324
374	42406 228th Ave. SE	Unnamed	Newaukum Crk	Roads	72	2031	46.7	7.9	4.3	0.4	\$2,836,700
7756	Stonequarry Creek @ Foothills Trail Fish Passage	Stonequarry Crk	Newaukum Crk	Parks	42	2031	10.6	1.7	0.8	0.0	\$2,380,000
2897	SE High Point Way	East Fork Issaquah Crk	Issaquah Crk	Roads	98	2032	28.1	8.1	26.4	7.0	\$7,293,000
1757	NE 100th St.	Ames Crk	Snoqualmie R	Roads	93	2032	39.0	7.4	16.3	3.1	\$2,976,000
9284	SE 200 th	Unnamed	Issaquah Crk	Roads	60	2032	21.6	2.9	3.1	0.2	\$2,394,005
1301, 1837	Sammamish Trail	Par Cr	Sammamish R	WLRD	39 & 50	2032	10.9	2.2	8.5	1.7	\$2,700,000
1216	Trib to Judd Creek	Unnamed	Judd Creek	Parks	40	2032	1.9	0.6	1.9	0.6	\$2,380,000
565	NE 80th St @ West Snoq Valley Rd.	Ames Crk	Snoqualmie R	Roads	71	2033	16.1	5.7	14.3	5.3	\$4,970,000
442	NE Woodinville-Duvall Rd.	Tuck Crk	Snoqualmie R	Roads	65	2033	3.0	1.2	3.0	1.2	\$4,300,000
409	198th NE	Seidel Crk	Bear Crk	Roads	66	2033	13.9	4.5	10.9	2.8	\$6,593,248
2076	Sammamish River Trail near NE 143rd	Unnamed	Sammamish R	WLRD	40	2033	4.0	1.0	3.8	0.6	\$2,400,000
2378	Trib @ SVT	Unnamed	Snoqualmie R	Parks	40	2033	2.2	1.1	2.2	1.1	\$2,380,000
9565, 780	Trib to Raging River @ Preston-Snoqualmie Trail	Unnamed	Raging R	Parks	43	2033	6.9	1.5	6.9	1.5	\$2,380,000
2500	24219 NE 80th St.	Evans Crk	Bear Crk	Roads	38	2033	9.1	2.3	7.8	1.3	\$4,861,000
13035	Taylor Mtn Forest parcel #0622079021	Unnamed	Carey Crk	Parks	35	2033	2.7	0.9	2.7	0.9	\$650,000
762	45326 196th Ave. SE	Unnamed	White R	Roads	85	2034	45.7	9.1	26.2	4.5	\$4,225,000
2098	Avondale Rd. NE at 140th - Bridge	Cottage Lake Crk	Bear Crk	Roads	83	2034	33.2	7.5	32.2	7.2	\$9,093,000
5670	33416 NE Stossel Creek Way	Harris Crk	Snoqualmie R	Roads	90	2035	4.1	1.4	3.1	1.0	\$4,679,000
638	33632 NE Stossel Creek Way	Harris Crk	Snoqualmie R	Roads	84	2035	10.8	1.9	10.8	1.9	\$4,006,000
2176	33932 NE Stossel Creek Way	Harris Crk	Snoqualmie R	Roads	81	2035	3.6	0.5	3.6	0.5	\$3,590,000
157	Parcel 2326079008, NE Stossel Creek Way	Harris Crk	Snoqualmie R	Roads	75	2035	23.9	4.9	23.9	4.9	\$3,592,000
2499	40316 196th Ave. SE	Pussyfoot Crk	White R	Roads	74	2036	24.3	5.4	20.2	4.8	\$2,178,000

FPS #	Location	Stream Name	Tributary To Name	Project Lead	Habitat Priority Score	Estimated Completion Year	County Habitat Gain Potential (Habitat Units)	County Habitat Gain Potential (Miles)	Immediate Habitat Gain (Habitat Units)	Immediate Habitat Gain (Miles)	Total Project Cost Estimate (2025 Dollars)
2286	42022 196th Ave. SE	Seconds Crk	White R	Roads	47	2036	17.1	2.8	2.5	0.4	\$2,126,000
3136	249th Ave. SE	Cristy Crk	Green R	Roads	82	2037	25.5	5.4	25.5	5.4	\$3,700,000
310	Upper Dorre Don Way SE	Unnamed	Cedar R	Roads	68	2037	1.0	0.8	1.0	0.8	\$4,318,416
170	NE Woodinville-Duvall Rd. 17808	Daniels Crk	Cottage Lake Crk	Roads	69	2037	35.2	7.7	10.3	2.0	\$4,984,000
2104	NE Woodinville-Duvall Rd.	Freeman Crk	Cottage Lk	Roads	54	2037	6.5	1.1	6.5	1.1	\$6,801,344
1995	SE 400th St.	Newaukum Crk	Green R	Roads	87	2038	292.9	57.3	16.9	3.3	\$8,541,000
912	216th Ave. SE	Unnamed	Newaukum Crk	Roads	52	2038	19.8	4.1	20.1	2.1	\$1,457,000
2420	196th SE	Peterson Crk	Cedar R	Roads	74	2039	12.6	4.9	12.6	4.9	\$7,353,733
From Appendix B				2023-2039 WORK PLAN			1571.0	350.6	737.2	158.6	\$253,319,204
				PROJECTS COMPLETED 2020-2022			126.6	22.3	75.8	10.2	
				2020-2039 TOTALS			1697.6	372.9	813	168.8	

Appendix D. Fish Passage Restoration Program Risk Profile Matrix

Threat Description and Potential Impact	Risk Type	Threat Cause	Threat Cause	Threat Probability	Threat Impact	Threat Priority	Proactive Action Strategy
Unable to secure full project footprint and/or offsite property rights/easements	External	Property acquisition	Private property owners unwilling to sell required property interests	Very High	High	High	Pro-active, early outreach, clear messaging and adequate funding to quickly secure property interests
County flood code and FEMA requirements (CLOMR/LOMR) slow pace of project delivery	Technical	Permits	Existing processes require major floodplain study for all fish passage projects, regardless of scope or location.	Very High	High	High	Proactive engagement with FEMA, revision of local codes and/or secure political support for a shift that results in lower community rating/higher insurance rates
Existing Procurement capacity and processes unable to accommodate scale and pace of project design and delivery	Org.	Contracts - internally managed	Existing processes and procedures inadequate to match need/pace	High	High	High	Strategize with Procurement to develop a way to batch RFPs, shorten process, expand roster options or create larger thresholds for WO and more KC design and construction options (i.e. design/build).
Removal of existing culverts create unmitigable flood elevation increases offsite	Technical	Permits	Lack of broader solutioning that considers/addresses full reaches	High	High	High	Coordinate early with adjacent landowners to scope concerns and contingencies.
ROW/Easement acquisition challenges (chicken and egg dilemma related to project footprint and alternatives)	External	Property acquisition	Property owners unwilling to negotiate required property interests	High	High	High	Coordinate early with adjacent landowners to scope concerns and contingencies.
Existing permitting review capacity and requirements significantly slow progress of barrier removal	Project Mgmt.	Permits	Traditional processes, codes, and policies (esp. KC Permitting)	Very High	Medium	High	Consider Programmatic and batched reviews, pre-approved "typical" crossing designs, proactive code revisions/interpretations
Funding and/or staffing resources are redirected to lower priority barriers that help advance other agency goals	Org.	Resource allocation	Lack of centralized control over funding, decision making and priorities	Medium	High	Medium	Budget for and hire staff focused on fish passage capital projects
Slowed delivery resulting from staff resources having multiple, competing priorities	Org.	Staffing capacity	Fail to resource and prioritize the work	Medium	High	Medium	Dedicate resources, empower program managers, remove/reduce distractions and set clear priorities that do not change
Slow KC process results in lost opportunity to acquire required footprint/easement	External	Property acquisition	Lack of outreach to and/or support from property owners consistent with project schedule drivers.	Medium	High	Medium	Start real estate processes and outreach very early in the project schedule, streamline appraisal and offer processes; make timely decisions and act quickly
Flood hazard regulations designed for new development rather than fish passage restoration projects increase cost and limit potential habitat benefits	Project Mgmt.	Permits	One-size-fits-all regulatory requirements add analysis without adding value.	Medium	High	Medium	Proactive code revisions and/or interpretations,
Offsite mitigation of flood impacts drives costs beyond budgeted amounts	Technical	Permits	Existing zero-rise regulations for development applied to restoring natural stream and floodplain functions	Medium	High	Medium	Include flood analysis and mitigation in project charter and scope of analysis from the start.
Limited capacity for planning, design and construction support by other KC agencies (HPP, Procurement, contract management, Stormwater, Flood Cert, Structural, etc.)	Org.	Staffing capacity	Failure to Identify and Properly Resource Full Range of CIP Support	Medium	High	Medium	Add staff, LEAN processes, & revise code to tier analyses appropriate to project scope and effect
Extended timeframe to move from Gate 1 (charter) to Gate 3 (30% design) that significantly slows down project delivery	Technical	Internal project approvals (gate reviews)	Project teams lack of decision authority for progress to get to Gate 3 after Gate 1.	Medium	High	Medium	Develop a small number of broadly applicable solutions (typical stock designs) that can be quickly adapted to most situations.
Not enough funding budgeted or granted to complete projects	Project Mgmt.	Resource allocation	Estimates used for budgeting are not accurate due to uncertainty and assumptions that were not correct, and limited funding available to address contingency	Medium	High	Medium	Develop a robust funding/financing plan to support projects.

Threat Description and Potential Impact	Risk Type	Threat Cause	Threat Cause	Threat Probability	Threat Impact	Threat Priority	Proactive Action Strategy
Project design indicates it will comply with regulatory flood requirements but may result in changes in downstream flow or water levels at events more frequent than the base flood event, resulting in concerns by adj. property owners about changes in erosion, deposition or flooding.	Technical	Communications - central	Project is not sensitive to changes in the base flood event, but a wider crossing will pass more flow downstream during more frequent storm events	High	Medium	Medium	Scope flood easements into the project scope and negotiations with adjacent property owners.
Permitting agencies impose unacceptable or expensive conditions.	External	Permits	Impacts associated with product are perceived as not mitigated by project benefits.	Medium	Medium	Medium	Proactive code revisions and/or interpretations, Delegate review of Flood Hazard and WQ to WLRD, Clear instruction for compliance only review by Exec, self-certification
Limited grant administration support places burden on design team & sponsor and impacts project delivery schedule.	Org.	Grant management	Fail to resource and prioritize the work	Medium	Medium	Medium	Dedicate resources, empower program managers, remove/reduce distractions and set clear priorities that do not change
Higher cost and slower delivery of projects resulted from separately managed delivery teams.	Org.	Resource allocation	Three separate project delivery teams that are physically and organizationally separated making it harder to manage, direct and enact efficiencies.	Low	High	Medium	<ul style="list-style-type: none"> • Merge, reassign or loan in designated staff so they report to a single manager • Establish clear and achievable scope, schedule and budget forecasts • Frequent mandatory reporting of progress • Establish shared contract support to minimize duplication of effort • Regular meetings between designers to share strategies, lessons learned and new approaches
Design process constrained by lack of qualified designers (bridge, structural engineers)	Technical	Staffing capacity	Recruitment efforts do not anticipate and prepare for essential skills	Low	High	Medium	Add capacity via consultants and/or recruitment of skilled designers
Level of funding exceeds capacity to manage and coordinate work	Org.	Staffing capacity	Failure to add capacity, revise processes and/or	Low	High	Medium	Add PM staff, seek large scale consultant support, explore options for pay for service
Construction materials unavailable or difficult to obtain when needed	External	Central procurement	Poor planning and supply chain issues	Low	High	Medium	Work with vendors/suppliers to anticipate materials and ensure delivery no later than needed (incl. early delivery to staging areas)
Pace of culvert replacement does not match the need from salmon to access historical habitat, and their numbers decline beyond the point of no return	Business Value	Resource allocation	Significant and quick improvements of many limiting factors are necessary to reverse the declining trend in salmon populations over last several decades.	Low	High	Medium	Accelerate funding and pace of project implementation for projects that will provide the most habitat gain in the shortest period of time.
Completed project doesn't restore unimpeded fish passage	Business Value	Internal project approvals (gate reviews)	Project design or construction doesn't incorporate necessary safety factor to ensure fish passage under full range of stream conditions	Low	High	Medium	Incorporate higher "factor of fish passage" than minimum standards into project design
Slow or duplicative internal decision-making processes	Org.	Communications - internally managed	Lack of clear goals and/or guiding principles, conflicting objectives, lack of higher-level direction and support	Low	Medium	Low	Unified set of goals and objectives, clear process to elevate and resolve disagreements, known and readily accessible final arbiter/decision maker
Agency disagreements on methods or approach	Org.	Communications - internally managed	Failure to establish clear design/performance criteria, designers not aware of maintenance needs and long-term program expectations	Low	Medium	Low	Unified set of goals and objectives, clear process to elevate and resolve disagreements, mutual agreement on final arbiter/decision maker

Threat Description and Potential Impact	Risk Type	Threat Cause	Threat Cause	Threat Probability	Threat Impact	Threat Priority	Proactive Action Strategy
Slow design processes hinder pace	Project Mgmt.	Internal project approvals (gate reviews)	Reliance on site specific, custom design for every crossing	Low	Medium	Low	Develop a small number of broadly applicable solutions (typical stock designs) that can be quickly adapted to most situations
Damaged relationships and loss of trust due to poor delivery/performance	Org.	Communications - central	KC overpromises and underperforms as a result of poor resourcing effort, lack of focus and everchanging priorities	Low	Medium	Low	Meaningful collaboration with tribes, regulators, and stakeholders from project selection through construction.
Overly lean decision processes unintentionally shut down transformational ideas	Org.	Internal project approvals (gate reviews)	Reliance of business-as-usual approaches to project design	Low	Medium	Low	Support outreach to other entities engaged in similar work and apply lessons learned to county projects.
Mix of innovators and pragmatists is encumbered by discouraging access to needed resources, leading to departure of key catalytic or driver team members that hampers team innovation.	Business Value	Staffing capacity	Reliance of business-as-usual approaches to project design	Low	Medium	Low	Support outreach to other entities engaged in similar work and apply lessons learned to county projects.
Limited communication support places burden on design team and impacts project delivery schedule.	Org.	Communications - internally managed	Fail to resource and prioritize the work	Low	Low	Low	Dedicate resources, empower program managers, remove/reduce distractions and set clear priorities that do not change
Alternatives analyses that examine too many alternatives with an overly complicated evaluation process, or focusing too much on design detail that can be deferred to preliminary design	Project Mgmt.	Internal project approvals (gate reviews)	Lack of defined processes (incl. tribal outreach), useful design standards, and lessons learned for fish passage projects.	Low	Low	Low	Develop a small number of broadly applicable solutions (typical stock designs) that can be quickly adapted to most situations.