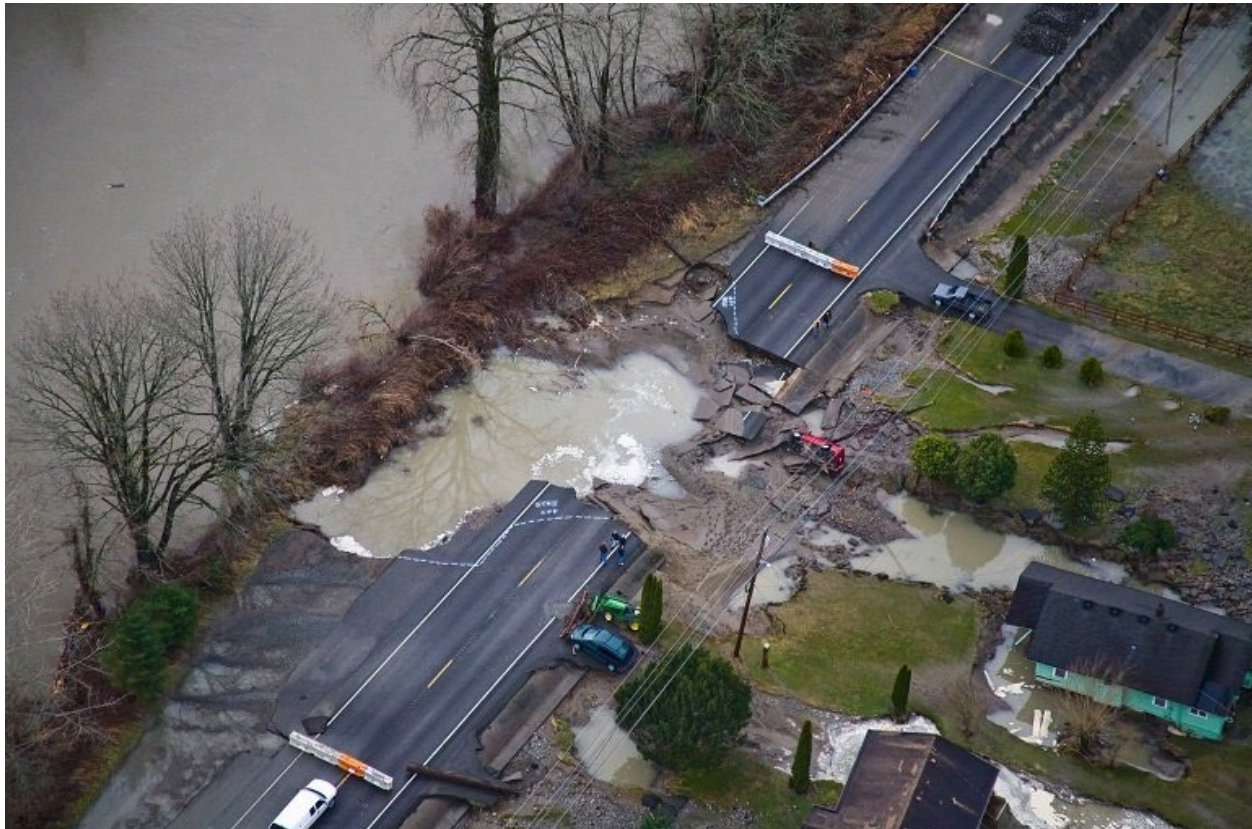


2024 KING COUNTY FLOOD MANAGEMENT PLAN APPENDICES

Draft

Prepared for
King County Water and Land Resources Division

January 2024



2024 KING COUNTY FLOOD MANAGEMENT PLAN APPENDICES

Draft

January 2024

King County Water and Land Resources Division

201 S Jackson St # 600

Seattle, WA

CONTENTS

2024 King County Flood Management Plan

APPENDICES

Appendix A	CRS Crosswalk
Appendix B	2013 Action Plan Status
Appendix C	Planning Committees
Appendix D	Community Engagement Summary
Appendix E	Levee Inventory
Appendix F	Dam Inventory
Appendix G	Public Information Activities
Appendix H	King County Repetitive Loss Area Analysis
Appendix I	Status of Flood Hazard Mapping Studies
Appendix J	Review of Categories of Floodplain Management Activities

Appendix A

CRS Crosswalk

APPENDIX A

CRS Activity 510 Crosswalk

CRS Step	Chapter/Section
1. Organize to prepare the plan	Chapter 1
a. Office responsible for land use and community planning involved.	Chapter 1
b. Planning committee comprised of department staff.	Chapter 1
c. Planning process or committee formally recognized by governing body.	N/A
2. Involve the public.	Chapter 1
a. Planning process conducted through a committee that includes members of the public.	Chapter 1
b. Host one or more public meetings within first two months.	Chapter 1
c. Host one or more public meetings on draft plan.	Forthcoming in February 2024
d. Implement other public information activities to encourage input.	Chapter 1; Appendix F
3. Coordinate with other agencies.	
a. Review existing studies, reports, and technical info.	Section 2.1
b. Coordinate with external agencies and organizations.	<ul style="list-style-type: none"> • Chapter 1 • Section 2.1
4. Assess the hazard.	Chapter 2
a. Assess flood hazard areas:	
1) Map of flood hazard areas.	See maps throughout
2) Description of known flood hazards.	Chapter 2, subsections titled "Primary Flood and Erosion Hazards and Risks" <ul style="list-style-type: none"> • Section 2.2 • Section 2.3 • Section 2.4 • Section 2.5 • Section 2.6
3) Discussion of past floods.	Chapter 2, subsections "Hydrology and Hydraulics" and "Primary Flood and Erosion Hazards and Risks" <ul style="list-style-type: none"> • Section 2.2

CRS Step	Chapter/Section
	<ul style="list-style-type: none"> • Section 2.3 • Section 2.4 • Section 2.5
b. Assess less frequent flood hazards.	Section 2.6
c. Assess areas that may flood or flood problems that are likely to get worse in the future.	Climate change summaries in Chapter 2 <ul style="list-style-type: none"> • Section 2.2 • Section 2.3 • Section 2.4 • Section 2.5 • Section 2.6
d. Describe other natural hazards.	Chapter 2, subsections titled “Primary Flood and Erosion Hazards and Risks” <ul style="list-style-type: none"> • Section 2.2 • Section 2.3 • Section 2.4 • Section 2.5 • Section 2.6
5. Assess the problem.	
a. Summarize vulnerability to each hazard identified.	Chapter 2 <ul style="list-style-type: none"> • Section 2.2 • Section 2.3 • Section 2.4 • Section 2.5 • Section 2.6 • Section 2.7
b. Describe impact of hazards on:	
1) Life safety and warning and evacuation.	Section 2.7
2) Public health, including hazards from flooding and mold.	Section 2.7
3) Critical facilities and infrastructure.	Chapter 2 <ul style="list-style-type: none"> • Section 2.2 • Section 2.3 • Section 2.4 • Section 2.5 • Section 2.6 • Section 2.7
4) Economy and major employers.	Section 2.7
5) Number and types of affected buildings.	Chapter 2 <ul style="list-style-type: none"> • Section 2.2 • Section 2.3 • Section 2.4 • Section 2.5 • Section 2.6

CRS Step	Chapter/Section
	<ul style="list-style-type: none"> • Section 2.7
<p>c. Review of damaged buildings and flood insurance claims and/or estimate potential damage and dollar losses to vulnerable structures.</p>	<p>Chapter 2</p> <ul style="list-style-type: none"> • Section 2.2 • Section 2.3 • Section 2.4 • Section 2.5 • Section 2.6 • Section 2.7 • Appendix: King County Repetitive Loss Area Analysis
<p>d. Describe natural floodplain functions.</p>	<p>Chapter 2, Section 2.1</p>
<p>e. Describe development, redevelopment, and population trends.</p>	<p>Chapter 2</p> <ul style="list-style-type: none"> • Section 2.2 • Section 2.3 • Section 2.4 • Section 2.5
<p>f. Describe impacts of future flooding conditions from 4.c. on people, property, and natural functions.</p>	<p>Chapter 2</p> <ul style="list-style-type: none"> • Section 2.2 • Section 2.3 • Section 2.4 • Section 2.5 • Section 2.6
<p>6. Set goals.</p>	<p>Chapter 1</p>
<p>7. Review possible activities.</p>	
<p>a. Preventive activities.</p>	<p>Chapter 3</p>
<p>b. Floodplain management regulations for current and future conditions.</p>	<p>Chapter 3</p>
<p>c. Property protection activities.</p>	<p>Chapter 3</p>
<p>d. Natural resource protection activities.</p>	<p>Chapter 3</p>
<p>e. Emergency services activities.</p>	<p>Chapter 3</p>
<p>f. Structural project activities.</p>	<p>Chapter 3</p>
<p>g. Public information activities.</p>	<p>Chapter 3</p>
<p>8. Draft an action plan.</p>	
<p>a. Categories covered by action items:</p>	<p>Chapter 4</p>
<p>1) Two of six categories.</p>	
<p>2) Three of six categories.</p>	
<p>3) Four of six categories.</p>	
<p>4) Five of six categories.</p>	

CRS Step	Chapter/Section
b. Establish or revise post-disaster policies and procedures.	N/A
c. Action items to mitigate other hazards.	Contained within Action Plan
9. Adopt the plan.	Forthcoming, mid-2024
10. Implement, evaluate, and revise.	
a. Procedures for monitoring implementation, reviewing progress, and recommending revisions to the plan annually.	Chapter 5
b. Annual report prepared by planning committee or a successor committee.	Chapter 5

Appendix B

2013 Action Plan Status

APPENDIX B

Implementation Status of 2013 Action Plan: 2013 – 2023

Step 7 of the FEMA Community Rating System planning framework requires that each activity recommended by a previously credited plan must be discussed, along with implementation status. This Flood Plan updates the *2013 King County Flood Hazard Management Plan Update and Progress Report*, which identified the 2013 – 2018 King County Flood Control District 6-Year Capital Improvement Project list as the Action Plan. The following tables, organized by major river watershed, list the name, description, and status of each item listed on the 2013 Action Plan.

Basin/River	Name	Description	Status
WRIA 7 – South Fork Skykomish/Snoqualmie Watershed			
Skykomish	Maloney Creek Confluence Improvements	Investigate ways to improve infrastructure at the mouth of Maloney Creek and on the SF Skykomish River to reduce the frequency of flooding of homes and property within the Town of Skykomish.	Completed in 2013.
Skykomish	Miller River Road Protection	Repair of 290 feet of rock revetment within its existing footprint to provide protection to Miller River Road.	Completed in 2014.
Skykomish	Miller River Home Buyouts	Purchase monastery compound threatened by flooding and erosion.	Completed in 2014.
Skykomish	South Fork Skykomish Repetitive Loss Mitigation	Elevate or buyout individual structures in the South Fork Skykomish Basin to eliminate the risk of flooding or erosion damage during future flood events.	Since 2017, 20 parcels purchased, covering 7.89 acres. Two more acquisitions are in process. No home elevations have occurred in the SF Skykomish Basin.
Skykomish	Skykomish Home Buyouts	Purchase homes and property subject to flooding risk in the Town of Skykomish.	Incorporated into South Fork Skykomish Repetitive Loss Mitigation.
Skykomish	Timberlane Erosion Buyouts	Acquire and remove homes along a stretch of the South Fork Skykomish River that are endangered by erosive forces, channel migration, and inundation.	Since inception, eight parcels purchased, totaling 2 acres.

Basin/River	Name	Description	Status
Upper Snoqualmie	City of Snoqualmie Natural Area Acquisition	Acquire and demolish individual residential structures to eliminate the associated risk of flood damage to homes.	This project was incorporated into the Upper Snoqualmie Residential Flood Mitigation project in 2013.
Upper Snoqualmie	Meadowbrook 2011 Repair	Repair damage from 2011 flood event.	Completed in 2017.
Upper Snoqualmie	Middle Fork Levee System Improvements	Upgrade the Middle Fork Snoqualmie levees to meet the US Army Corps of Engineers PL84-99 certification standards.	One Middle Fork Snoqualmie levee upgraded to meet PL 84-99 certification standards in 2020.
Upper Snoqualmie	Mason-Thorsen Extension 2011 Repair	Repair damage resulting from flood events.	Completed in 2011.
Upper Snoqualmie	North Bend Residential Flood Mitigation	Relocate or elevate individual residential structures to eliminate the associated risk of flood damage to homes.	This project was incorporated into the Upper Snoqualmie Residential Flood Mitigation project in 2017.
Upper Snoqualmie	South Fork Levee System Improvements	Design and reconstruct the impaired segment of levee in place to resolve six known levee deficiencies.	Necessary repairs completed in 2018.
Upper Snoqualmie	SR 202 Bridge Lengthening	Expand bridge SR202 opening over South Fork Snoqualmie and Ribary Creek to improve conveyance and reduce upstream flood impacts.	The Bendigo Bridge Replacement project was identified as a Proposed Long Term Action in the South Fork Snoqualmie River Capital Investment Strategy that was completed in 2017.
Upper Snoqualmie	Upper Snoqualmie Residential Flood Mitigation (includes North Bend Residential Flood Mitigation and City of Snoqualmie Natural Area Acquisition)	Acquire flood-prone properties or elevate individual structures in the Upper Snoqualmie basin to eliminate the risk of flood damage when Snoqualmie River flows overtop the existing levees.	Since 2008, 48 home elevations have been completed and two are currently underway. Since 2008, 25 parcels have been acquired, totaling 24.1 acres, with one more in process.
Upper Snoqualmie	Record Office Repair	The Record Office revetment is located along the Snoqualmie River in the City of Snoqualmie. Flooding in 2015 and 2016 damaged the revetment, causing loss of riprap armoring and steepening the bank along approximately 200 feet. The revetment protects a city street and various utilities from river erosion hazards.	The repair and adjacent riparian enhancements were completed in 2022, with the City of Snoqualmie incorporating in other park and stormwater-related improvements in the area.
Lower Snoqualmie	Aldair Buyout	Remove homes and agricultural structures from behind the Aldair levee, to eliminate risk of a potential levee failure.	No further progress on the purchase of the three agricultural properties abutting the Aldair levee since 2010.
Lower Snoqualmie	Farm Flood Task Force Implementation	Provide technical and cost-sharing assistance to agricultural landowners in floodplains to help them better maintain their operations during and after flood events. Specific project actions include farm	Three Barns have been elevated since 2009, as well as one golf course club house. Twenty-six farm pads were permitted and constructed in the Lower Snoqualmie Valley as part of the farm pad program.

Basin/River	Name	Description	Status
		pads, elevations of barns and agricultural accessory dwellings, etc.	
Lower Snoqualmie	Lower Snoqualmie Repetitive Loss Mitigation	Elevate or purchase individual structures in the Lower Snoqualmie basin to eliminate the risk of damage during Snoqualmie River floods.	This project was merged with the Lower Snoqualmie Residential Flood Mitigation in 2019.
Lower Snoqualmie	Lower Snoqualmie Residential Flood Mitigation	Provide technical and cost-sharing assistance to residential and agricultural landowners in the Lower Snoqualmie floodplain to help them better withstand the impacts of flooding. Specific project actions include farm pads, elevations of homes, and elevation or flood proofing of agricultural structures.	Since 2008, 17 home elevations have been completed in the Lower Snoqualmie Basin, with three more in progress. 15 parcels have been acquired, totaling 33.9 acres. One more is in process. Three barn elevations were completed as part of Farm Flood Task Force Implementation project. Twenty-six farm pads were permitted and constructed in the Lower Snoqualmie Valley as part of the farm pad program.
Lower Snoqualmie	McElhoe/Person Levee	Repair damage from 2006 flood event.	Completed in 2012.
Lower Snoqualmie	Sinnema Qualle Repair	Project included reconstruction of 750 feet of bank revetment to protect the Snoqualmie Valley Trail and State Route 203 from ongoing bank erosion and slope instability.	Completed in 2016.
Lower Snoqualmie	Tolt Pipeline Protection	Project reconstructed 1,200 feet of bank revetment, which was threatening the Tolt River Pipeline. The pipeline provides about 1/3 of the water to more than a million people in Seattle and surrounding cities.	Completed in 2018.
Tolt	Lower Tolt River Acquisition	Purchase Swiftwater property to allow for future setback of Upper Frew levee (right bank)	This acquisition was completed in 2013. Additional high priority acquisitions in the Lower Tolt are ongoing.
Tolt	San Souci Neighborhood Buyout	Multi-year project included removing nearly 20 at-risk homes from willing sellers. Following the full neighborhood acquisition, the river was reconnected to 33 acres of its historic floodplain.	All but the three northern-most parcels from one landowner were acquired by 2018, and the floodplain reconnection was completed in 2019.
Tolt	SR 203 to Trail Bridge Floodplain Reconnection	Setback Frew levee (right bank) to improve conveyance and allow habitat enhancement.	Project in preliminary design, construction currently scheduled for 2027.
Tolt	Tolt River Mile 1.1 Levee Setback	Purchase flood and erosion prone properties on both sides of the Tolt River between SR203 and the Snoqualmie Valley Trail Bridge. These acquisitions will allow for future setback of the Tolt 1.1 (Hwy to RR Bridge) levee in order to reduce flood and channel migration hazards, increase sediment storage and	Acquired 16 parcels, totaling 11.27 acres.

Basin/River	Name	Description	Status
		flood conveyance capacity, restore natural riverine processes, and reduce future maintenance costs.	
Tolt	Tolt River Natural Area Acquisitions	Acquire up to 12 properties in the channel migration zone of the Tolt River in the vicinity of the Tolt Natural Area.	Acquired 16 additional parcels since 2008, totaling 29.52 acres. Ongoing.
Tolt	Tolt Supplemental Study	Update technical information on flood and erosion risks and habitat restoration to recommend priority actions.	Tolt Capital Investment Strategy was completed in 2017.
Raging	Abandoned Bridge Abutment and Waring Revetment Removal		The project has not been implemented.
Raging	Alpine Manor Mobile Home Park Acquisition	Acquire and remove most, if not all, of the homes in the Alpine Manor Mobile Home Park, as well as several single family homes in the area in order to permanently remove these structures from areas at high risk for channel migration, avulsion and flooding.	All but one at-risk parcel acquired as of 2023. Raging River Channel Migration Zone Study and Map was completed in 2019 and improved the understanding of properties at risk from channel migration and avulsion.
Raging	Preston Fall City Upper Repair		Repair was completed in 2012.
WRIA 8 – Lake Washington/Cedar/Sammamish Watershed			
Sammamish	Willowmoor Floodplain Restoration	Reconfigure the Sammamish River “transition zone” to provide necessary lake level control for Lake Sammamish, enhance habitat conditions in the river, adjacent wetlands, and tributaries for Endangered Species Act (ESA) listed Chinook salmon and other fish, and reduce the costs of ongoing maintenance of the transition zone.	Completed stakeholder outreach in 2015 and selected a preferred alternative design in 2016. Project design paused in 2019 to allow time to prepare additional technical analyses directed by the Flood District.
Lake Washington tributaries	Lower Coal Creek Phase I	Increase the storage capacity of the regional detention pond while maintaining fish passage and increasing conveyance capacity at five box culvert crossings.	Group 1 – Upper Skagit Key Culvert Replacement construction completed fall 2017, currently in Post-Construction Monitoring. Group 2 – Cascade Key and Newport Key Culvert Replacements, construction completed in 2018, currently in post-construction monitoring and storm repairs completed in fall 2020. Group 3 – Glacier Key and Lower Skagit Key Culvert Replacements construction completed in fall 2020, currently in post-construction monitoring and storm repairs completed in summer 2020. Group 4 – Newport Yacht Club and Grand Canal Outfalls and Storm Drains – design and land acquisitions activities

Basin/River	Name	Description	Status
			ceased, unable to acquire easements, project will not proceed.
Lake Washington tributaries	Issaquah Creek Repetitive Loss Mitigation	Mitigate repetitive loss properties on Issaquah Creek, and investigate other potential at-risk homes in repetitive loss areas.	Progress identified in basin profile
Lake Washington tributaries	McAleer/Lyon Channel Improvements	Re-establish a more natural floodplain for Lyon Creek and upgrade undersized culverts in the project area.	Completed in 2015.
Cedar	Belmondo Repair	Mitigation for emergency bank stabilization during 2009 flood.	First phase of mitigation for emergency repair completed in 2010 (rip rap removal, installation of one flow deflection structure, vegetated geogrids, native plantings). Second phase of mitigation completed 2012 (riprap removal, install rock toe and geogrids). Third phase of mitigation completed 2013 (install 2 flow deflection structures, roughness trees, vegetated geogrids).
Cedar	Cedar Pre-Construction Strategic Acquisitions	Acquire real estate properties that several large Flood District capital projects depend on, namely the levee setback projects at the Herzman, Jan Road, Rutledge-Johnson, Rhode, Getchman, Lower Jones Rd, and Elliot Bridge levee segments. Priorities for acquisition will be directed by the Flood District.	Acquired numerous properties from willing sellers to support capital projects.
Cedar	Cedar Levee Setback Feasibility	Determine bridge and levee modifications to increase level of flood protection along the lower 1.2 miles of the Cedar River through the City of Renton.	Feasibility study initiated in 2021.
Cedar	Cedar River Repetitive Loss Mitigation	Develop and implement mitigation measures for flood prone properties in repetitive loss areas. Acquisitions are from willing sellers.	Acquired numerous at-risk properties in flood-prone and repetitive loss areas.
Cedar	Cedar Rapids 2011 Repair	Perform emergency bank stabilization along setback levee alignment during January 2011 flood event.	Completed in 2011.
Cedar	Cedar River Gravel Removal	Remove gravel along the lower 1.25 miles of the Lower Cedar River in order to maintain 100-year level of flood protection for the City of Renton.	Completed in 2016.
Cedar	Dorre Don Meanders Phase I	Conduct feasibility study of existing levees to identify modifications and property acquisitions to reduce flood risks.	The project has not been completed. Three projects in this reach have been identified in the Cedar River Capital Investment Strategy.
Cedar	Elliott Bridge Levee Setback	Acquire flood-prone homes in a repetitive loss area spanning both sides of the Cedar River. Levees on both banks will then be setback or removed. The	Completed in 2016.

Basin/River	Name	Description	Status
		project will eliminate potential for future flood damage to these homes.	
Cedar	Herzman Levee Setback	Remove and setback a portion of or the entire Herzman Levee along the right bank of the Cedar River between river mile 6.55 and river mile 6.70 to reduce upstream water surface elevations during flood events, reduce future maintenance needs on the downstream Cedar Trail 2 (CRT2) revetment, reduce future maintenance needs on the Herzman Levee, and provide improved riparian and aquatic habitat.	Planned for 2024.
Cedar	Jan Road-Rutledge Johnson Levee Setbacks	Reconnect floodplain by removing levees, constructing a setback levee and side channels, and installing large wood structures and native vegetation. Jan Road project reduced risk to CRT 7 during high flows and provided safe egress to residents during flooding, provided mitigation for 2017 large wood relocation, and improved habitat conditions.	Jan Road completed 2022. Rutledge Johnson planned for 2025.
Cedar	Maplewood Acquisition and Setback	Complete a detailed landslide risk assessment and feasibility study for existing levee to reduce flood risk.	Landslide risk assessment completed in 2021. Schedule for feasibility study to be determined by prioritization in Cedar River Capital Investment Strategy.
Cedar	Rainbow Bend Levee Setback	Remove the Rainbow Bend levee to allow river flows to spread across the open space created by the completed acquisition of over 50 flood-prone homes. This slows flood velocities and reduces flood elevations in this area of the river, protecting the adjacent state highway and regional trail.	Completed in 2013.
Cedar	Rhode Levee Setback and Home Buyouts	Purchase homes along path of fastest, deepest flood flow, and set back the levee to lower localized velocities and depths.	Properties acquired from willing sellers. Project schedule determined by prioritization in Cedar River Capital Investment Strategy.
Cedar	Cedar Rapids Repair	Repair 2020 damage to engineered log jam caused by erosion and scour resulting in loss of upper ballast, dislodging of key logs, shearing of piles, and damage to hardware connections.	Completed in 2021.
Cedar	Youngs Revetment Repair	Reposition logs that jammed up against the revetment during the January 2011 flood event, threatening the integrity of the flood protection structure.	Completed 2012.

Basin/River	Name	Description	Status
Cedar	Riverbend Mobile Home Park Acquisition and Levee Setback		Completed in 2023.
Green/Duwamish River Watershed			
Green/Duwamish	Black River Pump Station Repairs	Establishment of secondary containment for all fuel tanks and lines completed. Rehabilitation and improvements to the pump station to meet current standards, construction of high use engines and fish passage improvements continue.	Original scope completed in 2019. Other improvements on-going.
Green/Duwamish	Boeing Levee Addition – Kent	A new earthen levee and flood wall combination was constructed behind 1,000 feet of the existing Boeing Levee.	Completed in 2014.
Green/Duwamish	Boeing Levee USACE ERP	Planned Ecosystem Restoration Project (ERP) in partnership with Kent and the Corps of Engineers riverward of the setback levee and floodwall.	The project was not implemented, however the City of Kent applied for King County Parks levy grant in 2023 for feasibility studies for habitat and recreation improvements between the river and the setback facility.
Green/Duwamish	Briscoe Levee Setback	The City of Kent constructed four floodwall segments to support NFIP levee accreditation. Floodwall segments/reaches locations include RM 14.5-14.6 (Reach 1), 15.45-15.6 (Reach 2), 16.0-16.4 (Reach 3) and 16.9-17 (Reach 4).	Completed between 2014 and 2017.
Green/Duwamish	Briscoe Reach Design	This project was for design of a levee setback at Rivers Edge, located south of 190 th and west of 62 nd Ave S. at RM 16.1 to 16.2. Three parcels were purchased to support the setback.	This project was not implemented. The three parcels that were purchased were sold to private owners. Floodwall Reach 4 was instead constructed.
Green/Duwamish	Green River Flood Emergency Prep	Local efforts to prepare for flooding after USACE advised that Howard A. Hanson Dam was compromised. Preparation efforts included building miles of sandbag and HESCO barriers on the levee crest.	Completed in 2012.
Green/Duwamish	Green River PL 84-99 Mitigation	Between 2008 and 2009, 461 trees were cut from the Lower Green River levees to maintain eligibility for the PL 84-99 levee program. Permitting for this work required mitigation including placement of large wood and planting of riparian trees in three locations include Foster Golf, the Green River Natural Resource Area and Teufel.	Completed in 2018
Green/Duwamish	Hawley Road Levee – Kent	Earthen levees were installed behind the existing Hawley Road Levee	Completed in 2014.

Basin/River	Name	Description	Status
Green/Duwamish	Horseshoe Bend Acquisition and Reconstruction	Reconstruct the Horseshoe Bend Levee at the Breda facility (RM 24.46-24.72) and McCoy (RM 24.26-24.45) to a more stable configuration in order to reduce flood risk to the surrounding areas. The projects will also increase the design containment elevation to the 500-year (0.2% annual chance) flood.	Two acquisitions completed in 2018, the City of Kent constructed a secondary containment facility in 2012/2013, landward of the McCoy segment of the Horseshoe Bend Levee. A repair of the McCoy facility is planned for 2024, and repair of the Breda facility is planned for 2027.
Green/Duwamish	Holiday Kennel Acquisition and Berm	Property acquired in 2017. Initial project subsumed under Lower Russell Road Levee Setback Project which was completed in 2023. Project replace an old levee and revetment that did not meet current engineering design standards.	Completed in 2023.
Green/Duwamish	Reddington Reach Setback and Extension	Project replaced a sub-standard levee with a new levee that protects nearly 600 properties valued at \$680M. Created wider corridor for flood flows which greatly reduced flood risks to residents, business and infrastructure within the City of Auburn and the Green River Valley and provided wider riparian corridor with enhanced ecological benefits, improved natural river functions.	Completed in 2014.
Green/Duwamish	Russell Road Upper	Installation of a 1,190 foot secondary levee behind the existing Russell Road Upper Levee at two locations, RM 19.5-19.8 and RM 20.1 to 20.4.	Completed in 2013.
Green/Duwamish	Sandbag Removal	Removal of 26 miles of temporary flood-protection sandbags on the Green River.	Completed in 2012.
Green/Duwamish	USACE SWIF	The Lower Green River System Wide Improvement Framework (SWIF) was submitted to the Corps of Engineers on March 26, 2019. The SWIF outlines a prioritized strategy to address levee deficiencies to optimize flood risk reduction, address system-wide issues, and maintain eligibility for the 17 miles of levees currently enrolled in the USACE Levee rehabilitation and Inspection Program under PL 84-99. USACE officially accepted the Interim Green River The Final SWIF was accepted by USACE in September 2019 and implementation will continue through 2028.	Ongoing

Basin/River	Name	Description	Status
White River Watershed			
White	Countyline to A Street Levee Setback	Address loss in channel capacity due to ongoing sedimentation by removing 4,500 linear feet of existing levee and reconnecting the river with 121 acres of off-channel aquatic habitat on the river's left bank. Involved construction of a new setback levee, 6,000 feet in length, protected by a 5,780-foot wood bio-revetment and several engineered log jams. The project is expected to provide significant flood risk reduction for more than 200 residential properties near the river.	Completed in 2017.
White	Red Creek Acquisitions	Acquire homes near the confluence of Red Creek and the White River as willing sellers become available.	The project has not been implemented.
White	Right Bank Levee Setback	Acquire at-risk, flood prone residential properties along the right bank of the White River within the City of Pacific to allow for the construction of a new levee setback flood protection structure. Acquired residential structures will be removed, temporary sand-filled flood protection barriers will be removed, artificial fill will be excavated, existing wetland areas will be enhanced, and an earthen setback levee will be constructed.	In planning/design phases.
White	Greenwater Acquisition	Acquire flood prone residences along the White River near the Greenwater River, several of which experience inundation and are very exposed to channel migration hazards.	One property has been donated in 2020.
Annual Programs and Local Jurisdiction Contracts			
Monitoring/Maintenance	Flood CIP Monitoring and Maintenance	Monitor projects using performance measures and adaptive management to track the effectiveness of completed projects and inform the design and implementation of future projects.	Ongoing, annual.
Opportunity Fund	Subregional Opportunity Fund	Provide funding equal to each jurisdiction in King County to allow the jurisdiction to carry out local flood reduction improvements, local storm water control improvements, and watershed management activities.	Ongoing, annual.

Basin/River	Name	Description	Status
Seattle	Alaskan Way Seawall Construction	Rebuild the Alaskan Way Seawall along Elliot Bay to protect the downtown waterfront, meet current seismic standards, and improve nearshore habitat.	Completed in 2017.
Seattle	South Park Duwamish Backwater	Construct a pump station to alleviate flooding in Seattle's Duwamish industrial area that occurs during high tides when storm water runoff is unable to drain to the Duwamish River.	Completed in 2023.
Countywide	Central Charges	Administrative project used for incurring expenditures for central costs assigned by the Budget Office.	Ongoing, annual.
Countywide	Flood Emergency	Provides funding for minor emergency repairs during a flood event.	Ongoing, as needed.
Countywide	WRIA grants	Provide grant funding for salmon recovery and riverine habitat restoration.	Ongoing, annual.

Appendix C

Planning Committees

APPENDIX C

Planning Committees

Flood Plan Internal Staff Planning Committee Roster

Name	Role
Eric Beach	Water and Land Resources Division – Agriculture Program
Sarah Brandt	Department of Natural Resources and Parks – Parks Division Open Space Program
John Brosnan	Water and Land Resources Division – Stormwater Services Section
Denise Di Santo	Water and Land Resources Division – Basin Stewardship and Natural Resources Conservation and Restoration
Edan Edmonson	Office of Emergency Management – Dam Safety Program
Ruth Harvey	Road Services Division
Kollin Higgins	Water and Land Resources Division - Watershed and Ecological Assessment Team
Abigail Hook	Department of Natural Resources and Parks – Clean Water and Healthy Habitat Initiative [former]
Janne Kaje	Water and Land Resources Division – Regional Partnerships and Salmon Recovery
Nicole Johnson	Office of Emergency Management – Risk Reduction and Operations
Richard Martin	Water and Land Resources Division – Agriculture, Forestry, and Incentives Program
Michael Murphy	Water and Land Resources Division – Land Conservation Program
Brian Murray	Water and Land Resources Division – River and Floodplain Management Section [former]
Jared Schneider	Office of Emergency Management – Hazard Mitigation Program [former]
Megan Smith	Department of Natural Resources and Parks – Clean Water and Healthy Habitat Initiative
Scott Smith	Department of Local Services – Permitting Division
Katy Vanderpool	Water and Land Resources Division – River and Floodplain Management Section
Lara Whitely Binder	Executive Climate Office - Climate Preparedness Program

King County Flood Plan Partner Planning Committee Roster

Name	Affiliation
King County Staff	
Steve Bleifuhs	King County Water and Land Resources – County Floodplain Administrator
Edan Edmonson	King County Office of Emergency Management – Dam Safety Program
Laura Hendrix	King County Water and Land Resources – Planning and Floodplain Permitting
Nicole Johnson	King County Office of Emergency Management – Risk Reduction and Operations
Matt Knox	King County Water and Land Resources – Environmental Science
Judi Radloff	King County Water and Land Resources – Geology and Geomorphology, Flood Hazard Studies and Mapping
Lorin Reinelt	King County Water and Land Resources – Engineering
Jared Schneider	King County Office of Emergency Management – Hazard Mitigation Program
Jason Wilkinson	King County Water and Land Resources – Flood Plan Project Manager
Ken Zweig	King County Water and Land Resources – Property Protection and Flood Warning
Community and Partner Committee Members	
Matt Baerwalde	Snoqualmie Indian Tribe
Tom Dean	Vashon-Maury Island Land Trust
Angela Donaldson	Fall City resident
Sherry Edquid	City of Tukwila
Kayla Eicholtz	Washington Department of Ecology
Erin Ericson	Snoqualmie Valley Watershed Improvement District
Miranda Fix	Seattle resident
Adrienne Hampton	Duwamish River Community Coalition
Patrick Haluptzok	Lake Sammamish resident
Jamie Hearn	Duwamish River Community Coalition
Molly Lawrence	Van Ness Feldman, representing Port of Seattle
Laurie Lyford	Washington Sensible Shorelines Association
Mike Mactutis	City of Kent
Martha Neuman	City of Seattle
Diane Pasta	Des Moines resident
Stewart Reinbold	Washington Department of Fish and Wildlife

Kate Ryan	People to Preserve the Tualco Valley
Robert Seana	Snoqualmie valley resident
Lauren Silver	Snoqualmie Valley Preservation Alliance
Jackie Underberg	Bellevue resident

King County Flood Plan Partner Planning Meetings and Topics

Meeting Number and Date	Meeting Topic
#1 – October 26, 2022 11:00 a.m. – 1:00 p.m.	<ol style="list-style-type: none"> 1) Introduction to the Flood Plan: Purpose, Process, Scope, and Schedule 2) Discussion of flooding issues of most concern to committee members 3) Introduction to Flood Plan goals, objectives, and guiding principles
#2 – December 20, 2022 10:30 a.m. – 12:30 p.m.	<ol style="list-style-type: none"> 1) Updates on Flood Plan process and SEPA review 2) Review and discuss Flood Plan goals, objectives, and guiding principles
#3 – February 21, 2023 10:30 a.m. – 12:30 p.m.	<ol style="list-style-type: none"> 1) Review and develop Flood Plan goals, objectives, and guiding principles 2) Review and discuss river flood hazards and risks
#4 – March 21, 2023 10:30 a.m. – 12:30 p.m.	<ol style="list-style-type: none"> 1) Review and discuss hazards and risks from coastal, tributary, and urban flooding workshops 2) Continued review and discussion of river flood hazards and risks
#5 – April 18, 2023 10:30 a.m. – 12:30 p.m.	<ol style="list-style-type: none"> 1) Introduction to and discussion of Flood Plan policies 2) Introduction to activity evaluation criteria
#6 – May 16, 2023 10:30 a.m. – 12:30 p.m.	<ol style="list-style-type: none"> 1) Introduction to flood risk reduction strategies and actions 2) Review and discuss activities to address identified flood problems
#7 – July 18, 2023 10:30 a.m. – 12:30 p.m.	<ol style="list-style-type: none"> 1) Review and discuss draft Flood Plan policies 2) Review and discuss potential activities to be considered for including in the Flood Plan 3) Review and discuss draft evaluation criteria
#8 – September 19, 2023 10:30 a.m. – 12:30 p.m.	<ol style="list-style-type: none"> 1) Review and discuss committee input provided throughout the planning process and how it is being incorporated in the draft plan 2) Review and discuss potential flood risk mitigation activities and the process to identify activities to include in the plan
#9 – October 17, 2023 10:30 a.m. – 12:30 p.m.	<ol style="list-style-type: none"> 1) Review and discuss strategies and actions included in the past King County flood plan and hazard mitigation plan 2) Review and discuss activities that should be included in this plan 3) Summary of the remainder of the planning effort

NOTE: All committee meetings were open to the public and notice posted on King County’s website.¹

¹ <https://kingcounty.gov/en/dept/dnrp/nature-recreation/environment-ecology-conservation/flood-services/flood-management-plan/partner-planning-committee>

King County Flood Management Plan

Partner Planning Committee – Meeting #1 Agenda
October 26, 2022 | 11:00 – 1:00 p.m.

Meeting Objectives:

- To introduce committee members to the flood plan process, scope, and schedule
- To solicit input on which issues are most important to committee members
- To introduce and begin to discuss flood plan goals, objectives, and guiding principles

11:00 – 11:15 Welcome and Introductions

11:15 – 11:40 Flood Plan Purpose, Process, Scope, and Schedule

11:40 – 12:20 Identifying Important Issues

- Breakout room discussions
- Which are the most important topics/issues for you in the flood plan update?
- What flood issues have you observed or are you most concerned about?

12:20 – 12:40 Introduction to Goals, Objectives, and Guiding Principles

12:40 – 12:50 Public Comment

- Opportunity to provide official public comment (up to 2 minutes per commenter)

12:50 – 1:00 Wrap Up

Partner Planning Committee Communication Expectations

- Respect each other's input
- Allow others to complete their statements before contributing yours
- Offer constructive comments in disagreement, but be respectful
- Allow space for others to contribute to the conversation
- State concerns and interests clearly, listen carefully to and assume the best in others, ask questions rather than make assumptions
- Acknowledge that all partners bring legitimate purposes, goals, concerns, and interests, whether or not there is agreement
- Acknowledge that different organizations or agencies have different business models, decision-making requirements, and obligations

King County Flood Management Plan

Partner Planning Committee – Meeting #1 Meeting Notes October 26, 2022 | 11:00 a.m. – 1:00 p.m.

List of committee members/alternates present:

- Alex Lincoln (King County)
- Angela Donaldson (Fall City resident)
- Diane Pasta (Des Moines resident)
- Erin Ericson (Snoqualmie Valley Watershed Improvement District)
- Jackie Underberg (Bellevue resident)
- Jamie Hearn (Duwamish River Community Coalition)
- Jared Schneider (King County Office of Emergency Management)
- Jason Wilkinson (King County)
- Judi Radloff (King County)
- Kate Ryan (People to Preserve the Tualco Valley)
- Ken Zweig (King County)
- Laura Hendrix (King County)
- Lauren Silver (Snoqualmie Valley Preservation Alliance)
- Laurie Lyford (Washington Sensible Shorelines Association)
- Lexanne Bumm (Des Moines resident)
- Lisa Nelson (Washington Department of Ecology)
- Lorin Reinelt (King County)
- Martha Neuman (Seattle Public Utilities)
- Matt Baerwalde (Snoqualmie Indian Tribe)
- Patrick Haluptzok (Lake Sammamish resident)
- Robert Seana (Snoqualmie Valley resident and farmer)
- Sherry Edquid (City of Tukwila)
- Shawn Gilbertson (City of Kent)
- Steve Bleifuhs (King County)
- Stewart Reinbold (Washington Department of Fish and Wildlife)
- Thomas Wilkenson (Upper Preston resident)
- Tom Dean (Vashon-Maury Island Land Trust)
- Spencer Easton (Consultant team – ESA)
- Dan Beckley (Consultant team – ESA)

Interested parties present:

Eric Beach (King County), Frederick Chavre (Maple Valley resident), Helen Gitahl (Green River farming interest), Kjristine Lund (interested citizen), Lucy Gitahl (Green River farming interest)

Flood Plan Purpose, Process, Scope, and Schedule

Steve Bleifuhs presented on flood risk in King County and the roles of King County and the Flood Control District in identifying flood hazards and mitigating flood risks. Jason Wilkinson presented on the reasons for pursuing a new flood plan, including changing conditions and the importance of considering equity, and detailed the scope of the plan, which will identify flood hazards, describe impacts, and outline strategies and actions to mitigate flooding.

Jason Wilkinson described the purpose of the Partner Planning Committee is to share information and ideas, provide input on goals, objectives, and guiding principles, and to develop a shared vision for flood hazard management across jurisdictions and interest areas.

Multiple questions were asked by Partner Planning Committee members about the role of the Flood Control District, what they fund, and what government entities adopt or implement the Flood Plan. Jason Wilkinson explained that King County submits the Flood Plan to the County Council for consideration and the Flood Control District determines how they want to consider the plan through their own process. Steve Bleifuhs explained that the Flood Control District funds staff in the King County River and Floodplain Management Section and that the Flood Control District is funded through a county tax, having significant legal obligations in how they spend that money, but no regulatory authority to manage the floodplain or legal obligation to implement the Flood Plan.

Spencer Easton summarized initial input from one-on-one interviews with committee members, which included a desire for the Flood plan to address equity, climate change, agriculture, a balanced approach to multi-benefits, as well numerous more specific issues. A need for further discussion on the role between King County, the King County Flood District, and the cities of King County was identified.

Breakout Room Discussion of Important Issues

The Partner Planning Committee was divided into four breakout rooms with Spencer Easton, Jason Wilkinson, Steve Bleifuhs, and Dan Beckley as hosts.

Issues frequently identified as important to attendees included:

- Agriculture (drainage issues, economic losses, regulations, soil impacts, viability)
- Climate change (adaptation, increased flood frequency, sea level rise, climate projections)
- Equity (communication, education, environmental justice)
- Development in the floodplains (property acquisition, managed retreat, regulations, resources)
- Interagency coordination (implementation roles, FEMA programs)
- Related disasters and impacts (burn scars, erosion, forest fires, logging, landslides)
- Stormwater management (drainage infrastructure, upper watershed runoff, urban flooding)

Areas of concern and locations where attendees have observed impacts included:

- Coastal areas
- Cedar River
- City of Kent
- Lake Sammamish
- Raging River
- Rural streams
- Urban areas
- Upper watershed areas

Introduction to Goals, Objectives, and Guiding Principles

The draft goals were presented to the Partner Planning Committee. Multiple people expressed a desire to see agriculture represented in the goals, as well a show of consideration for other land uses and geographic areas. There was discussion about whether goals should emphasize reducing flood risk or reducing flooding, which led to identifying a need to further clarify and define flood risk, among other terms.

Public Comment

The only public comment inquired about the potential for engaging with the Army Corps of Engineers on reducing flooding in Lake Sammamish, similar to the way that Lake Washington's water levels are lowered in winter to reduce flooding.

Next Steps

The next meeting will focus on goals, objectives, and guiding principles. A recording of this meeting will be made available online.

King County Flood Management Plan

Partner Planning Committee – Meeting #2 Agenda
December 20, 2022| 10:30 a.m. to 12:30 p.m.

Meeting Objectives:

- To follow up on the conversation at the first meeting (October 26, 2022)
- To solicit input on flood plan goals, objectives, and guiding principles

Pre-meeting interactive slides:

https://docs.google.com/presentation/d/1jSXb1meRna_L8DdRf8NtIOJU2afuzYlc/edit?usp=sharing&uid=117101940176352132038&rtpof=true&sd=true

Agenda

10:30 – 10:40 Welcome and Introductions

10:40 – 10:50 Public Comment

- Opportunity to provide official public comment (up to 2 minutes per commenter)

10:50 – 11:00 Flood Plan Updates and Follow-up from Meeting #1

- Refresher on role of Partner Planning Committee
- Updates on Flood Plan Process
 - Upcoming topic-specific workshops
 - SEPA Scoping Period
- Summary of feedback received at first Partner Planning Committee Meeting
- Follow-up on questions received at and since first meeting

11:00 – 11:10 Communication Agreements

11:10 – 11:20 Presentation: Goals, Objectives, and Guiding Principles

- Context and purpose of Goals, Objectives, and Guiding Principles
- Presentation of working draft Goals, Objectives, and Guiding Principles
- Summary of input received from committee members prior to the meeting

11:20 – 11:50 Breakout Rooms: Goals, Objectives, and Guiding Principles

11:50 – 12:20 Report Out and Discussion

12:20 – 12:30 Wrap Up

King County Flood Hazard Management Plan Update

Partner Planning Committee – Meeting #2 Meeting Notes
December 20, 2022 | 10:30 a.m. – 12:30 p.m.

List of attendees:

- Angela Donaldson (Fall City resident)
- Diane Pasta (Des Moines resident)
- Edan Edmonson (King County)
- Erin Ericson (Snoqualmie Valley Watershed Improvement District)
- Jackie Underberg (Bellevue resident)
- Jamie Hearn (Duwamish River Community Coalition)
- Jason Wilkinson (King County)
- Kayla Eicholtz (Department of Ecology)
- Kazia Mermel (Sound Cities Association)
- Kelsey Payne (Snoqualmie Indian Tribe, substituting for Matt Baerwalde)
- Lauren Silver (Snoqualmie Valley Preservation Alliance)
- Laurie Lyford (Washington Sensible Shorelines Association)
- Lexanne Bumm (Des Moines resident)
- Lorin Reinelt (King County)
- Martha Neuman (Seattle Public Utilities)
- Matt Knox (King County)
- Mike Mactutis (City of Kent)
- Miranda Fix (Seattle resident)
- Patrick Haluptzok (Lake Sammamish resident)
- Sherry Edquid (City of Tukwila)
- Stewart Reinbold (Washington Department of Fish and Wildlife)
- Tom Dean (Vashon-Maury Island Land Trust)
- Spencer Easton (Consultant team – ESA)
- Dan Beckley (Consultant team – ESA)

Interested parties present:

Eric Beach (King County), Helen Gitahi (Green River farming interest), Kjristine Lund (interested citizen), Laura Casey (Carnation farmer), Laura Wolfe (Port of Seattle), Lucy Gitahi (Green River farming interest), Molly Lawrence (Van Ness Feldman), Regina Fletcher (Snoqualmie Valley Preservation Alliance)

Public Comment

An opportunity to provide public comment was provided at the beginning of the meeting. Kjristine Lund commented on her appreciation for the video about the Flood Plan and commended the sharing of the video as an opportunity to inform the public about the Flood Plan process.

Flood Plan Updates and October 26, 2022 Meeting Follow-up

Jason Wilkinson provided a review of the role of the Partner Planning Committee and provided an update on current actions and upcoming steps in the Flood Plan Process, including detailing the scoping process for the Flood Plan under the State Environmental Policy Act. He also provided a summary of feedback received at the first Partner Planning Committee Meeting in October 2022.

Communication Agreements

Spencer Easton shared the Communication Agreements that Partner Planning Committee members are asked to commit to. Further revisions were not made to the Communications Agreements. Committee members signaled their commitment to the Communication Agreements through Zoom reactions.

Goals, Objectives, and Guiding Principles

Spencer Easton presented a summary of the feedback on goals, objectives, and guiding principles, provided by Partner Planning Committee members prior to the meeting. Comments on goals generally reflected a need to define or clarify words and phrases (“equitable” and “all flooding” in Goal 1; application of “cost-effectiveness” in Goal 3) or to change wording to be more address a broader set of issues (changing “tribal treaty rights” to “tribal rights” in Goal 2). Comments on objectives mostly suggested adding further specific process or outcome details, such as expanding upon Objective 11’s recommendation to seek funding sources for flood risk reduction to include collaboration and partnership opportunities. Comments on guiding principles largely suggested minor wording changes or sought clarification on the meaning or intent of the guiding principles.

Participants in the meeting were given the opportunity to provide further feedback on goals, objectives, and guiding principles in breakout rooms. Feedback from these separate discussions included:

Goals:

- Define “flood risk reduction” or further clarify intents (Goal 3)
- Highlight importance of coordination between various government agencies and intersection of various strategic plans
- Incorporate explicit language about consideration of different types of King County communities, such as vulnerable communities, and different types of land uses, including rural and urban development

Objectives:

- Requesting clarification on the relationship between the Flood Plan and other planning efforts, including Vision 2050, salmon recovery plans, and the 2020 Regional Hazard Mitigation Plan
- Suggest explicit consideration of renters as impacted stakeholders, not just property owners
- Suggest inclusion of an objective to increase water storage capacity in the upper watershed
- Address impacts to working waterfronts and existing development

Guiding Principles

- Numerous comments suggesting that guiding principles could be better organized, more clearly distinguished from facts and assumptions, or reduced in number
- Include guiding principles related to equity and social justice

Jason Wilkinson addressed comments about coordinating the Flood Plan with other planning efforts and government agencies, noting that King County is also updating its comprehensive plan and is coordinating with that effort. Jason Wilkinson stated that the Flood Plan will include an assessment of potential climate change impacts in coordination with the University of Washington’s Climate Impacts Group, in response to comments about using the latest climate science in the Flood Plan.

Spencer Easton noted committee comments that the objectives and guiding principles often focused on natural environments and were less applicable to urban development, in response to comments about the lacking recognition of working waterfronts. Regarding the numerous comments about the need to define terms that are used in the plan, a glossary or definitions section in the Flood Plan would be helpful.

King County staff will email a copy of the draft goals, objectives, and guiding principles along with a deadline to submit further input. King County staff will revise the goals, objectives, and guiding principles based on the committee feedback and will report back to the committee about the edits at the February meeting.

Next steps

Participants in the meeting expressed general support for the breakout room approach to engagement that was used in the meeting. All participants were invited to participate in upcoming topic-specific workshops, starting in January. Anyone interested in the workshops can contact Spencer Easton at seaston@esassoc.com for more information.

King County Flood Plan

Working Draft Goals, Objectives, and Guiding Principles Comments from December 20, 2022, Partner Planning Committee

General Comments/Questions

- How does this fit in with Vision 2050? That relates to salmon, etc.
- Would be helpful to include something adaptive. We aren't able to update these plans frequently, but we need to be able to more adaptive as new information comes to light, new plans are adopted, etc.
- Should there be an objective related to a risk assessment? 2006 plan had a risk assessment as an appendix.
- How will this plan relate to the 2020 Regional Hazard Mitigation Plan?
- Can we identify local problems and places to get neighborhoods/communities involved in things they can do to help with and prevent flooding? Things like checking storm drains, etc.
- Consider connections with roads, fish passage barrier removal.

Goals – describe the long-term outcomes the flood plan is trying to reach

1. To reduce risks from all sources of flooding and channel migration through comprehensive, equitable, climate-resilient solutions
 - Does “all sources” really include urban/suburban stormwater contributions?
 - Does “all” mean even minor flooding caused by water line breaks, possibly others not thought of?
 - What does “equitable” mean in this sense? Does this include compensation for historic/systematic inequities?
 - Matt B brings up excellent point...what is defining equitable and how is it promulgated?
 - Do “solutions” include those for which there likely is no funding?

2. To promote flood risk reduction solutions that preserve, restore, and enhance the natural functions of flood hazard areas, honor Tribal rights, and support interests important to King County communities through actions that achieve multiple benefits
 - Would it be too long to add “preserve” and/or “restore” natural functions? (Preservation/protections typically most cost effective)

- I agree with Matt, I'd like to see "preserve" or "restore" added to the goal.
 - Suggest removing "treaty" and keeping more inclusive "Tribal rights" or "sovereign Tribal rights."
 - In my mind this statement is completely contradictory. Enhancing natural functions is in direct conflict with supporting interest important to KC communities.
 - Wondering whether we can add "promote flood risk reduction solutions by preserving, restoring and enhancing..."
 - Re: interests to KC communities; often communities most impacted don't have as many resources. BIPOC communities impacted by flooding.
 - Should start with "To promote flood risk reduction solutions that enhance..."
 - On its own this one doesn't make sense unless it refers to flood risk reduction actions.
 - Suggest this goal should be: Promote flood risk reduction solutions that enhance the natural functions of flood hazard areas, honor Tribal treaty rights, and support interests important to King County communities through actions that achieve multiple benefits
3. To promote flood risk reduction solutions focused on long-term cost effectiveness
- Add language that indicates a desire for more coordination and cooperation from other agencies (state, federal); coordination with other plans out there; coordination between groups and different jurisdictions. Agricultural plans, WRIA plans, city flood plans, etc. (all of the above). With the FCD ability, they can choose what to adopt from this. Concerns about what implementation will look like. Concern that the FCD is not obligated to adopt this. RFMS paid for by FCD.
 - Why is the only value listed that of cost-effectiveness? If we spend a million and it does very little vs 10 million and it helps a great deal, this statement would rate the effective solution lower.
 - There is a mention of multi benefit. Is it the number of benefits, or the amount of the benefits? How do we quantify or address them in strategy?

General comments on goals:

- Seems like there's something missing about how different actions will be prioritized.
- Have a definition in the plan about what we mean by reduce risk; minimize and prevent the impacts of flooding. Or are we trying to reduce peak flows and amount of water? Spencer noted that flood risk also includes prevention of flooding.
- A couple of notes: we did cover flood risk vs. flooding. Important that we are not trying to reduce flooding because it is a natural function. We should focus more on public safety. Add

definition section. The term equity is questioned a lot. Are we referring to legal definition of equity or the ESJ of the KC plan. How does this coordinate with other KC plans? Definition of net ecological gain is not state law (yet?). Are we going off of the proviso from WDFW or the prior language? Provide context around “NEG” There are some RCWs that address this. I like the comment about preserving and restoring, but I would still like to see the word enhance. Use all three words - want to see net gain.

- Comment on reduced risk - flooding is natural. For example, is there an opportunity to provide more overall storage in the upper watershed (this is what goal #1 means)? Can we consider removing the word cost and focus on long-term effectiveness? Cost is a detail.
- I think the goals are pretty good as written.
- Can we weave in something about areas where we need to address flooding that are not very natural? E.g., areas in the Duwamish that are very altered. Need to capture both rural and urban needs well. I like “all sources of flooding.”
- Is there a goal or objective recognizing existing development and infrastructure? So much of this seems focused on nature, managed retreat, etc. The goals might be different for working waterfronts, for example.

Objectives – more specific statements describing how we will achieve the outcomes in the goals

1. Use the best available science to identify and assess flood and channel migration risks and identify how future changes may affect future risks.
 - Can we look at how things beyond climate change may affect future risk? e.g., land use trends/plans; large projects
 - Best available science covers many other subjects beyond climate change.
2. Promote public awareness of identified and potential flood hazards and resilience strategies in ways that are accessible and easy to understand.
 - Reference to promoting public awareness, will the plan contain an outreach strategy?
3. Identify and prioritize actions to reduce risks to life, property, and public infrastructure that advance multi-benefit outcomes and reflect the perspectives of affected communities.
4. For existing flood protection facilities, pursue the most appropriate long-term solutions—maintain, repair, retrofit, set back, or remove—that are compatible with current and future goals for the area, are set in a watershed-based context, and that take climate change into account.
 - Should something about the watershed-based context be an objective by itself to recognize that floodplain management shouldn't just treat symptoms? Work toward this as an objective.

5. Adopt forward-looking land use management policies to prevent creation of new flood and channel migration risks, while preserving or enhancing natural floodplain functions and preventing further habitat degradation of imperiled species.
 - Is there any thought or intent to expand the land covered by flood regulations beyond what FEMA has mapped?
 - Consider watershed scale.
6. Maintain a regionally coordinated flood warning and emergency response program and improve public awareness of emergency response programs
7. Coordinate across King County departments and with other jurisdictions to provide consistency in flood hazard management and disaster response and recovery activities.
 - Who are we talking about with the reference to other jurisdictions--cities, tribes, other gov't's?
 - Add FCD as a specific jurisdiction?
 - What does flood hazard management encompass? Does this include regulations?
 - This objective should include water concurrency between the jurisdictions and the county.
8. Proactively acquire properties (developed or undeveloped) to reduce flood and channel migration risks, support the implementation of multi-benefit projects, and provide ecological benefits.
 - This is a high priority objective for the Snoqualmie Tribe.
 - Add idea of managed retreat? Way to break cycle of repeated damage, esp. in coastal areas.
 - How does acquiring property reduce flooding or risk?
 - What is the definition of a multi-benefit project, and how will benefits be prioritized?
9. Co-design solutions with impacted communities throughout King County that reflect local priorities, actively seek opportunities and partnerships to meet multiple benefits, and leverage grant funding and partner investments.
 - At what stage does co-design happen? Is this co-design during the planning, during implementation, both?
 - What does co-design mean? This goes back to the scope of the plan.
 - Who are impacted communities, and where are they? Does this mean cities or neighborhoods in unincorporated areas?
 - Also provide support to partners to achieve multiple benefits/mutual goals.
10. Improve access to programs that help residents recover from flooding beyond traditional flood insurance (such as federal crop insurance programs).

- How do we improve access to programs? Are we promoting/educating about these? Are we actually dealing with access? How do we put ppl in state of prevention and preparedness rather than reacting?
11. Identify funding sources for implementing recommended flood risk reduction activities, including multi-objective activities, and identify opportunities, strategies, and partnerships to leverage grant funding.
 - Is there a specific person with this role of identifying funding sources? Needs to be considered in an ongoing way rather than being reactive (like a grant writer).
 - Including collaborating with/supporting partners.
 - What is the purpose of the King County Flood Control District taxing authority?
 12. Use adaptive management to adjust actions based on scientific and technological advances, including climate projections, the best available information on floodplain management practices, principles, and risk assessment, and equity considerations.
 - Also, emerging equity issues.

General comments on objectives:

- Does the county anticipate updating their floodplain regulations as a part of the plan update?
- Don't focus only on property owners, consider renters as well.
- Consider water storage in upper watersheds as a way to facilitate climate resilience and address flooding. Can this be included somewhere (#5)? Consider controlled and natural storage project the WID has done a lot of work on this, reports are available.
- Lots of objectives—can we refine/consolidate?
- With outreach efforts, try to reach younger people. They have opinions that should be considered. Be creative and try different methods of communication.

Guiding Principles – the facts and technical understanding that direct flood hazard management in King County

Natural Environment

1. Flooding and erosion are natural processes that sustain biological productivity and diversity.
 - Support for this principle.
 - With climate change and in urban areas, flooding and erosion don't always sustain biological productivity and diversity.
 - I think this statement is overly broad and may not reflect a developed environment.
 - Suggest it should be: "Promote flood risk reduction solutions that sustain biological productivity and diversity."
 - Flooding is a natural process we are trying to prevent in a manner that maintains as much prod
 - Sounds biased against fixing flooding issues.

2. Protecting and working with natural processes can provide environmental benefits, increase climate change resilience, and reduce flood risks to people and property in a less costly manner than structural flood control approaches.
 - Again, in an urban area, working with natural processes isn't always less costly.
 - Natural processes require space, and that results in purchasing expensive property.
 - Sounds biased against fixing flooding issues.
 - Promote flood risk reduction solutions that protect and work with natural processes and provide environmental benefits, increase climate change resilience, and can be done in a less costly manner.
 - And we may be willing to pay more (in some instances) for natural process solutions.
3. Rivers and streams and their floodplains, coastal areas, and riparian areas provide habitat for salmon, including several that are listed as threatened under the Endangered Species Act. Salmon are intricately connected to Native American culture and tribal rights.
 - Needed?
4. Riparian vegetation improves levee/bank stability and provides a host of other ecological functions and benefits.
 - Riparian vegetation also provides a whole host of other critical, irreplaceable functions.
 - It was a huge feat to get to the point where we have this understanding and can include it as a guiding principle.
 - Needed?
5. Habitat protection and restoration and salmon recovery are dependent on rivers and areas adjacent to them, as well as marine nearshore areas.
 - Preserving, restoring, and enhancing are three distinct items, and they are the trifecta we want to go after.
 - These things are also dependent on marine areas.
 - "Restoring" may not be needed here.
 - This one could use some wordsmithing.
 - Needed?

Risk Management

6. Many areas behind levees or outside of the mapped floodplain have a residual risk of flooding (for example, from potential levee failure).
 - Could be helpful to contextualize this residual risk with other types of risk, and what that means in terms of priority.
 - Not just people behind levees, also risks from decertified levees.
 - Needed?

7. Flooding is influenced by land use and land management decisions, stormwater, and climate change.
 - What about land “management” decisions? “Land use” implies regulatory framework but management includes actions.
 - Aren’t 7 and 11 mostly duplicative? Combine them?
8. Structural flood control methods can reduce flood damage in the near-term, yet those methods require maintenance, do not eliminate all risk, and may not be adaptable to changing conditions.
 - All flood control methods, structural or natural, fall into those categories.
 - These statements apply to all flood control methods, not just structural. None eliminate all risk. All of the things we do may not be adaptable to changing conditions. This seems unbalanced. Doesn’t reflect urban flood management needs/conditions.
 - How are we defining what structural flood control methods are? We understand that no one method can eliminate all risk. Why are structural methods called out? Would prefer to see structural flood control measures considered?
 - This sounds biased against fixing flooding issues.

Best Practices

9. Actions to address flood risk to existing development must consider the existing land use context, other land uses and interests (such as fish and wildlife habitat, open space, agriculture, recreation, and transportation), and climate change and other future changes.
 - Does not address urban and urban use.
10. Flood damage creates public and private financial costs, and effective flood risk reduction reduces long-term flood damage costs while minimizing new impacts to other values.
 - What does “new impacts to other values” mean?
11. Flooding is a watershed-scale issue; actions and environmental conditions in upland portions of watersheds can impact flooding and channel migration downstream.
 - Floodplain management throughout history has been about flood control, dealing with symptoms and not cause. Would like to see the watershed-scale lens throughout the document. The new state guidance on floodplain management is integrated but I don’t see us talking about integration in the goals and objectives. This is the first statement that talks about addressing the causes and not the symptoms. Angela is super passionate about this topic. We need to look at the whole picture. Want to put exclamation marks on this item.
12. Engagement with and involvement of tribes, residents, stakeholders, flood-vulnerable communities, and public and private landowners is vital in developing a responsible, effective flood management plan.

13. Private property rights should be respected when providing flood protection.
 - Unclear what this is trying to say.
14. Cooperation among local, regional, state, and federal agencies is essential for the success of long-term comprehensive flood hazard management.
15. Constructing new flood protection facilities where none currently exist should be an option of last resort.
 - Is this a guiding principle? It may be a statement of preference. This may be something we have to do related to sea level rise. Could be stated in the positive instead - natural solutions are preferred where possible.
 - What is considered as a flood protection facility?
 - What science is telling us that new facilities should be the last resort? Is this an opinion or should we be supporting further evaluation to see what's most effective?
 - Assume this does not apply to setbacks? Clarification needed?
 - Importance of protecting life and property. Not balanced. If building a new one is cost effective, we should. If not, we shouldn't. Suggestion to delete this one.
 - This could be specifically in critical areas. Flooding in older developed areas may not have other options.
 - Why would this be here? Shouldn't the cost/benefit analysis just apply to new and existing flood reductions equally, why this?
16. Identifying flood risks and determinations of flood risk reduction solutions is most effective in the long-term when informed by the best available science, best practices in floodplain management, and multi-objective and multi-benefit considerations.
 - "Best available science" may be a bit jargony and needs definition.
17. Solutions to address flood and channel migration risks should consider historic, ongoing, and continuous negative ecological impacts of flood risk reduction facilities and offset these impacts through implementing the standard of Net Ecological Gain for each project.
 - Nebulous standard (gain in whose opinion?); Is there and can we use a better term or phrase?
 - Solutions could make forward progress in addressing environmental justice.
 - Why is Net Ecological Gain capitalized? Is this a specific concept being referred to? This may be redundant with other Guiding Principles.
 - Net Ecological Gain - this is not a state law at this point. How are we going to reach a standard that is not legally set yet? Needs to be addressed in next leg session.
 - Concerned about the standard we are saying we will commit to without clarity on what the standard is.
 - In an urban environment that reduces flooding, we would not do it if it has loss of ecological function.

18. Equity and social justice factors must be considered in developing flood risk reduction solutions.

General comments on Guiding Principles:

- These are a lot of principles to keep track of, and there are a lot of redundancies in the list. It would be helpful to have something simpler.
- The guiding principles are very nature based and sound a bit biased. They don't address flooding in urban areas.
- The guiding principles don't address underserved communities.
- #14 is a good principle. Many of the others seems solution-oriented and not principles. There is a lot of mixing of different things in the guiding principles.
- Some of these are underlying assumptions and some are principles/guidelines. It's a mix, and guiding principles may not be the clearest title for them.
- Could be helpful to have a handful of guiding principles and a separate set of underlying assumptions/facts.
- Add a guiding principle that we want actions that are forward looking for a changing future.
- Add a guiding principle related to race and social justice issues.
- What are the facts and technical understanding that was the background for the development of these guiding principles? It would be helpful to know what these align with. There is a lot stated in here—assumptions about structural projects, for example—and these statements would be more helpful if they were aligned with technical references.
- The term “principles” is being used here in a different way than people expect. Principles should give direction to the plan—be forward thinking to a changing future, use current science, address impacts to people and business.
- Important to talk about lessons learned, adaptive management. After we complete a project, there are lessons learned that need to be captured so we can continue to adapt as we learn more.
- Where did the list of guiding principles categories come from? It seems limited.
- Guiding Principles looks like a list of reasons to not do any flood risk reduction.
- Suggest deleting 1-6, just statement of facts.

King County Flood Management Plan

Partner Planning Committee – Meeting #3 Agenda
February 21, 2023| 10:30 a.m. to 12:30 p.m.

Meeting Objectives:

- To share how committee input on the flood plan goals, objectives, and guiding principles was incorporated
- To introduce and discuss river flooding problems, focusing on the Snoqualmie River, Cedar River, and Green River (other river systems will be discussed at the March Partner Planning Committee meeting)

Agenda

10:30 – 10:35 Welcome and Introductions

10:35 – 10:45 Public Comment

- Opportunity to provide official public comment (up to 2 minutes per commenter)

10:45 – 11:10 Flood Plan Goals, Objectives, and Guiding Principles Follow-up

- Reminders about purpose of Goals, Objectives, and Guiding Principles
- Summary of Partner Planning Committee input
- Updates to drafts in response to partner feedback
- Discussion and next steps

11:10 – 11:40 Introduction to River Flooding Hazards and Risks – *King County staff share current understanding of primary problems and implementation progress*

- Snoqualmie River (including Raging and Tolt rivers)
- Cedar River
- Green River

Note: other King County river systems will be discussed at the March Partner Planning Committee meeting.

11:40 – 12:10 Breakout Rooms: Basin-Focused Discussions – *committee identifies additional problems and begins to share ideas for solutions*

12:10 – 12:20 Report Out and Discussion

12:20 – 12:30 Wrap Up

King County Flood Hazard Management Plan Update

Partner Planning Committee – Meeting #3 Meeting Notes
February 21, 2022 | 10:30 a.m. – 12:30 p.m.

List of attendees:

- Adrienne Hampton (Duwamish River Community Coalition)
- Alicia Kellogg (King County)
- Angela Donaldson (Fall City resident)
- Diane Pasta (Des Moines resident)
- Erin Ericson (Snoqualmie Valley Watershed Improvement District)
- Jackie Underberg (Bellevue resident)
- Jared Schneider (King County)
- Jason Wilkinson (King County)
- Jay Smith (King County)
- Jon Sloan (Port of Seattle)
- Judi Radloff (King County)
- Kazia Mermel (Sound Cities Association)
- Laura Hendrix (King County)
- Lauren Silver (Snoqualmie Valley Preservation Alliance)
- Laurie Lyford (Washington Sensible Shorelines Association)
- Lexanne Bumm (Des Moines resident)
- Lorin Reinelt (King County)
- Ken Zweig (King County)
- Martha Neuman (Seattle Public Utilities)
- Mary Strazer (King County)
- Matt Knox (King County)
- Mike Mactutis (City of Kent)
- Miranda Fix (Seattle resident)
- Monica Walker (King County)
- Nancy Sandford (King County)
- Sherry Edquid (City of Tukwila)
- Steve Bleifuhs (King County)
- Stewart Reinbold (Washington Department of Fish and Wildlife)
- Teresa Lewis (King County)
- Tom Dean (Vashon-Maury Island Land Trust)
- Spencer Easton (Consultant team – ESA)
- Dan Beckley (Consultant team – ESA)

Interested parties present:

Laura Casey (Carnation farmer), Laura Wolfe (Port of Seattle), Lucy Gitahl (Green River farming interest), Molly Lawrence (Van Ness Feldman), Regina Fletcher (Snoqualmie Valley Preservation Alliance)

Introductions

Spencer Easton provided an overview of the agenda for the meeting. Spencer reviewed the purpose and planning process for the Partner Planning Committee

Public Comment

An opportunity to provide public comment was provided at the beginning of the meeting. No public comments were made.

Flood Plan Goals, Objectives, and Guiding Principles Follow-up

Spencer Easton provided an overview of the development of the goals, objectives, and guiding principles, which the Partner Planning Committee provided input on in December. The Committee would review and discuss revisions based on prior input in this meeting.

Goals were updated to:

- Acknowledge existing development and infrastructure
- Distinguish urban vs. rural needs
- Consider long-term costs rather than cost effectiveness

Objectives were updated to:

- Consider future changes beyond climate, including land use changes
- Address engagement with affected communities
- Address the watershed context for flooding
- Clarify the role of acquisition in flood risk reduction
- Clarify the application of multi-benefit activities

Guiding principles were updated to:

- Reflect urban contexts
- Give direction to the plan
- Remove language that was suggestive of bias in favor of nature-based solutions or against structural solutions

Comments about prioritizing actions and potential solutions were not addressed because these will be incorporated in other elements of the flood plan. Additional comments were provided about clarifying the intent or better defining terms in the goals, objectives, and guiding principles, but none of the comments were in opposition to the concepts presented.

Introduction to River Flooding Hazards and Risks

Spencer Easton reviewed ongoing engagement efforts to identify flood issues, described basin-specific flood risk discussions that would occur in this meeting, and noted that the remaining river basins in King County would be discussed at the next Partner Planning Committee meeting. Spencer introduced Jay Smith, Nancy Sandford, and Monica Walker, who are members of the King County River and Floodplain Management Section's basin teams for the Snoqualmie River Basin, Cedar River Basin, and Green-Duwamish River Basin, respectively.

Jay Smith described flooding and flood hazard management in the Snoqualmie River Basin:

- Flooding characteristics: overbank floods, deep and fast flows, levee failures, high variability in flood pattern
- Impacts: roads overtopped, channel migration, flooding of urban areas and agricultural landscapes

- **Initiatives:** incorporating climate projections into capital projects, land acquisitions on Tolt River, flood gages, floodplain reconnection, reduce channel migration, road and infrastructure resilience

Nancy Sandford described flooding and flood hazard management in the Cedar River Basin:

- **Flooding characteristics:** overtopping banks, deep flows through neighborhoods, large wood deflects flows into banks, avulsion, sediment aggradation limits levee capacity
- **Impacts:** extensive residential property impacts, roads overtop including SR-169, landslides, erosion, vulnerable broadband infrastructure
- **Initiatives:** buyouts of vulnerable neighborhoods, levee maintenance, dredging at mouth of river, levee setbacks and floodplain reconnection, bank stabilization and repairing revetments along roadways

Monica Walker described flooding and flood hazard management in the Green-Duwamish River Basin:

- **Flooding characteristics:** overbank flows, flooding in areas without levees, channel migration risks
- **Impacts:** erosion, levee and revetment instability, urban flooding
- **Initiatives:** system-wide levee improvement framework, urban stormwater management, floodplain and habitat restoration

Breakout Rooms: Basin-Focused Discussions

Spencer Easton introduced an exercise where participants could provide input in a basin-specific breakout room on experiences with flood problems and solutions.

Discussion of the Snoqualmie River Basin included:

Flood issues

- Lower valley flooding being caused by upper watershed impacts
- Erosion on farmland and regulatory barriers to armoring shorelines
- Recurring and prolonged impacts to productive farmland
- Landslides near Spring Glen, Mud Creek, Tokul Creek, Snoqualmie Falls Hill, Raging River, and San Souci

Potential solutions

- Upper watershed storage, including retrofitting existing development and stormwater/floodwater retention to stagger high volume flows
- Changing King County Code to enable private flood control and drainage measures
- Changing management of Ames Lake weir to address flooding
- Assess flood management potential in FERC relicensing of Tolt Dam
- Streamlining solutions to drainage needs, such as prioritizing drainage response without necessarily needing to meet the variety of environmental requirements or incorporate multi-benefits

Discussion of the Cedar River Basin included:

Flood issues

- Sediment aggradation in lower river worsens flooding, requires ongoing maintenance
- Jones Road reach is constrained, lacks capacity
- Tributary flooding has localized impacts

Potential solutions

- Multi-benefit analysis of project identification and prioritization
- Levee setbacks and additional floodwater storage
- Continue coordination with City of Seattle on floodplain restoration efforts downstream of Landsburg Dam

Discussion of the Green-Duwamish River Basin included:

Flood issues

- Sea level rise and tidal influence impacts flooding upriver to Kent
- USGS change in the rating curve at their Auburn stream gage on the Green-Duwamish River will affect how Howard Hanson Dam is operated and may result in high volume releases from the dam that could raise the Green-Duwamish River stage an additional one foot in Kent
- Storm surge issues in Duwamish River area

Potential solutions

- Stricter regulation and monitoring of potential contaminants and pollution sources, especially in urban areas that flood
- Study compound impacts of sea level rise, storm surges, and riverine flooding to understand viability of different flood risk reduction solutions
- Adaptive management approach to monitoring outcomes of current and upcoming projects
- Seek additional funding sources for flood hazard management in South Park

Next Steps

Spencer Easton noted that the next Partner Planning Committee meeting would be on March 21st, at 10:30 a.m. The next meeting will provide an opportunity for participants to identify flood hazards and risks on the South Fork Skykomish River, Sammamish River, and White River, as well as to continue conversations initiated at this meeting about flooding in the Snoqualmie basin, on the Cedar River, and on the Green River.

King County Flood Management Plan

Partner Planning Committee – Meeting #4 Agenda
March 21, 2023| 10:30 a.m. to 12:30 p.m.

Meeting Objectives:

- To share outcomes from the coastal, tributary, and urban flooding workshops
- To continue discussing river flooding problems, focusing on the South Fork Skykomish River, Sammamish River, and White River
- To have a full committee discussion of the primary flooding hazards and problems that should be the focus of the flood plan

Agenda

10:30 – 10:35 Welcome and Introductions

10:35 – 10:45 Public Comment

- Opportunity to provide official public comment (up to 2 minutes per commenter)

10:45 – 11:10 Outcomes from Workshops on Coastal, Tributary, and Urban Flooding

- Overview of workshops and approach
- Summary of each topic and input received on flood hazards, problems, and potential solutions
- Questions

11:10 – 11:40 River Flood Hazards and Risks – *King County staff share current understanding of primary hazards, risks, and implementation progress*

- South Fork Skykomish River
- Sammamish River
- White River

Note: Presentations about the flooding on the Cedar River, Green River, and Snoqualmie River were shared during February’s Partner Planning Committee meeting.

11:40 – 12:20 Committee Discussion – *group discussion of the sources and causes of flooding in King County and their impacts to local communities, and identification of additional flooding problems and potential gaps in our understanding (consider all flooding sources)*

12:20 – 12:30 Wrap Up and Next Steps

King County Flood Hazard Management Plan Update

Partner Planning Committee – Meeting #4 Meeting Notes
March 21, 2022 | 10:30 a.m. – 12:30 p.m.

List of attendees:

- Adrienne Hampton (Duwamish River Community Coalition)
- Alex Lincoln (King County)
- Angela Donaldson (Fall City resident)
- Chase Barton (King County)
- Diane Pasta (Des Moines resident)
- Erin Ericson (Snoqualmie Valley Watershed Improvement District)
- Jackie Underberg (Bellevue resident)
- Jared Schneider (King County)
- Jason Wilkinson (King County)
- Kate Akyuz (King County)
- Kate Ryan (People to Preserve the Tualco Valley)
- Kayla Eicholtz (Department of Ecology)
- Ken Zweig (King County)
- Laura Hendrix (King County)
- Lauren Silver (Snoqualmie Valley Preservation Alliance)
- Laurie Lyford (Washington Sensible Shorelines Association)
- Lorin Reinelt (King County)
- Martha Neuman (Seattle Public Utilities)
- Mary Strazer (King County)
- Matt Baerwalde (Snoqualmie Tribe)
- Mike Mactutis (City of Kent)
- Miranda Fix (Seattle resident)
- Monica Walker (King County)
- Nancy Sandford (King County)
- Natalie Seitz (King County)
- Patricia Robinson (King County)
- Patrick Haluptzok (Sammamish resident)
- Regina Fletcher (Snoqualmie Valley Preservation Alliance)
- Sherry Edquid (City of Tukwila)
- Steve Bleifuhs (King County)
- Stewart Reinbold (Washington Department of Fish and Wildlife)
- Teresa Lewis (King County)
- Spencer Easton (Consultant team – ESA)
- Dan Beckley (Consultant team – ESA)

Interested parties present:

Danielle Butsick (Port of Seattle), Laura Casey (Carnation farmer), Molly Lawrence (Van Ness Feldman), Regina Fletcher (Snoqualmie Valley Preservation Alliance)

Introductions

Spencer Easton provided an overview of the agenda for the meeting. Spencer noted the objectives of the meeting included reviewing outcomes of recent topic-specific workshops, discussion of river flooding problems, and discussion of primary flood hazards and problems that should be the focus of the Flood Plan.

Public Comment

An opportunity to provide public comment was provided at the beginning of the meeting. No public comments were made.

Outcomes from Workshops on Coastal, Tributary, and Urban Flooding

Jason Wilkinson presented background information on the topics for tributary, coastal, and urban flooding, for which there were two workshops per topic. Participants, who included city officials, tribes, non-governmental organizations, and residents had the opportunity to provide input on problem areas, impacts, and solutions.

Key takeaways from the workshops included:

- Improved stormwater management at existing and new development was discussed as a possible solution for all types of flooding.
- Better emergency management coordination across jurisdictions is needed, including more clarity around King County’s role.
- Property acquisition is a key tool for reducing flood risk, but has complications and challenges, such as equity and housing impacts.
- Urban flooding issues are difficult and expensive to solve. Actions that provide multiple benefits open up more funding possibilities.
- Multiple factors combine to exacerbate coastal impacts, and addressing these impacts can be complicated by challenges with regulations, spatial limitations, and other natural hazards.
- Modeling for future flood conditions and pluvial flooding is needed to better understand risks.
- Sediment deposition and management are primary concerns in areas where sediment accumulation is impacting infrastructure and affecting flood conditions.
- Education and access to culturally appropriate tools are needed to better convey flood risk and related issues.

Following the overview of the workshops, Partner Planning Committee members who had attended the workshops emphasized the importance of future climate conditions, thoughtfully coordinated emergency response, and understanding the differences in approaches to flooding in rural and urban areas. Equity, mental health, waterfront access for certain land uses, and food production issues were discussed as some of the concerns that were identified in relation to managed retreat and floodplain property acquisition.

River Flood Hazards and Risks

Staff from King County’s River and Floodplain Management Section presented on the South Fork Skykomish River, Sammamish River, and White River, continuing discussions of basin-specific flood issues and characteristics from the previous meeting.

Chase Barton described flooding and flood hazard management in the South Fork Skykomish River Basin:

- Flooding: overbank flows, channel migration, avulsion

- **Impacts:** landslides, Miller River avulsion destroyed portion of Old Cascade Highway, levee and revetment damage
- **Initiatives:** stream monitoring, inspection of facilities, levee repair, property acquisition

Kate Akyuz described flooding and flood hazard management in the Sammamish River Basin:

- **Flooding:** flooding largely contained by banks, channel capacity restricted, surface water ponding due to stormwater drainage issues, backwater effects can increase lake levels
- **Impacts:** erosion, sediment aggradation, inundation of agricultural land, wave action on Lake Sammamish and damage to boat docks and lakefront properties
- **Initiatives:** Sammamish River Capital Investment Strategy, Issaquah Creek flood mapping, channel migration mapping, Willowmoor Flood Risk Reduction Project

Mary Strazer described flooding and flood hazard management in the White River Basin:

- **Flooding:** sediment accumulation limits conveyance capacity, overbank flooding in urban areas, channel migration
- **Impacts:** erosion of levees, extensive residential flooding, increased flood extents from reduced channel capacity
- **Initiatives:** floodplain reconnection, setback levees, revetment repair, HESCO installation near development and infrastructure, channel migration studies, property acquisition

Committee Discussion

The meeting transitioned to an open discussion about sources and causes of flooding in King County and their impacts. The Committee's initial focus on discussion of transportation impacts included challenges with transporting children to school in rural areas due to flooding inhibiting access, costs of delay to employees and employers, flooding of roads, impacts to inundated vehicles, limited vehicle access for low-income families, and challenges with receiving support to resolve transportation issues. In response to a comment about a City of Portland emergency transportation route plan, staff from the King County Office of Emergency Management noted that routes for snow emergencies are default routes for other emergencies, but that a coordinated effort with cities and stakeholders to develop an emergency transportation route plan has not been undertaken.

Discussion of the importance of early flood warning noted the Snoqualmie Valley Floodzilla system, King County's alert system, and Seattle's alert system. Participants noted that flood warning systems could help to activate pre-positioned resources and prepare people in exposed areas outside of the mapped floodplain. Issues of obtaining funding for retrofits and repairs related to flooding outside of the FEMA mapped floodplain were discussed. Jason Wilkinson noted that King County has worked with the University of Washington Climate Impacts Group to model future flood impacts, which will not affect how FEMA maps the floodplain, but it can help inform King County about future flood risks outside of the mapped floodplain.

Historical floodplain management activities were discussed as causing harm and pushing flood impacts to other locations, which have resulted in impacts to agricultural, natural resources, and ancestral lands. Flooding impacts to safe drinking water and food supplies were also noted as potential issues—flooded produce cannot be sold, and flood impacts to agricultural areas may limit access between farmers and sellers. Discussion of flood impacts to underserved populations highlighted that the lower cost of living in floodplains draws people to at-risk locations, and important considerations include the provision of sufficient resources to impacted communities, impacts to

disabled and senior populations, and the possibility that basing funding for flood risk reduction projects on certain demographics could unintentionally result in a loss of funding.

Next Steps

Spencer Easton noted that the Partner Planning Committee will talk about a framework for identifying appropriate strategies and more Flood Plan development topics in the next meeting, following up on participant comments about the importance of the Flood Plan reflecting the discussions in these meetings. Jason Wilkinson stated that in upcoming meetings there would be opportunities to provide input on strategies and policies, including consideration of where changes in the policy approaches from the 2006 Flood Plan may be needed.

King County Flood Management Plan

Partner Planning Committee – Meeting #5 Agenda
April 18, 2023 | 10:30 a.m. to 12:30 p.m.

Meeting Objectives:

- To solicit initial input from the Committee on the Flood Plan’s approach to policies and on specific policy recommendations
- To introduce evaluation criteria that can be used to assess actions proposed for inclusion in the Flood Plan

Agenda

10:30 – 10:35 Welcome and Introductions

10:35 – 10:45 Public Comment

- Opportunity to provide official public comment (up to 2 minutes per commenter)

10:45 – 11:15 Presentation: Flood Plan Policies

- Presentation on the purpose, use, and planned approach for policies in the Flood Plan
- Questions

11:15 – 11:40 Breakout Rooms: Discussion of Policies

11:40 – 12:10 Full Group Discussion: Flood Plan Policies

12:10 – 12:20 Presentation: Introduction to Evaluation Criteria

12:20 – 12:30 Wrap Up and Next Steps

King County Flood Hazard Management Plan Update

Partner Planning Committee – Meeting #5 Meeting Notes

April 18, 2023 | 10:30 a.m. – 12:30 p.m.

List of attendees:

- Angela Donaldson (Fall City resident)
- Diane Pasta (Des Moines resident)
- Eric Beach (King County)
- Jamie Hearn (Duwamish River Community Coalition)
- Jared Schneider (King County)
- Jason Wilkinson (King County)
- Judi Radloff (King County)
- Kate Ryan (People to Preserve the Tualco Valley)
- Kayla Eicholtz (Department of Ecology)
- Ken Zweig (King County)
- Laura Hendrix (King County)
- Laura Wolfe (Port of Seattle)
- Lauren Silver (Snoqualmie Valley Preservation Alliance)
- Laurie Lyford (Washington Sensible Shorelines Association)
- Lorin Reinelt (King County)
- Martha Neuman (Seattle Public Utilities)
- Matt Knox (King County)
- Mike Mactutis (City of Kent)
- Miranda Fix (Seattle resident)
- Sherry Edquid (City of Tukwila)
- Steve Bleifuhs (King County)
- Stewart Reinbold (Washington Department of Fish and Wildlife)
- Spencer Easton (Consultant team – ESA)
- Dan Beckley (Consultant team – ESA)

Interested parties present:

Laura Casey (Carnation farmer), Molly Lawrence (Van Ness Feldman), Regina Fletcher (Snoqualmie Valley Preservation Alliance)

Introductions

Spencer Easton provided an overview of the agenda for the meeting. Spencer noted the objectives of the meeting included soliciting input from the Partner Planning Committee about the Flood Plan's approach to policies and specific policy topics, as well as introducing the Committee to approaches to evaluating actions proposed in the Flood Plan.

Public Comment

An opportunity to provide public comment was provided at the beginning of the meeting. No public comments were made.

Flood Plan Policies Presentation

Jason Wilkinson provided background on the policies from the 1993 and 2006 Flood Plans, which were not updated during the 2013 Flood Plan Update. There were 47 policies, which range from broad policy statements to detailed operational standards. Steve Bleifuhs described the use of Flood Plan policies for framing priority actions, guiding flood risk reduction efforts, informing decision-making, and being the basis for code development or updates. Jason discussed the potential for approaching policies differently in the 2024 Flood Plan, such as using broad policy statements with more detailed guidance reserved for other parts of the Flood Plan. Jason summarized input relevant to policy updates from past topic-specific workshops, Partner Planning Committee meetings, and Internal Planning Committee meetings.

Participants raised questions about requirements for cities within King County to adopt King County's Flood Plan and its policies. Steve Bleifuhs reported that while state law indicates a county's flood plan is to be considered binding on cities within that county, this requirement has not been enforced nor has the state indicated it is likely to enforce this provision going forward. Participants expressed some concerns about King County's Flood Plan establishing policies that set higher standards than basic compliance with National Flood Insurance Program standards, such as incorporating multiple benefit requirements, and what this would entail for cities in King County. A participant suggested that any new or maintained King County policies proposed for the 2024 Flood Plan should be compared to King County Flood Control District policies, in order to identify and explain reasoning for the differences.

Steve Bleifuhs, when asked about challenges to implementing the existing policies, stated that detailed operational policies can present challenges to implementing projects across different contexts, suggesting that high level policies provide more flexible frameworks. Jason Wilkinson stated that he would provide the Partner Planning Committee with more information in the future regarding the process and timeline for code updates related to Flood Plan policy changes.

Flood Plan Policies Breakout Rooms and Discussion

Participants were divided into three breakout room groups to discuss policy topics for the 2024 Flood Plan, including scope, new policies, and which existing policies to keep. Summaries of responses to breakout room questions are included below. Existing policies can be found in Chapter 2 of the [2006 King County Flood Plan](#).

Do you agree with an approach that reduces the number of policies and focuses on high-level direction?

- Policies should be clear about their intent, commitments, and measures of success
- Policies should be simplified, with a flexible overarching vision
- Policies should avoid details about specific operations and programs
- County policies should be coordinated with cities, get buy-in from other jurisdictions

Which topics and which categories of activities should be covered by policies?

- Cover all types of flooding in geographic scope, including tributary, urban, and coastal
- Consider whether policies covered in other regulatory documents are redundant or reinforcing
- Clarification of roles and responsibilities, coordination across jurisdictions
- Broad, flexible policies that can be applied to different contexts

- Cover climate change, equity, and environmental justice

What are the top policies that should be retained from the 2006 Flood Plan?

- Property acquisition, elevation, and relocation policies, with some revisions
- Integrated floodplain management, multiple benefits, and protection of ecological functions
- Inter-governmental and intra-governmental coordination policies

What are new policies that should be considered for the 2024 Flood Plan?

- Further clarification of inter-governmental and intra-governmental coordination, roles and responsibilities, requirements for cities
- More detailed policies on the inclusion of climate change in flood planning
- Integrated floodplain management, with more explicit consideration of agriculture, tribal treaty rights, and endangered species
- Policies that address different approaches to flood hazard management and needs for rural and urban areas

What policies from the 2006 Flood Plan should not be carried forward or need revision?

- Economic impact assessment requirements, which could have environmental justice implications from deprioritizing small projects and protection of low-income areas
- Gravel management, sandbags, and other detailed operational practices
- Stronger language around funding, revise funding requirements related to King County standards

Participants continued an open discussion of the breakout room questions after reconvening as a whole group. Numerous participants reported out the points they had made in the breakout rooms, summarized above.

Participants had concerns about conflicts between policies and conflicts with how policies are implemented in different contexts. One participant suggested that it would be challenging to resolve all conflicts between policies and that there should be different policies for different times and places. Another participant stated that the Flood Plan should not aim to establish consistency and resolve conflicts between all policies, as those are more detailed, technical issues that should be addressed elsewhere either in the Flood Plan or in other plans. Discussion continued about whether or not cities should have to adopt King County standards; participants with knowledge of state requirements reiterated that cities only need to meet National Flood Insurance Program standards. There was disagreement about whether the Flood Plan should have different policies for urban and rural areas or if the policies should be flexible and cover all areas.

Participants generally agreed about inclusion of climate change policies and a geographic scope that covers all types of flooding and flooded areas. One participant suggested that stormwater management needs to be more explicitly considered in the policies as a flood issue on a watershed scale. One participant recommended carrying forward all policies related to funding but revising them to be more considerate of environmental justice and adding planning elements that would serve as precedent for funding requests. Agriculture and fish habitat were discussed as topics that should be detailed further in integrated floodplain management policies.

Evaluation of Actions

Spencer Easton presented an overview of how actions are evaluated for inclusion in flood plans, including state guidance on evaluation considerations and principles of comprehensive flood hazard management. Participants suggested that evaluating actions on the cost of implementation could present issues due to differing costs in urban and rural areas. One participant noted that an adaptive management component of the plan could provide a pathway for consideration of projects in the future that do not currently make sense to include in the plan.

King County Flood Management Plan

**Partner Planning Committee – Meeting #6 Agenda
May 16, 2023| 10:30 a.m. to 12:30 p.m.**

Meeting Objectives:

- To introduce the flood plan’s risk reduction strategies and actions.
- To solicit committee feedback on flood risk reduction activities that could be included in the flood plan.

Agenda

10:30 – 10:35 Welcome and Introductions

10:35 – 10:45 Public Comment

- Opportunity to provide official public comment (up to 2 minutes per commenter)

10:45 – 11:15 Presentation: Introduction to Flood Risk Reduction Strategies and Actions

- Presentation on the purpose, use, and planned approach for the Action Plan component of the Flood Plan, including the types of flood risk reduction activities that could be included in the plan
- Questions

11:15 – 12:20 Group Discussion: Input on Activities to Address Flood Problems

12:20 – 12:30 Wrap Up and Next Steps

King County Flood Hazard Management Plan Update

Partner Planning Committee – Meeting #6 Meeting Notes

May 16, 2023 | 10:30 a.m. – 12:30 p.m.

List of attendees:

- Angela Donaldson (Fall City resident)
- Diane Pasta (Des Moines resident)
- Erin Ericson (Snoqualmie Valley Watershed Improvement District)
- Jackie Underberg (Bellevue resident)
- Jason Wilkinson (King County)
- Judi Radloff (King County)
- Kayla Eicholtz (Department of Ecology)
- Ken Zweig (King County)
- Laura Hendrix (King County)
- Lauren Silver (Snoqualmie Valley Preservation Alliance)
- Laurie Lyford (Washington Sensible Shorelines Association)
- Martha Neuman (Seattle Public Utilities)
- Matt Baerwalde (Snoqualmie Tribe)
- Mike Mactutis (City of Kent)
- Miranda Fix (Seattle resident)
- Patrick Haluptzok (Sammamish resident)
- Robert Seana (Snoqualmie Valley resident)
- Sherry Edquid (City of Tukwila)
- Steve Bleifuhs (King County)
- Stewart Reinbold (Washington Department of Fish and Wildlife)
- Tom Dean (Vashon-Maury Island Land Trust)
- Spencer Easton (Consultant team – ESA)
- Dan Beckley (Consultant team – ESA)

Interested parties present:

Molly Lawrence (Van Ness Feldman), Regina Fletcher (Snoqualmie Valley Preservation Alliance), Kjristine Lund (interested citizen)

Introductions

Spencer Easton provided an overview of the agenda for the meeting. Spencer noted the objectives of the meeting included providing information on state and federal guidance for planning and selecting actions, providing information on the action plan component of the King County Flood Plan, and collecting input on types of actions to consider for inclusion in the Flood Plan.

Public Comment

An opportunity to provide public comment was provided at the beginning of the meeting. No public comments were made.

Presentation: Introduction to the Action Plan and Activities

Spencer Easton outlined flood issues that were identified during previous Partner Planning Committee meetings and in the topic-specific workshops that were held in early 2023. Spencer outlined the types of actions that were included in the 2006 and 2013 King County Flood Plans. Steps to identify and select actions were detailed from the Washington Department of Ecology's Comprehensive Flood Hazard Management Plan Guidebook and the Federal Emergency Management Agency's Community Rating System Coordinator's Manual.

The Community Rating System is an incentive program that provides flood insurance premium discounts to property owners in communities that participate in the program and implement floodplain management activities that exceed federal minimum standards. A participant asked if properties in incorporated cities are eligible for discounts. King County staff clarified that incorporated areas are eligible for discounts based on whether the local jurisdiction participates in the program, and the flood hazard management activities performed by those local governments dictate the discount (all participating cities in King County currently receive smaller discounts than unincorporated King County).

Spencer explained that the proposal for the action plan component of the Flood Plan was to include priority programs and projects for unincorporated areas of King County. Actions that may be implemented by other entities or in incorporated areas were proposed to be included in an appendix that would detail programs and projects led by others that align with the goals, objectives, and policies of King County's Flood Plan.

Multiple participants were confused that the action plan would not include projects in incorporated areas, with some concerned about projects that may be implemented by other entities only appearing in the appendix. Jason Wilkinson responded that the Flood Plan—while intending to characterize flooding countywide—can only recommend activities under the authority of King County. King County desires to reflect the activities of others but wants to avoid dictating the actions other government entities should perform. In response to questions about the expenditures of the King County Flood Control District (FCD), Jason reiterated that the FCD is an entity independent of King County government. Jason explained that, while actions would be distinguished by jurisdiction or implementing entity, flood hazards and risks identified in the Flood Plan would be countywide and span jurisdictional boundaries.

Participants continued to raise questions and concerns about the organization of the action plan and King County not implementing actions in incorporated areas, including:

- Will the Sammamish River be included in the Flood Plan?
 - Jason explained that the Sammamish River and all other rivers in King County will be included in the Flood Plan, with the identification of risks and needs, but that like other rivers, King County can only commit to actions in unincorporated areas.
- As King County's Water and Land Resources Division has historically performed some activities for the FCD, how will King County actions be differentiated from FCD actions?
 - Jason stated that King County implements numerous flood risk reduction activities that are not on behalf of or funded by the FCD, which would be distinguished in the action plan as the activities carried out by King County. These activities include flood risk reduction efforts carried out by Surface Water Management, the Office of Emergency Management, Roads, and Stormwater Services, among others. Activities

that are carried out by King County on behalf of or funded by other jurisdictions would be noted as such.

- For tasks that King County’s Water and Land Resources Division performs on behalf of or funded by the FCD, will the King County Flood Plan policies be guiding that work?
 - Steve Bleifuhs responded that the Flood Plan policies will inform King County’s work for the FCD, and King County will communicate risks and information to the FCD to help prioritize projects. King County’s hope is that the FCD will adopt the Flood Plan.
- It was suggested that priority needs and actions that may be performed by entities besides King County should not be in the appendix but should be called out as priorities in the main text of the Flood Plan, with language to indicate that those actions are optional for entities besides King County.
- The flood plan team clarified that this was an initial conversation with the committee to get their input, and they will consider how to adjust the approach to the action plan in light of the feedback provided.

Spencer continued the presentation to review the following action types, based on the categorizations detailed in the Community Rating System Coordinator’s Manual:

- Preventive – activities that keep flood problems from getting worse, such as regulations
- Property protection – activities that reduce impacts of hazards to properties as a parcel or neighborhood scale
- Natural resource protection – activities that preserve or restore natural areas or natural functions
- Emergency services – activities taken during an emergency to minimize impacts
- Structural projects – activities that keep flood waters away from an area
- Public information – activities that inform people on ways to protect themselves and their property from hazards

Discussion: Input on Activities

Spencer initiated a discussion on activities that should be considered for inclusion in the Flood Plan, based on the activity types from the Community Rating System Coordinator’s Manual.

Suggested preventive activities included:

- Vegetation management in the Sammamish River and Sammamish Lake
- Drainage basin assessments and planning
- Incentivizing development outside of flood zones
- Sediment management to increase channel capacity
- Sea level rise studies
- Increasing freeboard requirements on structures in the floodplain

Suggested property protection actions included:

- Relocating structures to locations outside of the floodplain
- Incentives for mitigation for repetitive loss properties
- Deed upon death approach, where property is acquired when owner passes
- Reimbursement coverage for flood prevention actions by homeowners, such as sandbagging

- Framework for determining when it is acceptable to condemn properties
- Property acquisition, retrofits, and managed retreat
- Financial assistance for low-income households to purchase flood insurance

Suggested public information activities included:

- Communicating risks of levee breach and dam inundation areas, including potential overlapping flood risks with seismic events and landslides
- Require disclosure to tenants or property owners if a property is in a floodplain
- More outreach, including distributing information through schools, through community groups, and at community events
- Coordinate with Washington Department of Labor and Industries and Office of Insurance Commissioner to promote flood insurance
- Coordination of messaging and outreach between King County and other jurisdictions within the county
- Post-disaster outreach and education

Other suggested actions included:

- Providing people with emergency kits for their home or informing people about creating their own emergency kits
- Protecting headwaters wetlands and disallow filling of headwater wetlands with purchasing of mitigating credits from downstream projects
- Aligning activities with flood risk reduction policies in the Comprehensive Plan
- Flood modeling to identify changes from improving flood control structures
- Repurposing structures in the floodplain to flood-compatible uses
- Address flood risks in areas where other entities, such as the King County Flood Control District, are not planning to take action

Next Steps

The next Partner Planning Committee meeting will be on Tuesday July 18th. The meeting will cover draft policies and will continue with a discussion of potential actions to consider in the Flood Plan.

King County Flood Management Plan

Partner Planning Committee – Meeting #7 Agenda
July 18, 2023| 10:30 a.m. to 12:30 p.m.

Meeting Objectives:

- To solicit committee feedback on the draft Flood Plan policies.
- To provide an update on the approach to flood risk reduction activities in the Flood Plan and solicit committee feedback on draft evaluation criteria.

Agenda

10:30 – 10:35 Welcome and Introductions

10:35 – 10:45 Public Comment

- Opportunity to provide official public comment (up to 2 minutes per commenter)

10:45 – 11:15 Discussion: Policies

- Recap prior discussion of Flood Plan policies
- Discuss Draft Flood Plan policies (distributed in advance)

11:15 – 11:35 Presentation and Discussion: Action Plan and Activities

- Update on the planned approach to how projects and other activities will be referenced in the Flood Plan
- Questions and discussion

11:35 – 12:20 Presentation and Discussion: Evaluation Criteria

- Presentation on draft criteria for evaluating actions in the Flood Plan (10 minutes)
- Breakout room discussions (15 minutes)
- Full group discussion and questions (20 minutes)

12:20 – 12:30 Wrap Up and Next Steps

King County Flood Hazard Management Plan Update

Partner Planning Committee – Meeting #7 Meeting Notes
July 18, 2023 | 10:30 a.m. – 12:30 p.m.

List of attendees:

- Angela Donaldson (Fall City resident)
- Diane Pasta (Des Moines resident)
- Edan Edmonson (King County)
- Eric Beach (King County)
- Erin Ericson (Snoqualmie Valley Watershed Improvement District)
- Jackie Underberg (Bellevue resident)
- Jamie Hearn (Duwamish River Community Coalition)
- Jason Wilkinson (King County)
- Judi Radloff (King County)
- Kayla Eicholtz (Department of Ecology)
- Ken Zweig (King County)
- Laura Haren (City of Kent)
- Laura Hendrix (King County)
- Lauren Silver (Snoqualmie Valley Preservation Alliance)
- Laure Wolfe (Port of Seattle)
- Martha Neuman (Seattle Public Utilities)
- Nicole Johnson (King County)
- Sherry Edquid (City of Tukwila)
- Steve Bleifuhs (King County)
- Stewart Reinbold (Washington Department of Fish and Wildlife)
- Tom Dean (Vashon-Maury Island Land Trust)
- Spencer Easton (Consultant team – ESA)
- Dan Beckley (Consultant team – ESA)

Interested parties present:

Laura Casey (Carnation farmer), Molly Lawrence (Van Ness Feldman), Regina Fletcher (Snoqualmie Valley Preservation Alliance)

Introductions

Spencer Easton provided an overview of the agenda for the meeting. Spencer noted the objectives of the meeting included soliciting input from the Partner Planning Committee on the draft Flood Plan policies, providing an update on the approach to Flood Plan actions and the Action Plan, and collecting input on potential evaluation criteria for Flood Plan actions.

Public Comment

An opportunity to provide public comment was provided at the beginning of the meeting. No public comments were made.

Discussion: Flood Plan Policies

Jason Wilkinson provided an overview of the revisions to the Flood Plan policies since they were last shared with the Partner Planning Committee. New policies were added to address capacity building with community organizations, limiting sediment removal activities, the importance of large wood in rivers and streams, identifying multi-benefit floodplain projects, and accounting for uncertainty in future flooding conditions due to climate change. Some of the previous draft policies were revised to expand on the application of best available science and streamline the policies that address land use.

Spencer Easton facilitated a discussion on the newest updates to the draft Flood Plan policies.

- In reference to draft policy #16, a participant asked what it meant for King County to exceed minimum standards of the National Flood Insurance Program.
 - Jason noted that by participating in the Community Rating System, King County already exceeds the National Flood Insurance Program minimum requirements. Laura Hendrix also noted that King County's land use regulations exceed National Flood Insurance Program minimums and that Washington's state floodplain management standards exceed the minimums.
- A participant suggested that policy #18, which urges street improvements for safe egress, should also encourage improvements for safe ingress.
- A participant described a gap in the policies in addressing existing development and land uses in the floodplain, noting that prioritizing restoration is not appropriate for all environments.
 - The participant described goals and objectives from the 2006 Flood Plan as having more acknowledgement of protecting existing development.
 - Other participants noted there are locations where intensive infrastructure exists and may have a need for flood control, also noting that if existing land use is not acknowledged, the draft policies could be interpreted as suggesting floodplain development should be removed.
 - Jason clarified that the absence of acknowledging particular land uses or infrastructure is not intended to suggest that they be eliminated or disregarded, but that the policies use a broad approach, in order to not disregard potential opportunities for restoration or floodplain reconnection based on existing land uses, while recognizing that full floodplain restoration is not possible everywhere.
 - Participants reiterated the need for clarification and acknowledgement around existing land uses, stating that existing land uses like working waterfronts and flood control infrastructure provide benefits.
 - One participant expressed a concern that committee feedback has not been incorporated into the draft documents developed for the Flood Plan.
- A participant suggested that more policies identify a need for adding floodwater storage, as well as the potential for releasing stored water during low-flow seasons, especially in response to climate impacts.
- A participant noted that many of the policies address planning before a flood, but there is a lack of policies to direct flood emergency response and post-flood recovery.
 - Jason stated that the King County Office of Emergency Management supported detailing specific flood response and recovery practices elsewhere in the Flood Plan.

Comments will continue to be accepted on the Flood Plan policies. King County will send out the policies and goals to the committee and would like comments back by August 18. The policies will not be finalized until the final draft of the Flood Plan in 2024.

Presentation and Discussion: Action Plan and Activities

Jason provided an update on revisions to the proposed approach to the Action Plan section of the Flood Plan. The previous proposed approach would have the Flood Plan list actions that King County would commit to in the body of the Flood Plan, while actions that King County supports other jurisdictions pursuing would be included in an appendix. The revised proposed approach would be called the Comprehensive Mitigation Strategy, which would include an Action Plan (actions that King County is committed to pursue) and a separate list of flood risk reduction actions that other jurisdictions may pursue. Participants indicated that this approach to the Action Plan addressed previous concerns about actions led by jurisdictions other than King County being reflected separate from King County's actions.

Presentation and Discussion: Evaluation Criteria

Spencer Easton provided an overview of how evaluation criteria would be applied to determine which actions to include from King County and other jurisdictions in the Comprehensive Mitigation Strategy.

Draft evaluation criteria for the discussion included:

- Compatibility with Flood Plan goals and objectives
- Compatibility with other King County plans and commitments
- Environmental impact
- Impact on people
- Benefits
- Effectiveness/suitability
- Resilience/adaptive capacity

The following comments were made in discussion of the draft evaluation criteria:

- There should be transparency on how projects are ranked against each other.
- Using the evaluation criteria, projects that are included in the Flood Plan should be organized in tiers based on priority.
- Definitions of evaluation criteria should be clarified to avoid subjective interpretations and improve transparency.
- Adding a quantitative component to the application of evaluation criteria could clear up confusion.
- There were mixed opinions on whether or not actions that would be pursued by jurisdictions other than King County should be based on existing, adopted capital improvement programs, although multiple people raised concerns about wanting flexibility for projects that may not be in adopted capital improvement programs.
- The resilience/adaptive capacity criteria could be more explicitly linked to climate change.
- The evaluation criteria should include consideration of projects being in accordance with King County regulations.

Wrap-up

Jason will resend the policies and distribute a copy of the revised goals, objectives, and guiding principles to the Partner Planning Committee, with comments on Flood Plan policies due to Jason and Spencer by August 18, 2024.

King County Flood Management Plan

Partner Planning Committee – Meeting #8 Agenda
September 19, 2023| 10:30 a.m. to 12:30 p.m.

Meeting Objectives:

- To discuss how committee feedback has thus far informed the Flood Plan.
- To discuss the request for mitigation activities and specific activities that should be considered in the plan’s Comprehensive Mitigation Strategy.

Agenda

10:30 – 10:35 Welcome and Introductions

10:35 – 10:45 Public Comment

- Opportunity to provide official public comment (up to 2 minutes per commenter)

10:45 – 11:05 Presentation and Discussion: Flood Plan Input to Date

- Summary of Partner Planning Committee and community input received to date and how it is being incorporated into components of the Flood Plan
- Questions and discussion

11:05 – 11:35 Presentation and Discussion: Activity Submittal Form/Process

- Overview of the request for mitigation activities
- Questions and discussion

11:35 – 12:20 Breakout Rooms: Mitigation Activity Brainstorming

- Opportunity to brainstorm potential mitigation activities in small groups and to submit activities for consideration through the conversation

12:20 – 12:30 Wrap Up and Next Steps

King County Flood Hazard Management Plan Update

Partner Planning Committee – Meeting #8 Meeting Notes
September 19, 2023 | 10:30 a.m. – 12:30 p.m.

List of attendees:

- Angela Donaldson (Fall City resident)
- Diane Pasta (Des Moines resident)
- Edan Edmonson (King County)
- Eric Beach (King County)
- Erin Ericson (Snoqualmie Valley Watershed Improvement District)
- Jamie Hearn (Duwamish River Community Coalition)
- Jason Wilkinson (King County)
- Ken Zweig (King County)
- Laura Wolfe (Port of Seattle)
- Laurie Lyford (Washington Sensible Shorelines Association)
- Martha Neuman (Seattle Public Utilities)
- Matt Baerwalde (Snoqualmie Tribe)
- Matt Knox (King County)
- Mike Mactutis (City of Kent)
- Patrick Haluptzok (Sammamish resident)
- Steve Bleifuhs (King County)
- Stewart Reinbold (Washington Department of Fish and Wildlife)
- Spencer Easton (Consultant team – ESA)
- Dan Beckley (Consultant team – ESA)

Interested parties present:

Emily Arteché (City of Snoqualmie), Jamie Brakken (Bellevue real estate agent), Laura Casey (Carnation farmer), Michael Pruet (Real estate project manager), Molly Lawrence (Van Ness Feldman) Peter Lamanna (Washington Sensible Shorelines Association), Regina Fletcher (Snoqualmie Valley Preservation Alliance)

Introductions

Spencer Easton provided an overview of the agenda for the meeting. Spencer noted the objectives of the meeting included to review input provided by this committee so far, to share input received in other forums, to provide an overview of the process to submit activities to be considered for the Flood Plan, and to brainstorm ideas that could be considered to include in the Flood Plan.

Public Comment

An opportunity to provide formal public comment was provided at the beginning of the meeting. No public comments were made.

Presentation and Discussion: Flood Plan Input to Date

Spencer provided an overview of input received on numerous topics, including flood hazards, goals and objectives, policies, risk reduction activities, structure of the Flood Plan, and evaluation criteria for

activities included in the Flood Plan. A detailed overview of this input and how it informed the Flood Plan development process can be found in the [presentation](#) and [video](#) from this meeting.

Following the overview of input and how it has been used, Spencer asked if there was any input that wasn't included in the overview that committee members would like to highlight. Diane Pasta noted that she had previously discussed concerns about access to drinking water during floods and potential impacts to drinking water sources from flooding and was requesting more information on this topic. King County committed to providing additional information and resources on this topic at the next meeting, as there were not County staff with expertise in this area present at the meeting.

Presentation and Discussion: Action Submittal Form/Process

Jason Wilkinson introduced the approach to developing the Comprehensive Mitigation Strategy and Action Plan components of the Flood Plan. King County shared forms with cities, tribes, and other entities which would allow them to propose flood risk reduction activities that will be reviewed for inclusion in the Flood Plan's Comprehensive Mitigation Strategy. All proposals will be reviewed against evaluation criteria. For activities to be included in the Action Plan, King County must be the lead agency, King County must be able to commit to funding or seeking funding for the activity, and the activity must be completed or advanced within five years of adopting the Flood Plan. All other proposed activities that meet the evaluation criteria would be included in the broader Comprehensive Mitigation Strategy.

Jason and Spencer responded to questions about the form and the process.

- What types of activities should be submitted with the form? Is it oriented towards projects with established plans and secured funding or can activities be included that are not well defined and require further scoping or planning?
 - Jason responded that the Flood Plan has a five-year timeline, although that schedule is primarily a commitment that King County is making. There will be consideration of projects that are not fully developed or require further planning if elements of the project can be studied or advanced in some manner within the five-year timeline.
 - Spencer added that activities do not need to be proposed as individual components, if they are all part of a larger program or project.
- Could you clarify what Comprehensive Mitigation Strategy means and entails?
 - Jason explained that the Comprehensive Mitigation Strategy is inclusive of all activities being recommended in the Flood Plan, both activities that meet the requirements of the Action Plan and those that do not. The name Comprehensive Mitigation Strategy reflects that the list of proposed flood hazard mitigation activities is inclusive of those that King County is not committing to completing within five years. The Action Plan, which is a component of the Comprehensive Mitigation Strategy, only includes actions that King County can commit to completing and reporting on to FEMA, as required by the Community Rating System process that King County is undertaking. Committee members suggested that the name Comprehensive Mitigation Strategy is confusing and that it might be helpful to select a different name.
- One of the evaluation criteria is that activities must not conflict with legal obligations of King County. How intensive will the legal review of activities be?
 - The review will be a high-level assessment of the proposed activity to determine if there is an obvious legal conflict. It will not be an intensive review.

- Will planned projects by the King County Flood Control District be included in the Flood Plan?
 - Spencer stated that actions in the King County Flood Control District's current capital improvement program would be included in the Comprehensive Mitigation Strategy.
 - In response to a specific follow-up question about the Lower Green River Corridor Plan, Jason added that the work that the Flood Control District has been discussing for the Lower Green River has not been developed into a project list at this point and will not be included, but the planning work they are undertaking will likely be referenced in some way.
- Is King County planning to conduct an analysis of repetitive loss properties?
 - King County completed an analysis of repetitive loss properties in 2022, which can be accessed [here](#).
- How will the Comprehensive Mitigation Strategy be used, if King County is not committing to implementing or funding activities put forward by other entities?
 - Jason explained that the Comprehensive Mitigation Strategy demonstrates a need for flood risk reduction activities throughout King County (not just in unincorporated areas) and demonstrating this need can support efforts to seek funding for implementation. Outlining proposals by a wide array of entities in King County in one place may also help support collaboration across jurisdictions and coordinated implementation.

By request King County committed to making activity form submissions available to other Partner Planning Committee members via a shared electronic file.

Breakout Rooms: Action Brainstorming

Partner Planning Committee members were divided into breakout rooms to brainstorm and discuss projects to be submitted for potential inclusion in the Comprehensive Mitigation Strategy. The Partner Planning Committee will discuss some of the activities that were submitted at their October 17th, 2023, meeting.

King County Flood Management Plan

Partner Planning Committee – Meeting #9 Agenda
October 17, 2023 | 10:30 a.m. to 12:30 p.m.

Meeting Objectives:

- To review past risk reduction strategies, recap earlier committee feedback, share an update on proposed Flood Plan activities, and solicit committee feedback on activities.
- To discuss the Flood Plan process moving forward.

Agenda

10:30 – 10:35 Welcome and Introductions

10:35 – 10:45 Public Comment

- Opportunity to provide official public comment (up to 2 minutes per commenter)

10:45 – 12:10 Presentation and Discussion: Flood Plan Strategies and Activities

- Presentation and discussion of strategies and actions in King County’s most recent flood plan and hazard mitigation plan and recap of committee input on priority strategies for this Flood Plan.
- Summary of the activities submitted and being considered for the Flood Plan.
- Committee discussion and input on drafting Flood Plan actions.

12:10 – 12:20 Flood Plan Process

- Summary of the process for the Flood Plan moving forward, with opportunity for questions and answers.

12:20 – 12:30 Wrap Up and Next Steps

King County Flood Hazard Management Plan Update

Partner Planning Committee – Meeting #9 Meeting Notes
October 17, 2023 | 10:30 a.m. – 12:30 p.m.

List of attendees:

- Angela Donaldson (Fall City resident)
- Diane Pasta (Des Moines resident)
- Eric Beach (King County)
- Erin Ericson (Snoqualmie Valley Watershed Improvement District)
- Jason Wilkinson (King County)
- Judi Radloff (King County)
- Laura Hendrix (King County)
- Laura Wolfe (Port of Seattle)
- Lauren Silver (Snoqualmie Valley Preservation Alliance)
- Laurie Lyford (Washington Sensible Shorelines Association)
- Lisa Nelson (Department of Ecology)
- Martha Neuman (Seattle Public Utilities)
- Matt Baerwalde (Snoqualmie Tribe)
- Mike Mactutis (City of Kent)
- Nicole Johnson (King County)
- Patrick Haluptzok (Sammamish resident)
- Sherry Edquid (City of Tukwila)
- Steve Bleifuhs (King County)
- Stewart Reinbold (Washington Department of Fish and Wildlife)
- Spencer Easton (Consultant team – ESA)
- Dan Beckley (Consultant team – ESA)

Interested parties present:

- Emily Arteche (City of Snoqualmie), Laura Casey (Carnation farmer), Regina Fletcher (Snoqualmie Valley Preservation Alliance), Molly Lawrence (Van Ness Feldman)

Introductions

Spencer Easton provided an overview of the agenda for the meeting. Spencer noted the objectives of the meeting included reviewing flood risk reduction activities from past King County plans, summarizing activities that were submitted for the 2024 Flood Plan, discussing gaps and opportunities for expanding upon the activities submitted, and discuss next steps in the Flood Plan process.

Public Comment

An opportunity to provide formal public comment was provided at the beginning of the meeting. No public comments were made.

Presentation and Discussion: Flood Plan Activities

Spencer provided an overview of flood risk reduction activities recommended in the 2020 King County Regional Hazard Mitigation Plan, including whether these activities were complete, ongoing,

or not yet started. Participants were prompted to discuss if these activities were relevant to the 2024 Flood Plan, should be included in the 2024 Flood Plan, or if they should be modified.

- Numerous members expressed their support for including flood-related activities from the 2020 King County Regional Hazard Mitigation Plan in the 2024 Flood Plan.
- Martha Neuman asked for clarification on the activity that recommends “Rehabilitation or removal of high hazard dams,” expressing concern that this may apply to the dams that support storage of Seattle’s drinking water supply.
 - Nicole Johnson stated that the technical definition of a high hazard dam is one whose failure would result in any loss of human life, which applies to many of the dams in the region.
 - Erin Ericson suggested this strategy could be expanded upon to include outreach about dam risks and support for better dam monitoring technologies.
 - Martha expressed general support for dam improvements, but that the activity would need to be reworded, so as not to construe the potential for removal or major changes to critical infrastructure.
 - Lauren Silver suggested possible improvements around dam failure warnings and studying evacuation routes and protocol.

Spencer provided an overview of flood risk reduction activities recommended in the 2013 King County Flood Plan, including the progress on completing activities in each major river basin.

Participants were prompted to discuss if these activities were relevant to the 2024 Flood Plan, should be included in the 2024 Flood Plan, or if they should be modified.

- There was general support for the types of activities in the 2013 Flood Plan, but nobody expressed support for pulling activities from the 2013 Flood Plan for direct inclusion in the 2024 Flood Plan.
- Lauren Silver expressed concerns about approaches to land acquisition, which could impact agricultural production, and suggested this be approached differently in the 2024 Flood Plan through other property protection methods.

Spencer detailed the process for evaluating activities submitted for possible inclusion in the Flood Plan and summarized information about the activities submitted, including their basin, activity types, benefits, and types of flooding addressed.

- Over 100 activities were submitted by King County and nearly 200 were submitted by other cities, governments, and organizations operating in King County or were otherwise pulled from publicly available information.
- 101 activities (or 33%) were natural resource protection projects, such as floodplain restoration, habitat improvements, and levee setbacks.
- 89 activities (or 29%) were structural projects, such as levees, revetments, floodwalls, or drainage improvements.
- 56 activities (or 18%) were preventive activities, such as land use regulations, flood hazard mapping, planning, and stormwater management.
- 37 activities (or 12%) were property protection, such as acquisition or elevation of homes.
- 14 activities (or 5%) were public information activities, such as technical assistance, education, and outreach.

- 9 activities (or 3%) were emergency services, such as flood warnings and emergency response.

For more detailed information on the activities submitted, review the presentation or video recording of the October 17th, 2023 Partner Planning Committee meeting [here](#).

The Partner Planning Committee discussed potential gaps in the activities submitted or additions that could be made.

- Erin Ericson suggested improvements to existing flood warning systems and dam failure warning systems.
- Lauren Silver suggested emergency planning technical assistance for communities and private landowners, including working with private landowners to document risks on properties that could improve emergency response.
- Laura Casey noted that many earlier discussions emphasized the importance of public information activities, which were not widely represented in the activities submitted.
 - Jason Wilkinson acknowledged the substantial input about the need for public outreach and education about flood risk, indicating that King County is considering ways to improve public information activities and will work to identify additional activities that will address the input that has been heard.
- Sherry Edquid suggested that the Comprehensive Risk Mitigation Strategy could include technical assistance provided by King County to communities conducting substantial damage assessments after flood disasters.
- Martha Neuman inquired about adaptive management of the Flood Plan and how implementation of the Comprehensive Risk Mitigation Strategy could change over the life of the Flood Plan.
 - Jason stated that the Flood Plan would be updated every five years, in addition to annual evaluations and progress reporting. These update and monitoring activities will allow for reconsideration of priorities and adapting to potential changes that could necessitate changes to how the Flood Plan is implemented. These activities would involve coordination with partners and would not be an action performed independently by King County.
- Molly Lawrence and Laura Wolfe suggested including an activity that would involve a planning effort on best practices and resilience in addressing sea level rise, with coordination between King County, the Port of Seattle, and other governments.
- Sherry suggested distinguishing property protection activities that apply to residential properties from those that apply to commercial properties.

Spencer detailed the proposed process for prioritizing activities submitted for inclusion in the Flood Plan's Comprehensive Risk Mitigation Strategy. Based on the evaluation criteria and consideration of other Flood Plan themes, such as equity and climate change resilience, a short list of activities would be selected for distinction as high priority activities. This would be different from alternatives that would rank all or some activities in multiple tiers.

- Laura Hendrix suggested prioritizing activities that reduce risk to repetitive loss properties.
- There was discussion of prioritizing a range of activities that would be appropriate for different environments, such as rural and urban areas, as well as a variety of activities that are appropriate for different types of flood impacts.

Flood Plan Process

Jason provided information on next steps in developing the Flood Plan and opportunities for review. An initial draft of the Flood Plan has been developed. Internal review and revision processes will be occurring through the end of 2023. A draft Flood Plan is expected to be available in January or February 2024, with a 45-day comment period.

No other Partner Planning Committees are scheduled. A proposed Partner Planning Committee meeting would occur in February 2024, which would allow for Committee members to discuss the draft Flood Plan and provide feedback.

Appendix D

Community Engagement Summary

APPENDIX D

Flood Plan Community Engagement Overview and Synthesis

Introduction

King County performs a wide range of services intended to reduce risks from flooding and erosion, protect people and property, support preparedness, and build resilience. Even with these measures, flooding is a natural occurrence on the landscape. Natural disasters, such as flooding, affect all who are touched by them, yet not all people are equally able to cope with or recover from the hardship of natural disasters. As King County acknowledges in its Equity and Social Justice Strategic Plan, deeply entrenched social, economic, and environmental inequities worsen and threaten our collective prosperity. King County also acknowledges the public involvement opportunities that accompanied past King County flood hazard management plans did not do enough to remove barriers to participation. With these factors in mind, this flood planning effort set out to hear from those who may be among the most vulnerable to flooding and who may not have been intentionally offered opportunities to share their perspectives in the past.

As the flood plan scope was being developed, King County secured a grant from the Washington Department of Ecology to support development of a community engagement plan¹ and to implement much of the outreach described in this summary. Engagement goals were twofold: gather public feedback to inform future flood risk reduction and flood resilience strategies, and increase awareness of flooding issues, local risks, and resources to build community and personal resilience. The approach involved three distinct phases, which began in early 2022:

- **Research:** King County and its consultants researched best engagement practices to reach diverse audiences. Research included a literature review and interviews with community leaders and agency representatives. An online survey was deployed to understand the best engagement methods and tactics to reach community members who had not been engaged in King County's past flood planning efforts and who are at risk and potentially among the most vulnerable to flooding. Local demographic information and other King County engagement efforts were analyzed. An equity-focused consulting firm performed

¹ <https://publicinput.com/Customer/File/Full/68d106bf-46c1-4b3f-972e-dc157c8e6316>

an equity review of the 2006 and 2013 King County Flood Hazard Management Plans and identified multiple ways to improve accessibility through this plan.

- **Planning:** Drawing on the research, the project team developed a multi-layered outreach plan focused on the two engagement goals. To guide engagement efforts, King County identified “priority communities.” These are communities who are among the most vulnerable to flooding—low-income, Black, Indigenous and People of Color (BIPOC), renters, those under 5 and over 65 years old, foreign-born individuals, those with disabilities, those who speak a language other than English at home, or those have limited access to information.
- **Implementation:** Implementation of the community engagement plan began in October 2022 and continued through fall 2023.

This appendix provides a summary of the outreach conducted, the input received, and the lessons learned in creating a pro-equity, community-based approach to the development of the King County Flood Management Plan.

Overview of Community Engagement Approach

As referenced in the introduction, King County developed a plan to guide engagement efforts, titled the Flood Plan Community Engagement Implementation Plan. A fundamental premise of the engagement approach was to offer multiple avenues for input. The plan identified six strategies to bring more voices and different perspectives into the planning process. King County implemented five of the strategies, and one additional strategy was added midstream in response to changing circumstances. Five of the six implemented engagement strategies are described in this section. Planning committee representation is described in Chapter 1 of the plan in the Partner Planning Committee section.

Community partnerships: Drawing on the connections and knowledge of local, community-based organizations, community partnerships were intended to extend the reach of other engagement strategies. King County invited community groups to enter a contracted partnership in which the County and the partner would co-create an engagement strategy best suited to reaching the partner’s network. The County offered funding to partners to implement the work (provided primarily through the Ecology grant). The groups contacted were BIPOC-focused, small organizations working in King County.

The engagement plan originally envisioned approximately 10 community partners. County staff held conversations with 13 different organizations and local government agencies to identify potential partners, and one organization agreed to a contractual partnership. The organization—the Washington State Coalition of African Community Leaders (WSCACL)—has relationships with over 100,000 native Africans or people descended from Africans living within King County.

Organizations that opted to not participate cited limited capacity during the project timeframe and a perspective that flooding was not a high priority topic for them. An

additional identified barrier was the lack of familiarity with King County’s Water and Land Resources Division and project team staff.

Through this partnership and in collaboration with King County, WSCACL translated and produced an educational video in multiple languages, distributed the video via multiple channels, and transcreated and distributed King County’s two-part flood plan online survey (described later in this section).²

Despite the limited number of formal community partnerships, several local governments and other organizations helped broadcast county-produced information to their networks or invited King County staff to attend events or meetings.

Community visits: The most visible of all engagement tools used during the development of the Flood Plan, community visits involved county staff attending events or meetings hosted and led by other groups or organizations. County staff attended 25 such events ranging from ethnic festivals to unincorporated area council meetings. Through personal conversations and presentations at these events, connections were made with over 1,350 people. These visits provided opportunities for King County to engage with individuals and organizations who may not have had prior knowledge of flood risk, flood risk reduction, or King County’s work to address flood risks.

Community visits had the dual goals of increasing awareness of flooding and gathering public input to inform the development of the Flood Plan. The project team developed key messages, talking points, and outreach materials to provide consistent, accessible messaging for all visits, and a “live poll” was developed to align with the online survey and to gather in-person comments. The poll and an email sign-up list provided pathways for community members to share their concerns, ideas, and priorities in the moment, as well as to stay informed throughout the planning process. At least 625 people shared their input in the live polls, tracked by the number of home zip codes shared in the polls.

Water and Land Resources Division representatives staffed these in-person events, which helped to build relationships with community members and increase the County’s understanding of the issues that are front and center for the community. Events were selected to achieve geographic coverage and to connect with priority communities. Staff attended three ethnic festivals in Seattle to reach predominantly BIPOC communities. While 48% of the live poll participants at these events were from Seattle, they represented very diverse communities, including many people with disabilities, people over 65, and BIPOC community members. Across all events, over 84% of those who engaged in the live polls at the community visits and provided their home zip codes were from King County.

² Video available at: <https://www.youtube.com/watch?v=mZWqfHtjWaE>

TABLE 1: COMMUNITY VISIT CALENDAR AND NUMBERS REACHED

Venue	Date	Target Community / Location	Type	Estimated Contacts
Washington State Coalition of African Community Leaders Fifth Annual Summit	2/25/2023	African Immigrant and African American / Eastern King County	Event	30
Kimball Creek Earth Day / Snoqualmie Tribe Event	4/22/2023	Native American and Youth / Snoqualmie	Event	60
Asian Pacific Islander Heritage Celebration	5/6/2023	Asian American / Countywide	Event	125
Indigenous People Festival	6/10/2023	Native American / Countywide	Event	150
King County Fair	7/14/2023	South King County	Event	60
Pacific Days	7/15/2023	BIPOC / South King County	Event	63
Renton River Days	7/21/2023	BIPOC / Renton	Event	174
Duwamish River Festival	8/5/2023	BIPOC / South Seattle	Event	116
Fiesta Patrias Celebration	9/17/2023	Latino / Countywide	Event	146
Marymoor at the Movies	8/9/2023	East King County	Event	59
Skykomish Open Air Market	8/19/2023	Skykomish area	Event	44
Maple Valley Emergency Preparedness Fair	9/30/2023	Maple Valley	Event	86
Issaquah Alps Trails Club Hike in Upper Issaquah Basin	8/26/2023	Issaquah Basin	Field event	6
Snoqualmie Basin Immigrant Farm Visits	2/9/2023	Hmong Farmers / Snoqualmie	Interpreted field visit	10
Green River Valley Immigrant Farm Visits	3/23/2023	Hmong Farmers / Green River	Interpreted field visit	2

Venue	Date	Target Community / Location	Type	Estimated Contacts
Sammamish Valley Immigrant Farm Visits	2/15/2023	Hmong Farmers / Sammamish Valley	Interpreted field Visit	3
King County Frontline Resilient Task Force	11/2/2022	BIPOC / Countywide	Presentation	15
Greater Unincorporated Maple Valley Community	3/6/2023	Maple Valley	Presentation	14
City of Issaquah Park and Environmental Advisory Boards	3/16/2023	Issaquah	Presentation	18
Snoqualmie Valley Recreation Coalition	3/21/2023	Recreation Interests / Snoqualmie	Presentation	18
Fall City Community Association	4/4/2023	Fall City	Presentation	50
Vashon Maury Island Community Council	4/20/2023	Vashon – Maury Island	Presentation	70
Snoqualmie Valley Mobility Coalition	6/9/2023	Mobility-limited / Snoqualmie	Presentation	25
Green River Coalition	6/12/2023	Maple Valley	Presentation	6
Regional Alliance for Resilient and Equitable Transportation Coalition	5/24/2023	Mobility – limited / Countywide	Discussion	34
Total Contacted				1384

Online Engagement: In addition to the survey used to inform the creation of the engagement plan described in the introduction, King County developed and promoted an online platform to share information about flooding and to solicit input via two phases of an online survey that would inform the development of the Flood Plan.³ All survey content was translated into ten languages. Each phase stayed open for at least two months, and 247 survey responses were submitted across the two phases. In addition, the WSCACL transcreated the survey and distributed it to their network, and across both phases WSCACL gathered 626 survey entries (see Table 2).

³ Surveys were shared at <https://publicinput.com/FloodPlan.English#0>

The first phase focused on identifying respondents' level of concern about flooding, whether and how flooding had impacted them, the level of awareness of King County's flood risk reduction services, preferred strategies to increase flood preparedness and reduce risk, and other benefits most important to the respondents (for example, clean water, accessible and safe roadways, supporting local farms).

The second phase focused exclusively on strategies and actions King County could take to reduce flood risk and build flood resilience, with questions focused on six categories of action (prevention, protection, structural activities, natural resource protection activities, emergency services, and public information). This phase also provided an opportunity for respondents to list specific projects, actions, or locations they felt should be included in the plan.

Both survey phases requested demographic information. This was an optional question that included a "I prefer not to answer" response. In addition, both phases requested home zip code information to track geographic representation.

TABLE 2: ONLINE SURVEY ENGAGEMENT

	King County Survey Responses	WSCACL Survey Responses	Total Survey Responses
Phase One	139	315	454
Phase Two	108	311	419
Total	247	626	873

King County-sponsored meetings: King County organized two public meeting series, each with two potential meeting times. The first two meetings kicked off the formal planning effort in October 2022, and the second two meetings in June 2023 involved sharing feedback provided up to that point and gathering additional input on potential plan elements. Both sets of meetings shared information about flood risks and resources for preparedness and invited input using group discussions, small group breakout sessions, and live polls. All meetings were led by an outside facilitator.

Three of the four meetings were offered virtually (two in the evening and one during the day), and interpretation and closed caption services were offered. One meeting was offered in person at the Tukwila Community Center. This meeting was ultimately cancelled due to low registration. In total, 91 individuals attended the three county-sponsored meetings. Zip code and demographic information were not collected at these meetings.

In addition to these public meetings, King County hosted a series of workshops to gather perspectives on tributary, coastal, and urban flooding. Two workshops were held for each of these three flood topics. The workshops were organized to hear from participants about flood hazards, specific problem areas, impacts associated with those problems, and potential solutions to consider in the Flood Plan. Attendance for the six workshops totaled 152.

Targeted advertising: Targeted advertising was not identified as a strategy in the engagement plan, but this activity was added as part of adaptively managing the engagement effort due to the availability of grant resources. Retaining the goals of geographic diversity and reaching members of priority communities, county staff implemented two targeted advertising outreach methods.

- **Transit Ads:** Using King County Metro’s transit ad system, English and Spanish posters and signs were placed in three transit stations (Bellevue, Issaquah, and Renton), on buses in the East and South County areas, and on the light rail line that runs from North Seattle to SeaTac. The ads ran from early September to early October 2023. The purpose was to drive people to online flood preparedness information and the online survey.
- **Ethnic News:** Ethnic media companies typically have an exceptional understanding of specific communities, the issues important to them, and the messages that will resonate with them. King County approached two ethnic media companies—one focused on African American communities and one on Latino communities—to increase outreach to these groups. Through paid advertising or reporting campaigns, the ethnic media companies were asked to transcreate King County’s messages for the communities they serve and promote those messages. Runta News, an ethnic media company focusing on African American and immigrant populations, participated and ran an ad campaign using social media and online content from June to August 2023. The campaign was intended to increase awareness about flooding and preparedness resources while also encouraging participation in the June 2023 county-sponsored public meetings. The Latino-focused media company chose not to participate.

Community Engagement Summary

During this planning effort, providing multiple avenues for engagement offered the opportunity for more people to share input with King County and allowed County staff to begin to develop new relationships, including with individuals and organizations who may not have previously been aware of floodplain management activities.

The strategies that resulted in the greatest numbers of people sharing input were community partnerships and community visits. While many people visited the King County-administered online information site, less than 10% completed the survey. The partnership with WSCACL was a more effective method to gather survey responses than the promotion King County did on its own, and WSCACL was also very successful in reaching majority BIPOC, immigrant community members. Across all forms of input, over 88% of those who shared their home zip codes were from King County.

Table 3: Engagement Approaches and Numbers Reached

Engagement Approach	Description	Number Reached	Number Providing Input
Community partnerships ¹	Co-created, customized outreach plan with community partners as well as an onboarding session	626	626
Community visits	Presentations, field events, festivals, roundtable discussions	1,384	626
Online polling / feedback ^{1,2}	Online survey, email notices, social media	3,720	247
King County-sponsored meetings	Virtual meetings	243	243
Targeted advertising ³			
Metro Transit Ads	Bus and light rail four-week campaign	35,635	Undetermined
Runta News Ads	Somali / African media two-month campaign	1,650	Undetermined
Total Reached			
Direct Contacts (partnerships, visits, online polls, and county meetings)		5,973	
Indirect Contacts (via targeted advertising)		37,285	
Total Providing Input			1,742

¹ The community partner and King County distributed two different online surveys, which resulted in 1,252 responses. It is unknown how many respondents completed both surveys, so the actual number reached may be smaller.

² Online survey site viewership numbers reduced by 25% to adjust for King County staff views of the site.

³ Targeted advertising contact numbers estimated by multiplying 5% with total viewership or estimated impressions.

Synthesis of Community Input

This section presents a review of the information shared by at least 1,740 community members as part of this planning effort between October 2022 and October 2023. It is divided into the following sections:

- representativeness of those who shared their input;
- information shared about the level of concern for and experiences with flooding;
- the issues that community members identified as most important; and

- input provided about the actions local governments should take to reduce flood risk and increase flood resilience.

As described in the previous section, the WSCACL distributed a transcreated version of King County’s online survey to their networks, and the responses to the two surveys were able to be separated for analysis. Where the WSCACL survey and King County survey provided notably different results, those are called out in the following sections.

Representativeness

Across all forms of input and based on those who provided home zip codes, input was shared from those residing in urban, suburban, and rural areas. The area with the greatest number of respondents was Seattle—102 respondents from south Seattle, 181 from north Seattle, and 90 from central Seattle. Other communities with high levels of participation were Renton (103), Kent (95), Bellevue (78), Maple Valley (63), and Federal Way (49). King County did not request zip code or demographic information at the County-sponsored meetings.

For the online surveys, 675 individuals chose to provide demographic information. Those responses demonstrate representation from priority communities as follows:

- 59% identified as Black, Indigenous or People of Color
- 47% were born in another country
- 44% identified as female
- 34% reported speaking a language other than English at home
- 32% rent their homes
- 15% were 65 years old or older
- 12% reported not having flood insurance and knowing they live in a flood prone area
- 10% were caregivers of those under 5 years old or those 65 years or older
- 9% do not have health insurance
- 8% reported their highest level of education was high school or less
- 8% reported having a disability
- 8% stated they were eligible for food or income assistance

Demographic data was not collected during live polls at in-person events. However, events were selected based on an assumption that priority communities reflecting many of the above demographic characteristics would be in attendance. Participants responding to the WSCACL survey represented priority community demographics more than any other source of input.

Concern about and Experiences with Flooding

The survey asked respondents to share their level of concern about flooding using a scale of 1 to 5, where 1 indicated not at all concerned and 5 indicated very concerned. Those responding to the WSCACL survey reported the greatest level of concern about flooding

(47% responding 4 or 5). Those who responded to the King County-administered survey indicated their level of concern was, on average, in the middle of the range. The live polls conducted at events with a large percentage of indigenous or youth attendees revealed an above average level of concern, while event attendees with a large percentage of Asian attendees revealed a below average level of concern.

Experiences of flooding varied widely across all respondents to the online survey and live polls. Nearly 40% indicated no direct experience with flooding, 33% reported experiencing flooded roads in their communities, and 31% have either known someone or personally been physically at risk from flooding. The majority of those who reported physical risk were from the WSCACL survey, and WSCACL members shared personal stories of floods in other nations. The highly variable concerns about flooding may be due to personal proximity to hazards.

The survey asked respondents to select two sources of flooding that are of greatest concern to them. Respondents to the WSCACL survey selected Puget Sound coastal flooding as the top concern (45%), and respondents to the King County survey selected large river flooding as the greatest concern (54%). Both groups selected stormwater runoff as their second-highest flooding concern.

Community visits to Hmong farmers in the Green, Snoqualmie, and Sammamish valleys revealed the perspective that farm fields seem to be wet for longer periods each year, and all but one of the immigrant farmers met during these field visits reported some level of flood damage to their farm-related business.

Perspectives on the Issues that Matter in Local Communities

Community members were asked their opinion about the range of benefits and outcomes that could be achieved as part of flood risk reduction activities. A pre-defined list of benefits was shared, and those that were commonly selected as very important, at two times the rate of other options, were:

- Keep roads and railways safe and accessible;
- Reduce flood risks and increase flood resilience;
- Protect and restore natural habitat; and
- Improve water quality.

In addition, benefits that were considered very important for those who replied to the WSCACL survey were:

- Create and support local jobs;
- Preserve natural lands and green spaces; and,
- Distribute resources equitably across King County.

Live poll responses were collected with the open-ended statement “What matters most to you? We can achieve other community goals while reducing flood risks. Write in your own responses.” Responses were categorized into broad categories. The following word cloud includes only those phrases mentioned or liked by two or more people. The size of the words reflects the frequency of the mention. For context, housing affordability was mentioned or “liked” 54 times, and the smallest text words were mentioned by only two people.



The role of flood risk reduction in addressing some of these concerns is unclear, such as housing affordability. However, some community concerns could be incorporated more actively into flood risk reduction projects, such as road safety, addressing climate change, education, outreach, and park access.

Community Perspectives on Local Government Actions to Reduce Risk and Increase Resilience

Before King County began implementing public outreach, the new flood plan was envisioned to be different than past plans in several ways. Differences included a greater focus on climate change and multi-benefit and equitable outcomes, and an increased geographic scope to include coastal areas, tributaries, and urban flooding considerations. Overall, these represent significant changes from the 2006 and 2013 King County Flood Hazard Management Plans.

Online survey and live poll responses and other submitted public comments indicate the public supports the increased attention given to these specific topics. Written comments affirmed an interest in expanding services beyond large river systems to include coastal areas, lakes, small tributaries, and urban flooding. Landowners who experience flooding from sources other than large river systems expressed a feeling that they have been omitted from

the benefits of previous flood plan implementation. Likewise, community members and government staff who attended the coastal, tributary, and urban flooding workshops expressed strong interest in seeing the Flood Plan address risks related to these flood hazards.

Comments also revealed support for multi-benefit projects, climate change planning, and a request to share resources and agency benefits equitably throughout King County, with several mentions of improved service for areas along the Duwamish River. In some cases, community members asked King County to expand or scale up the actions currently implemented, and many comments requested collaboration among all levels of government to better achieve the desired outcomes. The remainder of this section summarizes some of the key themes that were shared.

General Approaches for Reducing Flood Risk and Improving Flood Resilience

Survey and live poll participants were asked to select three of the most important actions King County could take in its flood planning, from a list of five options. From the online survey, the option to “reduce the risk of flooding or build community capacity for flood resilience and preparedness” was the most frequently selected (28%). Other choices that survey respondents selected at a high rate included listening to community input on local flood risk reduction strategies and approaches, providing other benefits for recreation, open space, habitat for fish and wildlife, water quality or local jobs, and providing benefits to historically underserved communities.

The live polls provided different results, with event attendee responses being split fairly evenly among the four actions listed above. Attendees consistently selected consideration of the cost of the project or action as the least important factor for flood planning (8%).

Event attendees were also asked to weigh the relative importance of the six categories of flood risk reduction activities described in Chapter 3 of this plan (prevention, property protection, natural resource protection, emergency services, structural projects, and public information). They could select any number of the six categories they felt were important. In addition, all public comments received from community members in public meetings, presentations, emails, telephone calls, and write-in comments submitted with live polls and surveys were assigned to the six flood risk reduction categories.

Two categories of action rose to the top of both the live polls and in the public comments:

- *Public information* received the second highest number of selections in the live polls, and it received the most write-in comments by a wide margin. All the comments requested more public information provided in a variety of ways, affirming the value of this type of action.
- *Natural resource protection* was most frequently selected in the live polls as an important focus for local government action. This category received many favorable

public comments, but some comments expressed reservations or alternate views about some of the specific strategies in this category.

Specific Strategies for Reducing Flood Risk and Improving Flood Resilience

Phase two of the online survey, deployed in the summer of 2023, presented specific strategies for each of the six categories of flood risk reduction activities, drawing from suggestions that had been provided up to that point in the planning process. Survey participants were asked to select up to three activities within each category that they felt were the most important. A write-in option was also available, and community members provided many additional suggestions. This section summarizes the results of the online survey responses and the themes that emerged from public comments. The general categories are presented in order of the communities' weighting of importance.

Public Information Priorities and Key Takeaways

- Expand public information sharing to reach youth, small businesses, local governments, and residents of King County, especially those new to the area.
- Maintain the educational efforts used during this planning effort to make sure all communities understand flood risks and the resources available to increase preparedness and flood resilience, regardless of their race, income, or access to power. Share more information about how climate change will affect flooding, the importance of wetlands, soft shorelines, and naturally flowing rivers, and ways to prevent public and environmental health impacts during and soon after floods.
- Share information clearly in multiple languages and through multiple avenues (in person, online, and in writing) to make information more accessible.
- Fund and build the capacity of community organizations and leaders to train others on how to prepare for, be safe during, and respond to flood events.
- Provide more frequent, ongoing communications linking people to information on preparedness and resources.

Nature Resource Protection Priorities and Key Takeaways:

- Over three-quarters of survey respondents identified protecting upper watershed areas and preserving wetlands so water distributes slower downstream as priorities.
- Over half of respondents selected reconnecting rivers to their floodplains and implementing low-impact development and green infrastructure (like rain gardens) as important activities.
- 41% of respondents identified working with communities and businesses in floodplains to protect or restore the environment and finding ways to incorporate natural elements into projects even in the most developed areas.

- Most written comments support actions like levee setbacks, restoration or revegetation of natural areas, planning for climate change, and fish and wildlife habitat improvements, but several comments also expressed a desire for more dredging or the perspective that beavers are an impediment to flood reduction efforts.
- Several community members shared concern about water supply in the future and asked King County to consider how to use floodwater to recharge aquifers or increase water supply.

Prevention Priorities and Key Takeaways:

Respondents to the WSCACL survey more frequently selected incentives or technical assistance to support development in low-risk areas (58%) than those responding to the King County survey (33%). Three field visits to meet with mostly Hmong farmers indicated a strong desire for technical assistance and incentives to allow them to maintain their farming businesses in the face of flooding.

- Public comments across all engagement methods expressed that new development should be managed carefully to prevent making flooding worse for others, and many comments were submitted asking for greater restrictions or limitations on development in both incorporated and unincorporated areas. A small number of comments requested less regulation to allow landowners more flexibility in what they can do on their property.
- High value is placed on accurate mapping and modeling that convey where flooding may occur.
- Many comments noted that farms can co-exist with flooding better than other types of development, although there were calls for ensuring that regulations support the continued viability of farms in flood prone areas.
- Recommendations for adjusting building codes were shared, from encouraging more second story living in flood prone areas to incentivizing more high-density development in urban areas.

Structural Project Priorities and Key Takeaways:

- Improving the flood resilience of roads and bridges throughout King County was identified as a priority, with specific mentions of roads on Vashon – Maury Island, Covington, and May Valley. NE 124th Street (Duvall) and Tolt Hill Road (Carnation) both received multiple requests for action.
- Community members requested more information about dam failures and dam failure planning and called out dam maintenance and upgrades as important where needed.
- Other priorities identified include:

- Maintaining or retrofitting stormwater systems, drains, and ditches to increase drainage and reduce flooding in urban, suburban, and rural communities.
- Maintaining aging or damaged river protection facilities and consideration of adding new ones, including reservoirs to store flood waters and new flood barriers.
- Converting the Lake Sammamish weir to something that will allow for increased floodwater storage in certain months, such as the structures used for Lake Washington.

As mentioned in the introduction to this section, survey respondents were presented pre-defined lists of actions under each of the six activity categories and were asked to select the three actions they felt were most important. The survey responses submitted by WSCACL participants were quite different than those who responded to the King County-administered survey, as shown in the following table.

TABLE 4. STRUCTURAL PROJECT ACTIONS IMPORTANCE RANKING

Structural Project Action	WSCACL Survey	King County Survey
Explore ways to improve existing drainage pumps and floodgates	67%, #1 rank	56%, #2 rank
Explore locations without any structural projects to identify if new structures may reduce flood risk	63%, #2 rank	29%, #5 rank
Improve flood resilience of major transportation routes	60%, #3 rank	67%, #1 rank
Increase the ability of culverts to pass more water	57%, #4 rank	52%, #3 rank
Explore opportunities for more floodwater storage	33%, #5 rank	49%, #4 rank

Emergency Services Priorities and Key Takeaways:

A main theme that emerged from public comments is that communicating flood evacuation routes and road closure information in real time is among the most important emergency services actions King County can take. Road closures came up repeatedly in all engagement arenas, and most of the direct flood experience shared was related to flooded roads. Some community members shared their personal stories of being affected by flooded roads and conveyed a sense that the County had abandoned them by allowing those roads to flood.

Public comments also indicated that most people don't know where to obtain information about emergency supplies, emergency plans, evacuation routes, road closures, locations of shelters, and early alert warning systems, suggesting current outreach efforts have been inadequate to inform the community about the existence of these already available resources.

The WSCACL survey respondents frequently highlighted the need for more communications with community members and capacity building for community organizations. This may be due to their greater reliance and trust in their community networks rather than government agencies, and it could also reflect the lack of flood-related outreach that has reached these groups.

Several additional suggestions were offered worth noting:

- Establish a reverse 911 system to communicate impending flooding;
- Improve coordination between FEMA and local governments to better support community members during disaster recovery;
- Provide targeted free resources and enhanced planning for those with limited income, limited mobility, or experiencing homelessness; and
- Organize evacuation drills and improve barriers for closed roads.

Property Protection Priorities and Key Takeaways:

The specific strategy selected by most survey respondents as the most important was providing technical support to property owners in at-risk areas to transition to land uses that better accommodate flooding. 60% of WSCACL survey respondents selected education to property owners and renters on the benefits of flood insurance as an important activity, whereas only 14% of the respondents to the King County survey selected this option. This could be due to many WSCACL members being unfamiliar with the resources available to reduce flood risk prior to engaging in this effort. Other highly ranked options include technical assistance for elevation projects and incentives to help property owners with mitigation for repetitively flooded buildings.

Acquisition from willing sellers and home elevations were called out as important property protection strategies, but comments also acknowledged the need to consider the negative equity impacts of acquisition practices and policies. Additionally, small-scale implementation of green stormwater infrastructure projects, especially rain gardens and permeable pavement, were identified by community members as important to reduce the impacts of stormwater runoff.

Outcomes

As described in the previous sections, extensive input was provided through multiple channels throughout the planning process. In some instances, the input provided by community members aligned with the direction established by King County for this plan. In other cases, community members shared new ideas and perspectives that informed the development of the plan. This section summarizes how community input influenced the plan's recommendations.

Since the scope of services King County provides that address elements of flood risk is broad, completely new concepts were not necessarily revealed. However, new perspectives on

existing services were shared that suggest room for improvement and which identify ways to amplify or expand services to meet the needs identified. Examples include:

- **Ongoing Expanded Public Outreach** – Based on the input received and the value provided by the public engagement process for this Flood Plan, King County is committing to expanded public outreach about flooding moving forward. The Flood Plan includes a programmatic recommendation to develop a Program for Public Information to collaboratively create and implement with floodplain managers, community members, and partners more targeted outreach to change behavior building more resilient communities. It also includes a programmatic recommendation to improve access to flood preparedness materials by collaboratively engaging diverse community organizations to co-create effective flood preparedness outreach.
- **Communication and Coordination** – King County and other local governments provide flood awareness outreach and communication, and emergency services are structured to provide resources in times of need. Even so, the most cited need by community members was improved communication from local governments and improved coordination among governments during times of emergency. In the coastal flooding workshops, the December 2022 king tide and coastal flooding event was highlighted as an example of local governments not fully understanding the needs of the local communities affected, and the multiple jurisdictional authorities involved in the response created confusion for community members.

This plan includes recommendations for improving existing services and considers ways to address the increasing risk in areas subject to high tides, storm surge, and coastal flooding, including in the Duwamish River. The recommendations also address improving coordination among local governments so that services are delivered efficiently and equitably.

- **Regulations** – Most community members provided feedback in multiple venues that existing regulations are not strong enough to prevent at-risk development in flood prone areas. In addition, community members also shared that regulations are too stringent to allow for taking the desired actions to reduce risk.

These ideas are addressed in multiple ways in this plan. First is a recommendation for collaboration across jurisdictions to identify differences in municipal flood hazard area regulations and provide technical assistance to jurisdictions to strengthen regulations if doing so would be beneficial. Additionally, the plan contains recommendations to expand hazard identification and to improve existing regulations or develop new regulations to manage development in at-risk areas.

For regulations that pose barriers to action, the plan contains recommendations to identify regulatory flexibility for flood resilience upgrades to structures and to pursue

updates to King County's flood hazard code that would allow for more efficient restoration of natural floodplain functions and culvert upgrades.

- **Technical Assistance and Capacity Building** – Input identified that both property owners and renters currently need more technical assistance to improve their resilience to flooding. Beyond government action, providing support to local community organizations was cited as a powerful way to build resilience.

Technical assistance recommendations in the plan include helping homeowners understand the feasibility and funding options for home elevations and providing aid to low-income property owners in securing the funding needed to implement an elevation project. Assistance-focused recommendations also include providing more accessible flood hazard permitting information and customer support and providing resources to help community members develop flood response action plans.

To build capacity with community organizations, the plan calls for creation of a comprehensive flood resilience improvement program, whereby community organizations are engaged in raising awareness of flooding, identifying their flood resilience goals, and increasing preparedness and resilience among their networks.

- **Encouraging Flood Insurance** – As noted above, over 60% of WSCACL survey respondents selected education to property owners and renters on the benefits of flood insurance as an important activity. A programmatic recommendation to encourage the purchase of flood insurance and collaboratively work with partners to design a social marketing campaign or other similar effort with a goal of increasing flood insurance policies held in King County is included in the Action Plan.
- **Road Access** – A topic identified by community members as a priority throughout the engagement effort is ensuring safe ingress and egress options during times of flooding. Public comments centered on evaluating and identifying ways to improve flood-safe road access, mapping current and possible evacuation routes, and exploring the feasibility of projects to improve the resilience of transportation routes affected by flooding. The plan includes several warning and response activities related to roadway flooding, as well as many capital projects intended to improve the resilience of the county's road and bridge infrastructure.
- **Confirmation of Other Recommendations** – Many other activities recommended in the Flood Plan, which arose from King County departments, partners (such as cities and nonprofits), and conversations with the Partner Planning Committee, are consistent with the input received from the community through the engagement activities described in this overview. Public confirmation of the value of many of the activities being considered for the plan increased confidence in including these activities in the Flood Plan.

Appendix E

Levee Inventory

APPENDIX E

Levee Inventory

Levee Name	River Name	River Bank	River Mile Downstream	River Mile Upstream
Byer's Curve	Cedar River	Left River Bank	12.71	12.81
Elliot Brg	Cedar River	Left River Bank	5.39	5.45
Herzman	Cedar River	Right River Bank	6.57	6.7
Royal Arch	Cedar River	Left River Bank	14.03	14.25
Scott-Indian Grove	Cedar River	Right River Bank	8.22	8.78
WPA	Cedar River	Left River Bank	10.72	10.96
Mcdonald	Cedar River	Left River Bank	11.47	11.66
Getchman	Cedar River	Right River Bank	13.69	14.01
Lower Bain Road	Cedar River	Left River Bank	14.87	15
Orchard Grove	Cedar River	Right River Bank	17.27	17.63
Upper Elliot Park	Cedar River	Left River Bank	4.78	4.91
Cedar Trl 5B	Cedar River	Left River Bank	9.78	9.94
Cedar Rapids R	Cedar River	Right River Bank	7.36	7.37
Rhode Cedar	Cedar River	Left River Bank	13.74	14.01
Belmondo	Cedar River	Left River Bank	10.34	10.39
Riverbend Lower Ext.	Cedar River	Left River Bank	6.58	6.83
Jan Road Setback	Cedar River	Right River Bank	12.6	13.3
Riverbend Setback	Cedar River	Left River Bank	6.51	7.4
Rutledge Johnson	Cedar River	Left River Bank	13.42	13.56
Progressive Investment	Cedar River	Left River Bank	8.38	8.5
Old RM 33.8 Right	Green River	Right River Bank	33.26	33.29
Old RM 41.8 Left	Green River	Left River Bank	41.14	41.19
Old RM 41.9 Left	Green River	Left River Bank	41.22	41.29
Barnett	Green River	Left River Bank	31.19	31.21

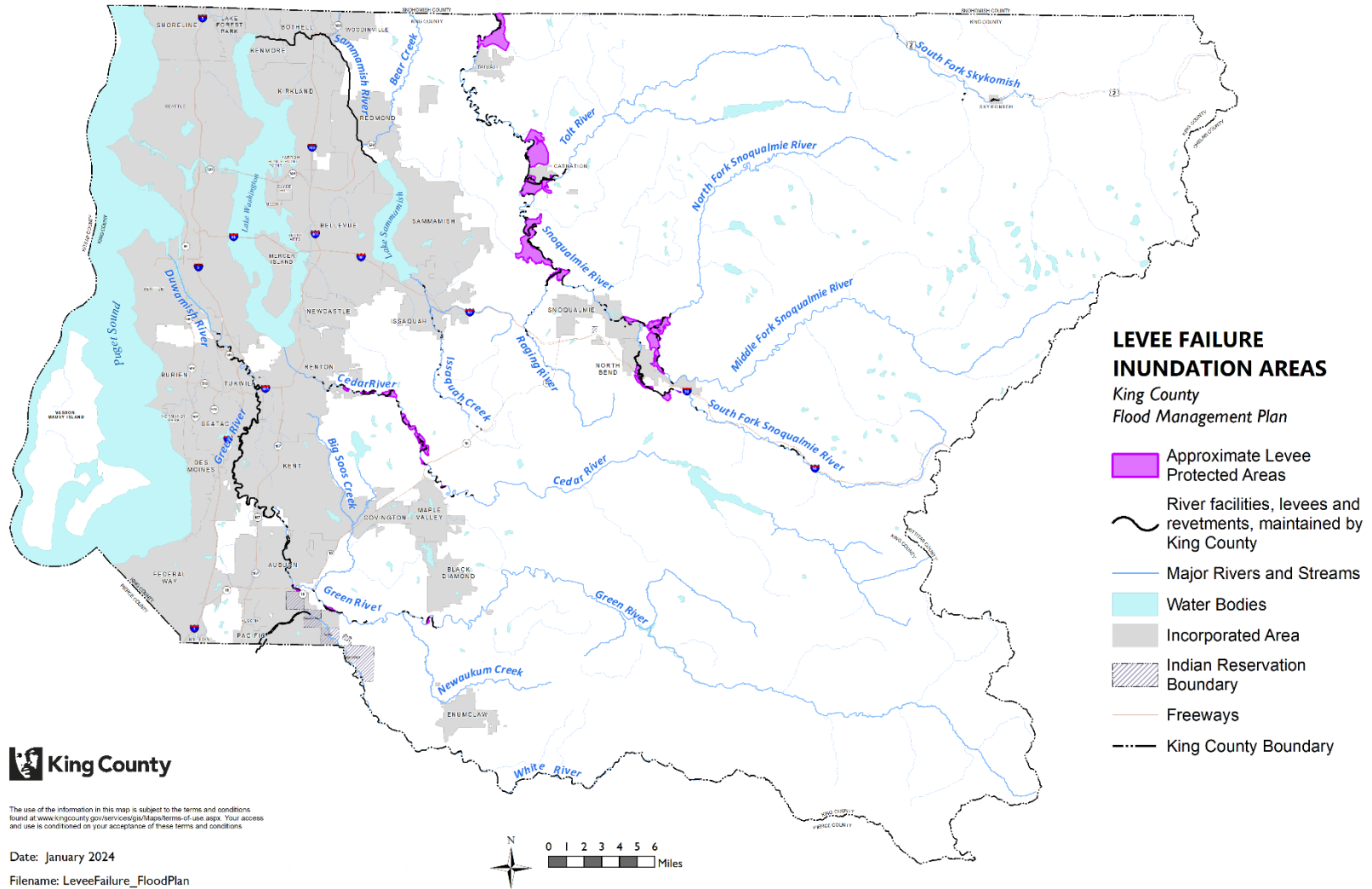
Levee Name	River Name	River Bank	River Mile Downstream	River Mile Upstream
Boeing	Green River	Right River Bank	17.5	17.84
Briscoe	Green River	Right River Bank	16.17	16.24
Briscoe Meander	Green River	Right River Bank	15.45	16.17
Briscoe School	Green River	Right River Bank	16.24	17
Christian Brothers	Green River	Right River Bank	16.99	17.19
Corps 68th AV S	Green River	Left River Bank	23.5	23.59
County Road #8	Green River	Right River Bank	22.99	23.17
Desimone	Green River	Right River Bank	14.48	15.45
DS Flaming Geyser Bridge	Green River	Left River Bank	42.44	42.53
Dykstra	Green River	Left River Bank	29.68	30.8
Family Fun Center	Green River	Right River Bank	12.03	12.23
Ft. Dent	Green River	Right River Bank	11.02	11.84
Galli's Section	Green River	Left River Bank	29.49	29.68
Gateway Lower	Green River	Left River Bank	7.96	8.27
Horath	Green River	Right River Bank	34.86	35.22
Kaech	Green River	Right River Bank	34.54	34.84
Mccoey	Green River	Right River Bank	24.26	24.44
Myers Golf	Green River	Right River Bank	21.28	21.83
Nursing Home Extension	Green River	Right River Bank	26.03	26.13
Okimoto	Green River	Right River Bank	21.91	22.04
Old Flaming Geyser Bridge	Green River	Left River Bank	42.67	42.83
Park DS	Green River	Left River Bank	43.97	43.99
Park US	Green River	Left River Bank	44	44.03
Pig Farm	Green River	Right River Bank	30.41	30.58
Pipeline	Green River	Right River Bank	21.83	21.91

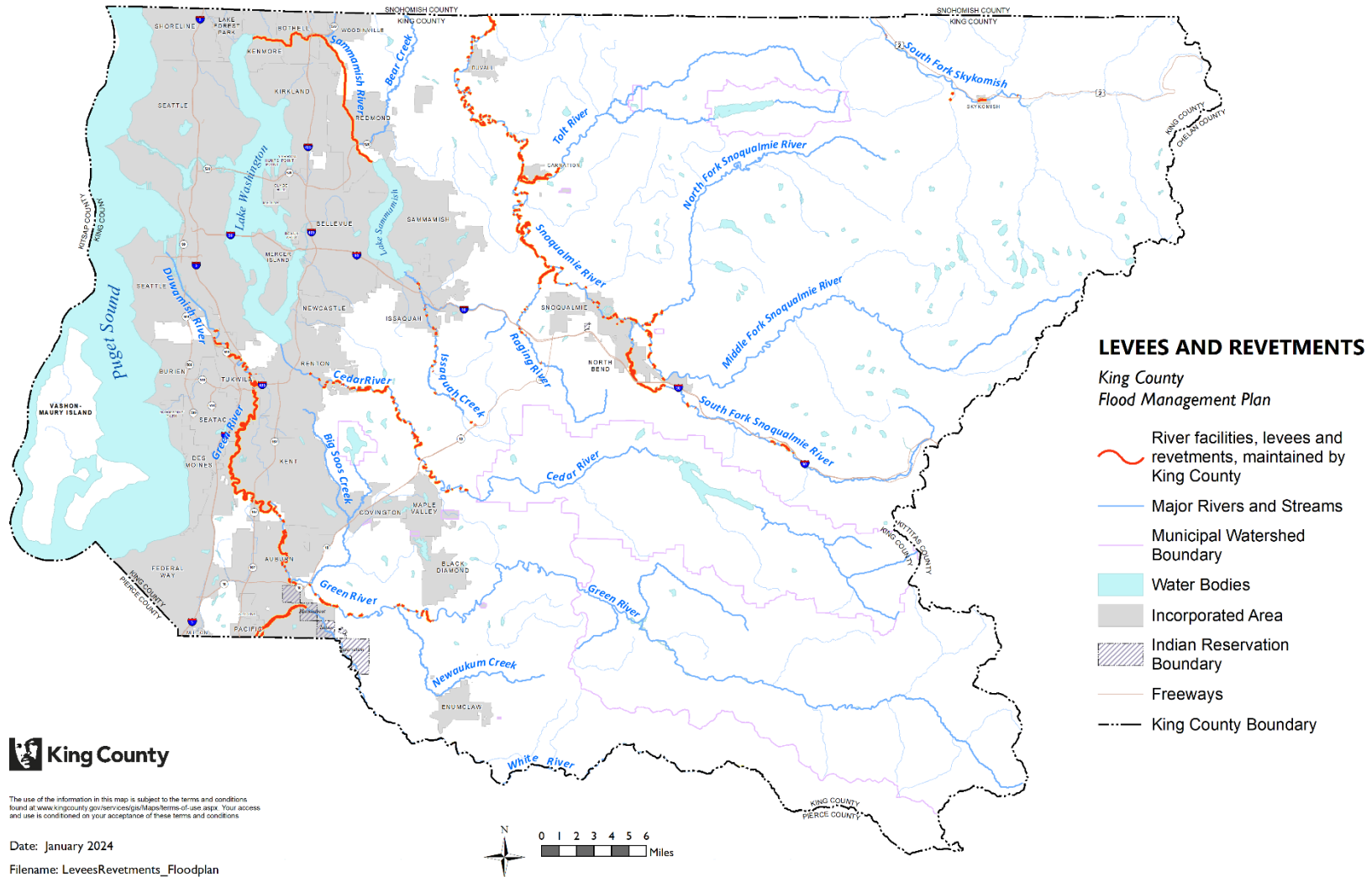
Levee Name	River Name	River Bank	River Mile Downstream	River Mile Upstream
Plemmons	Green River	Right River Bank	25.14	25.32
Porter Bridge	Green River	Right River Bank	30.96	31.08
Pre-1959	Green River	Left River Bank	34.82	35.05
Russell Rd Lower	Green River	Right River Bank	18.66	19.23
Russell Rd Upper	Green River	Right River Bank	19.69	20.4
Tukwila Community Center	Green River	Right River Bank	8.03	8.16
Fenster	Green River	Left River Bank	31.77	32
Pautzke	Green River	Left River Bank	32.02	32.43
White Swan Left	Green River	Left River Bank	12.25	12.27
Tukwila 205-Lily Pointe	Green River	Left River Bank	14.31	14.56
Boeing Setback	Green River	Right River Bank	17.05	17.83
Russell Rd Lowest	Green River	Right River Bank	17.85	18.25
Somes Dolan 1,2&3	Green River	Right River Bank	19.23	19.69
Narita 1&2	Green River	Right River Bank	20.4	21.27
Breda	Green River	Right River Bank	24.44	25.14
Nursing Home	Green River	Right River Bank	25.32	26.03
Tukwila 205-Christensen Rd	Green River	Left River Bank	13.04	14.31
Tukwila 205-Van Warden	Green River	Left River Bank	12.45	13.04
Tukwila 205-Segale	Green River	Left River Bank	14.89	15.75
Tukwila 205-GACO Western	Green River	Left River Bank	15.73	15.88
Tukwila 205-Gunter	Green River	Left River Bank	15.88	16.71
Tukwila 205-Cutoff	Green River	Left River Bank	16.71	16.77
Tukwila 205-Ratola	Green River	Left River Bank	14.56	14.89
Reddington	Green River	Left River Bank	28.6	29.49

Levee Name	River Name	River Bank	River Mile Downstream	River Mile Upstream
Boeing Floodwall	Green River	Right River Bank	17.05	17.83
Porter	Green River	Left River Bank	33.85	34.08
Tukwila South	Green River	Left River Bank	16.7	17.28
SR 18 DS	Holder Creek	Right River Bank	1.08	1.12
SR 18 US	Holder Creek	Right River Bank	1.15	1.21
Mason Thorson Ext	Middle Fork Snoqualmie River	Left River Bank	1.36	1.49
Norman Upper	Middle Fork Snoqualmie River	Right River Bank	0.65	0.93
Mason Thorson Ells	Middle Fork Snoqualmie River	Left River Bank	1.89	2.29
Mt. Si Rd Protection	Middle Fork Snoqualmie River	Left River Bank	2.89	2.96
Miller River Curve	Miller River	Left River Bank	0.36	0.41
North Park	North Fork Snoqualmie River	Right River Bank	1.11	1.34
Shake Mill RB	North Fork Snoqualmie River	Right River Bank	0.29	0.41
Burhans	North Fork Snoqualmie River	Left River Bank	0.68	0.86
Valcauda	North Fork Snoqualmie River	Left River Bank	0.86	1.22
Bridge to Bridge LB	Raging River	Left River Bank	0.5	1.46
Bridge to Bridge RB	Raging River	Right River Bank	0.51	1.46
Bryce's Bump	Raging River	Left River Bank	1.82	1.85
Georgeff	Raging River	Right River Bank	5.69	5.7
Mouth to Bridge LB	Raging River	Left River Bank	0.02	0.49
Mouth to Bridge RB	Raging River	Right River Bank	0.05	0.52
Sammamish River	Sammamish River	Left and Right River Bank	0	13.85
Hanson	Snoqualmie River	Left River Bank	31.57	31.62
Pleasant Hill Farm	Snoqualmie River	Right River Bank	29.48	29.85
Groin	Snoqualmie River	Right River Bank	41.3	41.38
Railroad Brg	Snoqualmie River	Right River Bank	40.43	40.67

Levee Name	River Name	River Bank	River Mile Downstream	River Mile Upstream
Aldair	Snoqualmie River	Left River Bank	32.28	33.14
McElhoe Pearson Upper	Snoqualmie River	Right River Bank	22.3	22.71
McElhoe Pearson Lower	Snoqualmie River	Right River Bank	22.21	22.3
Game Farm	Snoqualmie River	Right River Bank	20.93	21.29
Barfuse	Snoqualmie River	Left River Bank	33.42	33.81
Town of Skykomish LB	South Fork Skykomish River	Left River Bank	15.85	16.42
McConky	South Fork Snoqualmie River	Left River Bank	4.88	5.21
Prairie Acres RB	South Fork Snoqualmie River	Right River Bank	2.09	2.28
Riverbend	South Fork Snoqualmie River	Left River Bank	6.3	6.51
Reif Rd	South Fork Snoqualmie River	Left River Bank	2.89	4.77
Bendigo Upper LB	South Fork Snoqualmie River	Left River Bank	2.55	2.89
Bendigo Lower LB	South Fork Snoqualmie River	Left River Bank	2.28	2.55
Prairie Acres LB	South Fork Snoqualmie River	Left River Bank	2.08	2.28
Bendigo Lower RB	South Fork Snoqualmie River	Right River Bank	2.28	2.54
Bendigo Upper RB	South Fork Snoqualmie River	Right River Bank	2.49	2.88
Si View Park	South Fork Snoqualmie River	Right River Bank	2.88	3.28
Si View Levee	South Fork Snoqualmie River	Right River Bank	3.28	4.8
Holstine Ext	South Fork Snoqualmie River	Right River Bank	4.92	5.39
Brissack Brg Sidestream	South Fork Snoqualmie River	Left River Bank	5.96	5.97
O'Bert	South Fork Snoqualmie River	Left River Bank	7.22	7.23
Frew Upper	Tolt River	Left River Bank	1.14	1.66
Pond Berm	Tolt River	Left River Bank	0.63	0.68
Remlinger	Tolt River	Left River Bank	1.13	1.43
Swiftwater Berm	Tolt River	Left River Bank	1.2	1.33
Frew	Tolt River	Left River Bank	0.57	1.13

Levee Name	River Name	River Bank	River Mile Downstream	River Mile Upstream
Tolt River Levee LB	Tolt River	Left River Bank	0.08	0.56
Hwy to RR Bridge	Tolt River	Left River Bank	0.57	1.12
Tolt River Levee RB	Tolt River	Right River Bank	0.46	0.57
Tolt Campground	Tolt River	Left River Bank	0	0
Lower Tolt River RB	Tolt River	Right River Bank	0	0.6
Holberg	Tolt River	Left River Bank	1.66	2.2
Girl Scout Camp	Tolt River	Left River Bank	1.43	1.99
Game Farm Wilderness Park	White River	Left River Bank	8.22	8.65
Pacific City Park Levee	White River	Right River Bank	5.57	5.86
Union Pacific	White River	Left River Bank	6.23	6.38
Trans-Canada	White River	Left River Bank	8.65	9.37
Countyline	White River	Left River Bank	5	6.2
Countyline Upper	White River	Left River Bank	6.1	6.38





Appendix F

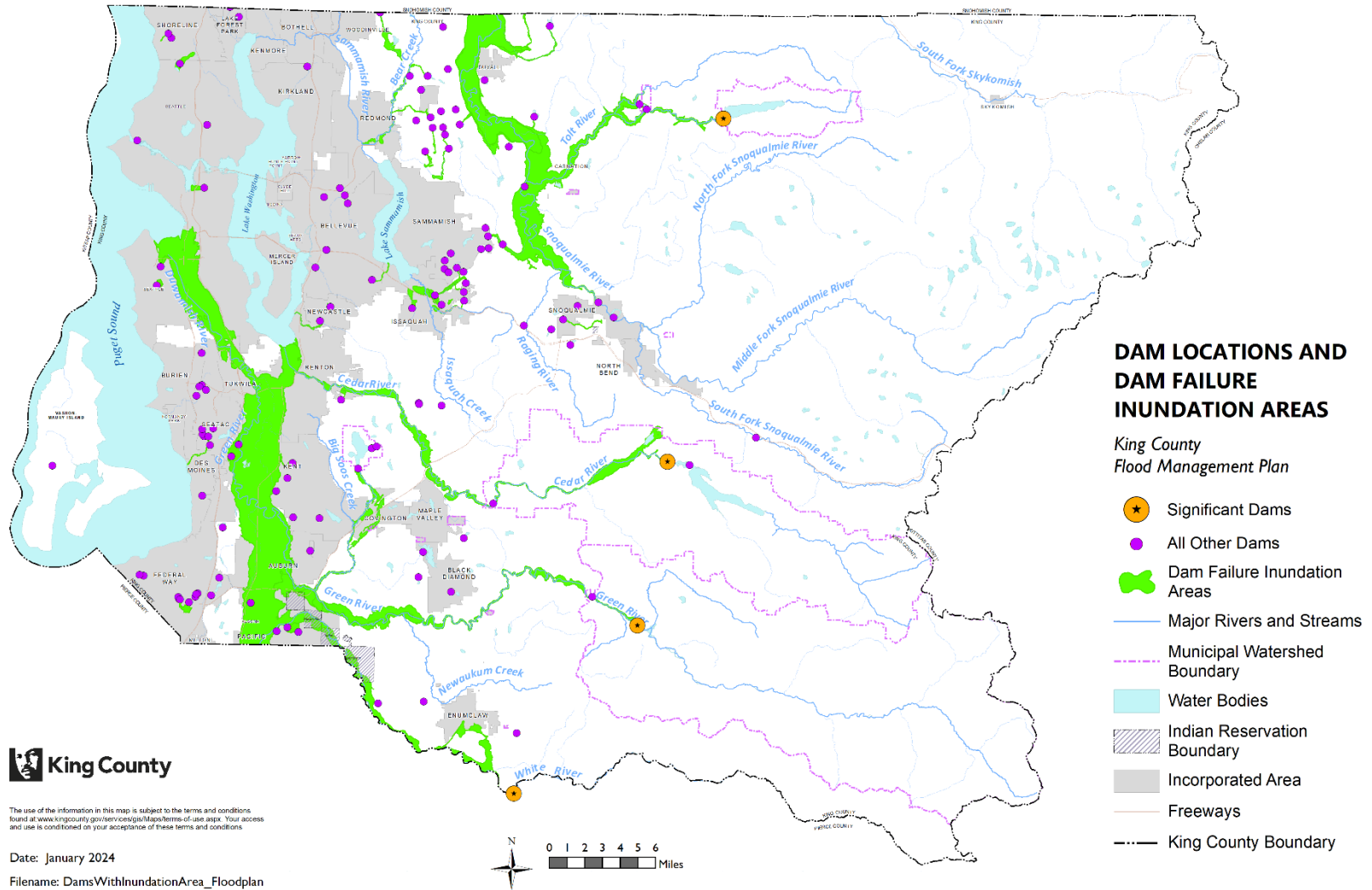
Dam Inventory

APPENDIX F

Dam Inventory

The following dams are considered “significant,” and failure of any of these dams would result in inundation of developed areas in King County.

- South Fork Tolt Dam – Tolt River
- Howard Hanson Dam – Green River
- Mud Mountain Dam – White River
- Cedar Falls – Cedar River
- Lake Tapps Dike – White River
- Culmback Dam – Sultan River (Snohomish County)



Appendix G

Public Information Activities

APPENDIX G

Documentation of King County Flood Plan Public Information Activities

This appendix details various public information activities conducted to support the development of the King County Flood Management Plan and is aligned with Step 2.d. of the 10-step CRS planning process. Included are the following elements:

- Flood Plan public kickoff meeting information
- King County Flood Management Plan website
- King County Flood Management Plan engagement hub
- King County Flood Management Plan online survey questions
- Advertisements used on King County metro buses and Sound Transit light rail
- List of events attended where King County hosted a Flood Plan booth/table
- List of community groups/associations to which King County presented about flooding and the Flood Plan
- Email announcements to subscriber list

News Release for Flood Plan Public Kickoff Meetings (CRS Step 2.b.)

Newsroom¹

Natural Resources and Parks
Public Affairs

Help King County prepare communities for more frequent, severe floods that are occurring due to climate change

September 26, 2022

As climate change increases the potential for more frequent and more severe flooding across the region, King County is seeking community expertise and advice on managing flood risks to people, homes, businesses, and roads. Two online meeting options – Tuesday, Oct. 4, from 10 a.m. to noon or Thursday, Oct. 6 from 6:30 to 8:30 p.m. – will kick off the plan update. This is the first opportunity for public input on this countywide plan.

King County will host two public meetings in October as it prepares to update its flood plan for the first time in nearly a decade, accounting for the increasing risk of more frequent and intense flooding due to climate change.

Both meetings – on [Tuesday, Oct. 4](#) from 10 a.m. to noon and on [Thursday, Oct. 6](#) from 6:30 to 8:30 p.m. – will be hosted online. Participants will have the opportunity to learn about current flood risks, share how flooding impacts their community, and help shape the plan that will guide how the county manages flood hazards for people, homes, businesses, and roads in unincorporated areas.

Visit kingcounty.gov/FloodPlan to learn more about King County's most common natural disaster, sign up for updates, and register to attend one of the kickoff meetings.

¹ Posted online at:

<https://kingcounty.gov/en/legacy/depts/dnrp/newsroom/newsreleases/2022/September/26-Flood-Plan-Kickoff.aspx>

"We want hear from people who live and work in areas that are at risk of flood so that we can address what they see as the opportunities and challenges related to flooding," said Christie True, Director of King County's Department of Natural Resources and Parks. "These meetings will be one of many times the public can shape the flood plan update."

Annual flood seasons have changed how local rivers function since King County last updated the flood plan in 2013. The updated flood plan will include new strategies to reduce flood hazards while also achieving other benefits such as recovering salmon runs, supporting working farms, protecting water quality, and protecting open space. King County wants to hear from and partner with communities most impacted by flooding to shape solutions.

"The flood plan presents a tremendous opportunity for King County to help reduce flood risks while delivering significant community benefits like clean water, healthy habitat, improved recreation and open space, sustainable agriculture, and supporting livelihoods and local jobs," said Josh Baldi, Director of King County's Water and Land Resources Division.

The planning, led by the King County Department of Natural Resources and Parks, will continue through 2023. Additional ways to get involved will be shared later this fall. The plan will be submitted to the King County Council for approval in 2024.


For more information about the flood plan, contact Jason Wilkinson, project manager, via [email](#) or call 206-477-4786.

Can't join the online meeting?

We understand not everyone can attend these meetings. We are still interested in hearing from you. King County staff members can come to community groups for conversations about flooding to inform our planning. We welcome suggestions on community events or meetings to attend. Contact Chrys Bertolotto via [email](#) or call 206-263-2677 to discuss options.

Instagram Post for Flood Plan Public Kickoff Meetings (CRS Step 2.b.)

Instagram Log In Sign Up



kingcountydnrp • Follow

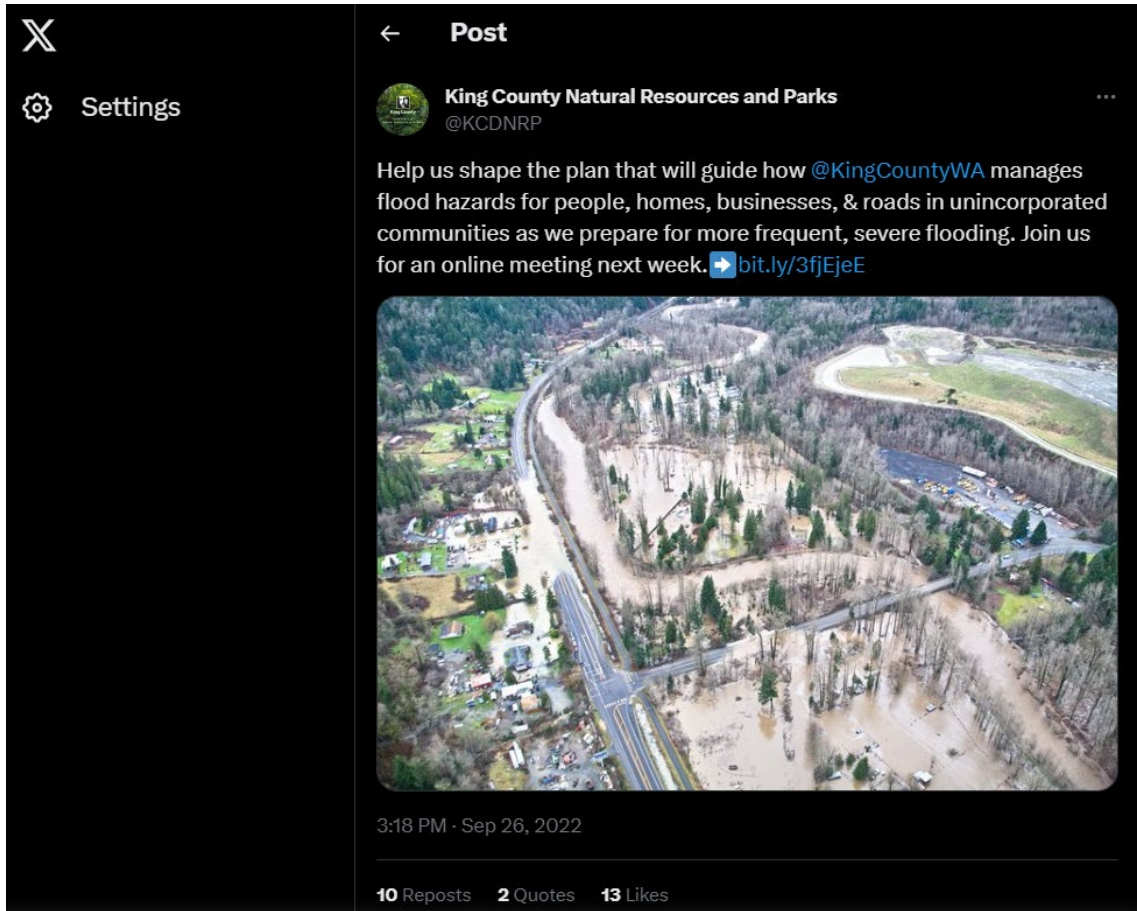
kingcountydnrp • Help us shape the plan that will guide how King County manages flood hazards for people, homes, businesses, and roads in unincorporated communities as we prepare for more frequent, severe flooding. Join us for one of the online meetings we're hosting next week. Find more information with the link in our bio.

64w

14 likes
September 26, 2022

Log in to like or comment.

Twitter/X Post for Flood Plan Public Kickoff Meetings (CRS Step 2.b.)



Meeting Agenda for Flood Plan Public Kickoff Meetings (CRS Step 2.b.)

10/6 Meeting Agenda (6:30 – 8:30 pm)

Topic	Time	Speaker	Affiliation
Pre-meeting Attendee Technology Check	6:20 p.m.		
Welcome	6:30 p.m.	Running Grass	Three Circles Center (facilitator)
Flooding and the Flood Plan	6:45 p.m.	Steve Bleifuhs	King County River and Floodplain Management (Section Manager)
Integrated Floodplain Management Works Best When People Engage	7 p.m.	Brandon Parsons	American Rivers (Director of River Restoration, NW Floodplain Lead)
Perspectives on Flooding (recordings)	7:15 p.m.	Sung Baek and Delores Lee	Community Residents
Hearing from You - Discussion	7:30 p.m.	All	Facilitated by Running Grass
The Flood Plan Update Process	8 p.m.	Jason Wilkinson	King County Water and Land Resources Division (Flood Plan Update Manager)
Next Steps	8:20 p.m.	Running Grass	



Attendance Log for Flood Plan Public Kickoff Meeting – Oct. 4, 2022 (CRS Step 2.b.)

Name	Do you represent an agency, jurisdiction or community-based organization? If so, please tell us the name of your group.:
Lorin Reinelt	King County - RFMS
STEVEN HIESTER	WA
Megan Smith	King County Water and Land Resources Division
Iris Kemp	WRIA 9
David Haakenson	
Eddie	
Tom Hardy	City of Redmond
don huling	SCAR
Emily Flanagan	City of Redmond
Laura Hendrix	King County - RFMS
Martha Neuman	Seattle Public Utilities
Sevin Bilir	King County
Claudia Donnelly	
sarah steen	
Laurie Lyford	WSSA
Lindsey Amtmann	
Elissa Ostergaard	Snoqualmie Watershed Forum
Harshitha Sai Viswanathan	Northwest Seaport Alliance
Dawn Judkins	Mountain View Fire and Rescue
Mark Ruebel	King County River and Floodplain Management Section
Alisha Pena	NW Seaport Alliance
Molly Lawrence	
Virginia Russell	
Karen Wilson	
linn gould	Just Health Action
Mike Mactutis	City of Kent
Jenny Gaus	City of Kirkland
John Cornelison	Vashon EOC
Mary Strazer	King County - RFMS
Pat and Mike Krebs	
Erin Ericson	Snoqualmie Valley Watershed Improvement District
Yi Tyan Tsai	WA
Lindsay Dillon	
Judy Haggard	
Kim Urquhart	No
Laura Cooper	WA State Department of Natural Resources
Savanna Steele	Congresswoman DelBene's Office
Brian and Frances Collinwood	
Lucy G	The Firm Outreach
Heather Young	
Alex Lincoln	King County - RFMS
Thomas Bloxton	King County - RFMS
Angela Angove	Pierce County Planning and Public Works - Surface Water Management
Kris Buitrago	King County - RFMS
Brynne Walker	Pierce County Surface Water Management
Jim Schlomer	Department of Fish and Wildlife
Anjali Fisher	King County DNRP

Attendance Log for Flood Plan Public Kickoff Meeting – Oct. 4, 2022, continued
(CRS Step 2.b.)

Name	Do you represent an agency, jurisdiction or community-based organization? If so, please tell us the name of your group.:
Mary Harenda	WA
MJ Jorgensen	City of Renton
Arlene RITZHAUPT	
Ingrid Lundin	
Anna Ritzhaupt	
Susan Saffery	Seattle Public Utilities, City of Seattle
Cheryl Paston	City of Bellevue Utilities
Henry Sladek	Town of Skykomish
Mike Perfetti	City of Tukwila
Miles Mayhew	seattle public utilities
Melanie Jordan	
Frederick Chavre	TaHoMa River Survivors
SHERRY EDQUID	City of Tukwila
Donald Finney	King County Water and Land Resources Division
Joel Roalkvam	
Sabrina Warren	Riverview SD
Diane Pasta	
Katrina Johnston	King County - RFMS
Staff/Meeting Support	
Running Grass	facilitator
Steve Bleifuhs	speaker
Jason Wilkinson	speaker
Carol Macilroy	speaker - Carol Macilroy Consulting Corporation
Anny Chang	support staff
Lily Barrett	support staff
Chrys Bertolotto	support staff

Attendance Log for Flood Plan Public Kickoff Meeting – Oct. 6, 2022 (CRS Step 2.b.)

Staff / Meeting Support	
Brandon Parsons	Speaker
Steve Bleifuhs	Speaker
Jason Wilkinson	Speaker
Running Grass	Facilitator
Maria Fiallos	Interpreter
Christopher Michael Fallas Urena	Interpreter
Anny Chang	support staff
Lily Barrett	support staff
Chrys Bertolotto	support staff

Name	Do you represent an agency, jurisdiction or community-based organization? If so, please tell us the name of your group.:
Terry Clark	
Henry Sladek	Mayor of the Town of Skykomish
Rosemary Neff	
Maria Gerace	No
Donald K Vardy	
Scott Sheffield	WSSA
Heather young	
Darcey Peterson	King County Water District No. 90
Christopher Ensor	Feet First
Katy Vanderpool	King County staff - RFMS
LarKen Buchanan	no
Lisa Figueroa	City of Redmond
Harshitha Sai Viswanathan	Northwest Seaport Alliance
Reid Brockway	Sammamish Home Owners
Kjristine Lund	Lund Consulting, Inc.
Linda Grez	
Lara Thomas	City of Duvall
Lauren Silver	Snoqualmie Valley Preservation Alliance
Miranda Fix	
Laura Tautz	
R Bowe	
Mary Harenda	Washington
Kate Ryan	People for the Preservation of the Tualco Valley
Rachel Minnery	
Angela Donaldson	Fall City Community Association
Melinda Wilde	Valley Communications Center
Don Huling	Soos Creek Area Response Group
Zebiba Al-Tahir	
Steven Heister	

King County Flood Management Plan Website (CRS Step 2.d.)

King County Flood Management Plan

Over the next two years King County will update its Flood Management Plan. The plan is our guide for managing flood risks along our rivers, creeks, and coastlines.

This page has been translated into other languages

View this page in the following languages:

[Español](#)

[한국어](#)

[русский](#)

[soomali](#)

[繁體中文首頁](#)

[Tiếng Việt](#)



CONTACT

Contact person: Jason Wilkinson

Email: jason.wilkinson@kingcounty.gov

Phone: [206-477-4786](tel:206-477-4786)

Stay informed

[Sign up for monthly news and announcements about the King County Flood Management Plan](#)

To create the next plan, King County is learning about the interests and goals of our communities most vulnerable to flooding. How does reducing flood risks impact rivers that support wildlife and farming? Ensure safe roads and reliable infrastructure? How do we address the likelihood of bigger floods with the resources available? What matters most to you?

What we learn will help us equitably shape our programs, policies, and infrastructure for years to come.

About the flood plan update

As our most common natural disaster, flooding is part of life in King County. The plan will set floodplain management policy for unincorporated King County and could inform flood management actions by cities, the King County Flood Control District, and other floodplain partners.

Our core values in developing the flood plan are:

- To stay community-centered.
- Embrace transparency and openness.
- Work with local partners.
- Strive for full accessibility.
- Have communities that are often left out of flood risk reduction conversations at the table.



People work to assess damage to State Route 202 caused by the flooding of the Snoqualmie River in 2009.

Why is King County updating the flood plan?

Rivers and streams are alive—they change over time. King County last updated the flood plan in 2013. Since then, nearly 10 seasons of flooding have changed

how our rivers look and function. Our population has grown, and we've added more homes and businesses to the landscape. How we develop land, manage waste, accommodate traffic, grow food, and recreate affects our rivers and coastal areas.

How will this flood plan be different?

To create a flood resilient future, the plan must represent the diverse perspectives of our community. Due to unjust historical practices, some communities are more at risk of flooding. Some people are less able to prepare or recover from flood disasters. Understanding what all communities need and their proposed solutions is King County's priority.

Past plans have focused on flooding along King County's major rivers. This plan will capture a broader range of flood hazards that affect people. It will include coastal flood hazards and sea level rise, small stream flooding, and urban flooding.

The updated plan will look for ways that we can reduce flood risks while delivering other community benefits. How can our projects and programs support farming or create new jobs? Improve salmon habitat and provide recreational areas? What's most important to you and what does your community need?

King County will work directly with communities on the flood plan in 2022 and 2023. Engagement opportunities will include community partnerships, advisory groups, and online surveys. King County will also hold open houses and virtual meetings. Staff are available to join community-hosted meetings and share information. See below for information on these opportunities.



Coastal flooding on Vashon Island in 2021.

Get involved

[Sign up to receive flood plan updates](#) and learn about ways to be involved in creating a flood resilient future. You can unsubscribe at any time.

Let's plan ahead for flooding, together. We're looking for your input to help everyone in our community be more resilient to flooding. Visit the [2024 King County Flood Management Plan engagement hub](#). You can share what flooding problems concern you in an online survey, open through October 15. You can also check out an upcoming events calendar or suggest events for King County to come to in your community.

Partner Planning Committee

The Partner Planning Committee is one avenue for gathering public input on the flood plan. Learn more about the purpose of the committee and upcoming committee meetings on the [Partner Planning Committee](#) webpage.

State Environmental Policy Act process - environmental impact statement

An important part of our process to update the Flood Management Plan is to prepare an environmental impact statement (EIS). An EIS is a document that describes proposed actions and how they would affect the environment and

people. Through the EIS process, King County will identify and analyze potential impacts of the plan on threatened or endangered species, water quality, historical and cultural resources, transportation, and more.

King County will explore the impacts of two scenarios, called “alternatives,” in the EIS. As a standard part of the EIS process, a “no action alternative” is considered. The analysis will consider the impacts of not adopting the new flood plan (the no action alternative) and continuing to use the 2006 and 2013 flood plans to guide floodplain management policy and activities and will also evaluate the impacts associated with adopting the new flood plan.

The County’s current flood plan focuses on flooding and erosion hazards on major rivers and streams like the Snoqualmie and Cedar rivers and Issaquah Creek. The updated flood plan proposes to address flooding more broadly on smaller streams and tributaries, lakes, and in urban and coastal areas. Public comments from the EIS scoping period confirmed this broader scope has the potential to result in better outcomes for King County communities.

[Learn more about the EIS process by reading our scoping fact sheet \(1.11 MB, PDF\)](#)

Scoping period (completed in 2022)

The scoping period is a formal opportunity for public input. We invited the public, tribal governments, and local, state, and federal agencies to comment on the range of alternatives, areas of impact, and possible mitigation measures that should be evaluated within the EIS.

A 30-day comment period was held from Monday, Nov. 7 to Friday, Dec. 9, 2022. The submitted comments provided valuable information about topics to consider in evaluating potential environmental impacts. Many of these topics will be considered as the EIS is drafted. We also received comments that are not applicable to the EIS analysis but are relevant to the flood plan itself, and those comments will be considered as part of plan development.

[Review the King County Flood Plan Environmental Impact Statement \(EIS\) Scoping Summary \(May 2023\), \(PDF, 190 KB\)](#)

More opportunities to comment on the EIS

King County will offer another formal opportunity for public input during the draft EIS review period. This is when comments are requested on the merits of the alternatives and the adequacy of environmental analysis. Tentative timing is fall 2023.

Past flood plans

The most recent flood plan was completed in 2006 and adopted by King County Council in January 2007. The flood plan was last updated in 2013 and adopted by King County Council with the passage of [Ordinance No. 2013-0419](#).

Download the 2006 flood plan and 2013 flood plan update. These reports are provided in Adobe Acrobat .pdf format.

[2006 King County Flood Hazard Management Plan \(16.6 MB\)](#)

[2013 King County Flood Hazard Management Plan Update and Progress Report \(4 MB\)](#)

Printed copies of the 2006 flood plan and 2013 flood plan update are available at the following [King County libraries](#):

- Auburn Library
- Bellevue Regional Library
- Bothell Regional Library
- Carnation Library
- Duvall Library
- Fairwood Library
- Fall City Library
- Issaquah Library
- Kent Library
- Maple Valley Library
- Muckleshoot Library
- North Bend Library
- Redmond Regional Library
- Skykomish Library
- Snoqualmie Library
- Tukwila Library

King County Flood Management Plan Online Engagement Hub (CRS Step 2.d.)

2024 King County Flood Management Plan

Flooding happens in King County. Flood risks are managed through the King County Flood Management Plan. Lets plan for the future together. **Complete a [survey](#) to share your ideas on how to build a flood resilient future.** You can also use this site to learn about flooding in King County and resources available to reduce flood risks.

Interpretation and translation services are available to you at no cost. If you need them, please contact us at 206-263-2677.

[English](#) | [Español](#) | [Tiếng Việt](#) | [Soomaali](#) | [□ □ □](#) | [Русский язык](#) | [繁體中文](#)
[文](#) | [Kiswahili](#) | [Français](#) | [Mandi'nka kango](#) | [ᱫᱷᱟᱱ](#)

Community flood planning survey

You don't need to be an expert in flooding to provide valuable input. Your responses to the following questions will help shape the priorities in the next flood plan. This survey will...

[View Results](#)

Let's plan for flood resilience together

Flooding is our region's most common natural disaster and is a part of life in King County. Flooding can be devastating to neighborhoods. Floods damage homes, destroy personal property and put lives at risk. Floods also affect access to jobs, stores and schools and can damage community open spaces. Flooding is likely to get more frequent and severe with climate change.

Natural disasters affect people differently, with some having a harder time recovering, or perhaps not recovering at all. Building flood resilience means that we are increasing the ability for people and communities to recover quickly from whatever impacts flooding brings to our doorsteps. Flooding will never disappear in King County, but being prepared can reduce the risks for communities, families, and individuals.

The flood plan guides how we manage flood risks and how the benefits of our efforts are distributed across the county. Information on this site is organized into five sections:

- [Flooding and building flood resilience](#) - background information and resources
- [Planning for flood resilience](#) - introduction to the plan, the process for updating the plan, and why the plan matters
- [Share your thoughts](#) - survey questions to inform the scope and actions identified in the plan
- [Meetings and events](#) - venues to learn about flooding and share your local insights
- [What we've heard from you](#) - a report on the feedback we've recieved so far

[Sign up to receive email updates about the flood plan!](#)



Snoqualmie River flooding near Duvall in December 2015.

Contacts

For general information or assistance with questions about flooding, please contact:

King County River and Floodplain Management Section

206-477-4812

For questions about the flood plan update, please contact:

Jason Wilkinson

Project Manager

206-477-4786

Jason.Wilkinson@kingcounty.gov

For questions about flood plan community engagement opportunities or how to submit comments, please contact:

Chrys Bertolotto

Flood Plan Community Engagement Coordinator

206-263-2677

cbertolotto@kingcounty.gov

King County Flood Management Plan Online Survey – Phase 1² (CRS Step 2.d.)

You don't need to be an expert in flooding to provide valuable input about how King County should manage flood risks. Your responses to the following questions will help inform the next flood plan. What needs does your community have when it floods? What types of services would be most useful to reduce flood risks? How should King County plan for future climate impacts? We value your responses and encourage you to bring forward new ideas!

Thank you for taking the time to complete this 10 - 15 minute survey! Responses for all but the last question are visible to the public.

1. How has flooding impacted you? (Select all that apply):
 - A. Flooding has damaged my home or homes in my community.
 - B. Flooding has damaged my business or businesses in my community.
 - C. My community has experienced flooded roads that has made it challenging or impossible to get to needed destinations.
 - D. Flooding forced me to temporarily move from my home.
 - E. Flooding forced me to permanently leave my home.
 - F. I or people I know in my community have experienced physical danger due to flooding.
 - G. Flooding has not impacted me.
 - H. Other (please describe):

2. What is your current level of concern about flooding? (pick one – not all concerned, moderately concerned, very concerned)

3. Select the two sources of flooding that are of greatest concern to you:
 - A. I am not concerned about flooding.
 - B. Large rivers (Cedar, Duwamish, Green, Sammamish, Snoqualmie, South Fork Skykomish, White)
 - C. Rivers, creeks, and streams not mentioned above
 - D. Puget Sound coastlines (high tides and sea level rise)
 - E. Stormwater (surface water) runoff
 - F. Lakes
 - G. Other (please describe):

4. There are many ways King County currently works to reduce flood risk. Please select the ways you are aware of:
 - A. Provide information to help residents prepare and protect themselves from flooding.
 - B. Communicate flooding conditions through flood alerts, flood apps and the Flood Warning Center.
 - C. Buy properties that are at high flood risk from willing and eligible landowners.

² These survey questions were posted on the online engagement hub (<https://publicinput.com/s2727>) from March – June 2023.

- D. Offer technical assistance or incentives for understanding flood risks, relocation, home elevation or other flood proofing actions.
 - E. Track flood conditions and map changing flood and channel migration hazards.
 - F. Maintain or repair levees and stabilize riverbanks to reduce flood risk.
 - G. Limit new development in at-risk areas through land use regulations and permitting.
 - H. Protect public infrastructure like roads, water treatment plants and underground utilities.
5. Please rank each item based on their level of importance in helping you prepare for, respond to and recover after a flood or reduce flood risks.
- A. Provide information to help residents prepare and protect themselves from flooding.
 - B. Communicate flooding conditions through flood alerts, flood apps and the Flood Warning Center.
 - C. Buy properties that are at high flood risk from willing and eligible landowners.
 - D. Offer technical assistance or incentives for understanding flood risks, relocation, home elevation or other flood proofing.
 - E. Track flood conditions and map changing flood and channel migration hazards.
 - F. Maintain or repair levees and stabilize riverbanks to reduce flood risk.
 - G. Limit new development in at-risk areas through land use regulations and permitting.
 - H. Protect public infrastructure like roads, water treatment plants and underground utilities.
6. Please tell us what other activities or services would help you prepare for, respond to or recover from flooding or reduce flooding risks.
7. King County can improve flood resilience and deliver other community benefits. How would you rate the importance of the following community benefits?
- A. Distribute resources equitably across King County
 - B. Protect and restore natural habitat
 - C. Recover salmon and orca populations
 - D. Support local farms
 - E. Reduce flood risks and increase flood resilience
 - F. Create and support local jobs
 - G. Preserve natural lands and green spaces
 - H. Improve water quality
 - I. Provide access for recreation on or near water
 - J. Keep roads and railways safe and accessible
 - K. Provide opportunities to learn about the landscape and history of the area
8. What do you think are most important elements for a flood resilient future in King County?
- A. Plan for future impacts of climate change
 - B. Reduce flood risks while delivering other community benefits (like the examples in question #7)
 - C. Ensure equitable outcomes of flood risk reduction efforts across King County
 - D. Consider flooding from all potential sources including rivers, streams, coastlines, stormwater, and lakes
 - E. Identify measures to enhance natural ecosystem functions that also will reduce flooding

- F. Identify ways for local governments to work together to help communities better prepare for, respond to, and recovery flood flooding
 - G. Get involved with community networks or planning with neighbors
 - H. Identify cost-effective, long-term solutions
 - I. Other (please describe): (Text box opens)
9. We want to make sure we are hearing from people through King County. Please provide your zip code to help us do that.
10. We want to make sure all people in King County are resilient in the face of natural disasters. To help us understand our communities better, please select all statements that apply to you. *(multiple choice optional question, make optional)*.
- a. I prefer not to answer.
 - b. I identify as Black, Indigenous or Person of Color.
 - c. I have a disability.
 - d. I rent my place of residence.
 - e. I am a caregiver of children under 5 or seniors 65 or over.
 - f. I am 65 years or older.
 - g. I speak a language other than English at home.
 - h. I use SNAP food stamps or other income assistance programs.
 - i. I do not have flood insurance and I know I live in a flood prone area.
 - j. I was born in another country.
 - k. I do not have health insurance.
 - l. My highest level of education is high school or less.
 - m. I identify as a female.

Thank you for taking the time to complete this survey! If you would like to sign up to receive email notifications related to the flood plan, please sign up here.

King County Flood Management Plan Online Survey – Phase 1³ (CRS Step 2.d.)

You don't need to be an expert in flooding to provide valuable input. Your responses to the following questions will help shape the priorities in the next flood plan.

This survey will take **approximately 10 minutes** to complete and will be available until **October 1**. Survey results are anonymous and will be visible to the public. On write-in questions, you can opt to make your response private. Click "confirm" to save your response to each question.

Q1)

What factors are most important to you when considering the actions King County includes in its flood planning? **Select up to three (3)** options.

- A. Reducing the risk of flooding or building community capacity for flood resilience and preparedness.
- B. Cost of the project or action.
- C. Provides benefits to historically underserved communities.
- D. Provides other benefits for recreation, open space, habitat for fish and wildlife, water quality, or local jobs.
- E. Community input on local flood risk reduction strategies and approaches.
- F. Other (Please Specify)

Q2)

The following questions will help identify specific approaches to reduce flood risks or improve flood preparedness. The ideas presented do not include everything we've heard so far. They provide a sample of the types of suggestions we're hearing from communities.

Prevention helps keep flood problems from getting worse. Prevention measures include developing and enforcing land use regulations that prevent risky development. It can also include buying land and returning it to a natural state. This allows nature to help lessen the impacts of flooding.

Community members have shared the following ideas about prevention. **Select up to three (3)** ideas that are most important to you.

- A. Adopt and enforce regulations to limit development in areas at risk of flooding.
- B. Adopt regulations to disallow filling of wetlands in upper watershed areas.
- C. Provide regulatory incentives to develop in areas at low risk of flooding or flood damage.
- D. Identify and provide more ways for stormwater or overland runoff to soak into the ground.
- E. Increase building elevation requirements in flood hazard areas.
- F. I have another suggestion to prevent flood problems from getting worse. (Please Specify)

³ These survey questions were posted on the online engagement hub (<https://publicinput.com/s2727>) from August - October 2023.

Q3)

Protecting property from flooding can include many activities to promote flood resilience. These are typically taken by property owners, renters, or local governments.

Community members have shared the following ideas about protecting property from flooding. **Select up to three (3)** ideas that are most important to you.

- A. Offer technical assistance or reduce regulatory barriers to retrofit or elevate buildings.
- B. Help property owners sell or move structures that are at risk of flooding.
- C. Provide technical support to repurpose structures in at-risk areas to new uses that accommodate flooding.
- D. Provide education to property owners and renters on the benefits of flood insurance.
- E. Offer incentives to help property owners make changes to properties that have flooded many times.
- F. I have another suggestion help protect properties from flooding. (Please Specify)

Q4)

Protecting natural resources and the environment allows floodplains and watersheds to store floodwater, improve water quality, and provide habitat for fish and wildlife.

Community members have shared the following ideas about protecting natural resources and the environment. **Select up to three (3)** ideas that are most important to you.

- A. Work with communities and businesses in floodplains to protect or restore the environment.
- B. Reconnect floodplains to help store and move floodwater and create habitat for fish.
- C. Promote low-impact development and green infrastructure (like rain gardens). This slows runoff and helps protect aquatic habitat.
- D. Protect upper watershed areas and preserve wetlands so water distributes slower downstream.
- E. Find ways to incorporate natural elements into projects even in the most developed areas.
- F. I have another suggestion related to protecting natural resources and the environment. (Please Specify)

Q5)

Emergency services support communities and limit impacts during urgent or life-threatening flooding.

Community members have shared the following ideas about emergency services. **Select up to three (3)** ideas that are most important to you.

- A. Improve coordination between governments agencies during times of flooding.
- B. Build capacity and support coordination between community organizations to respond to local emergencies.
- C. Plan for sea level rise and emergency response in coastal areas.
- D. Communicate flood evacuation routes and road closure information in real time.
- E. Provide support to communities on short-term emergency response tools, like building preparedness kits.
- F. I have another suggestion related to emergency services for flood events. (Please Specify)

Q6)

Structural projects are designed to contain, control, or divert the flow of water. They can prevent temporary flooding of certain areas of land.

Community members have shared the following ideas about structural projects. **Select up to three (3)** ideas that are most important to you.

- A. Explore opportunities for more floodwater storage at existing dams.
- B. Increase of the ability of culverts to pass more water.
- C. Explore locations without any structural projects to identify if new structures may reduce flood risks.
- D. Improve the flood resilience of major transportation routes.
- E. Explore ways to improve existing drainage pumps and floodgates.
- F. I have another suggestion related to structural projects to prevent temporary flooding. (Please Specify)

Q7)

Public information helps people learn how to protect people and property from flooding. It can also help people learn about the beneficial functions of floodplains.

Community members have shared the following ideas about public information. **Select up to three (3)** ideas that are most important to you.

- A. Promote flooding and flood risk information to property owners, renters, and visitors.
- B. Work with community and non-governmental organizations to share preparedness and emergency response messages and resources.
- C. Develop materials and support services that are culturally and locally relevant and in more languages.
- D. Disclose flood risks and ways to reduce those risks to people buying or renting property in flood-prone areas.
- E. I have another suggestion related to public information. (Please Specify)

Q8)

Do you have specific projects, actions or locations that you feel should be included in the flood plan, not reflected above? If so, please describe them as completely as you can below.

Thank you for taking the time to complete this survey!

Sign up to receive email updates about the flood plan and find out about other ways to share your opinions.

King County Flood Management Plan Bus and Light Rail Advertisement (CRS Step 2.d.)




**FLOODING HAPPENS.
LET'S PLAN FOR THE
FUTURE, TOGETHER.**

Snoqualmie Valley Flooding (2015)

- ✓ Flooding is the most common natural disaster in King County.
- ✓ You have local knowledge that is valuable.
- ✓ Help shape the flood plan strategies that will affect your community and family for years to come.

Find flood maps, resources, and get involved:
kingcounty.gov/FloodPlan

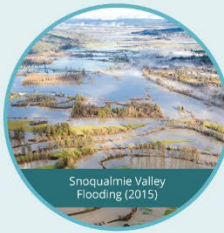


King County
KING COUNTY
FLOOD
MANAGEMENT PLAN
Creating a flood-resilient future

King County Flood Management Plan Bus and Light Rail Advertisement (CRS Step 2.d.)

FLOODING HAPPENS. LET'S PLAN FOR THE FUTURE, TOGETHER.

- ✓ Flooding is the most common natural disaster in King County. It will likely become more frequent and severe with climate change.
- ✓ You have local knowledge that is valuable.
- ✓ Help shape the flood plan strategies that will affect your community and family for years to come.



**Provide your input on
the King County Flood
Management Plan.**



Find flood maps, resources, and get involved:
kingcounty.gov/FloodPlan

← Scan to learn more.

King County Flood Management Plan Presentations to Community Groups and Associations (CRS Step 2.d.)

Venue	Date	Target Community / Location	Estimated Contacts
King County Frontline Resilient Task Force	11/2/2022	BIPOC / Countywide	15
Greater Unincorporated Maple Valley Community	3/6/2023	Maple Valley	14
City of Issaquah Park and Environmental Advisory Boards	3/16/2023	Issaquah	18
Snoqualmie Valley Recreation Coalition	3/21/2023	Recreation Interests / Snoqualmie	18
Fall City Community Association	4/4/2023	Fall City	50
Vashon Maury Island Community Council	4/20/2023	Vashon – Maury Island	70
Snoqualmie Valley Mobility Coalition	6/9/2023	Mobility-limited / Snoqualmie	25
Green River Coalition	6/12/2023	Maple Valley	6
Regional Alliance for Resilient and Equitable Transportation Coalition	5/24/2023	Mobility – limited / Countywide	34
Total Contacted			250

King County Flood Management Plan – Events for Tabling and Booths (CRS Step 2.d.)

Venue	Date	Target Community / Location	Estimated Contacts
Washington State Coalition of African Community Leaders Fifth Annual Summit	2/25/2023	African Immigrant and African American / Eastern King County	30
Kimball Creek Earth Day / Snoqualmie Tribe Event	4/22/2023	Native American and Youth / Snoqualmie	60
Asian Pacific Islander Heritage Celebration	5/6/2023	Asian American / Countywide	125
Indigenous People Festival	6/10/2023	Native American / Countywide	150
King County Fair	7/14/2023	South King County	60
Pacific Days	7/15/2023	BIPOC / South King County	63
Renton River Days	7/21/2023	BIPOC / Renton	174
Duwamish River Festival	8/5/2023	BIPOC / South Seattle	116
Fiesta Patrias Celebration	9/17/2023	Latino / Countywide	146
Marymoor at the Movies	8/9/2023	East King County	59
Skykomish Open Air Market	8/19/2023	Skykomish area	44
Maple Valley Emergency Preparedness Fair	9/30/2023	Maple Valley	86
Total Contacted			1,113

King County Flood Management Plan – News Release for Public Workshops (CRS Step 2.d.)

Newsroom

Natural Resources and Parks
Public Affairs

Help King County identify potential solutions for future flooding as the region prepares for climate impacts

February 6, 2023

With climate change increasing the potential for more frequent and severe flooding in the Pacific Northwest, King County seeks community input on solutions for coastal, tributary, and urban flooding problems. Input collected during online meetings this month will help identify strategies for the update to King County's Flood Management Plan.

King County will host three public meetings in February to inform its work to update its flood plan for the first time in a decade. Past flood plans focused on mainstem river flooding, and while rivers will continue to be a focus of the updated plan, the new plan will also explore urban, coastal, and tributary flooding. These flooding types are expected to occur more frequently due to climate change.

Similar workshops were held in January, and conversations will continue in February with three, topic-specific online meetings

- Tributary flooding on Wednesday, Feb. 8 from 10 a.m. to noon
- Coastal flooding on Wednesday, Feb. 15 from 10 a.m. to noon
- Urban flooding on Monday, Feb. 27 from 1 to 3 p.m.

King County's Water and Land Resources Division wants to hear from everyone who lives and works in areas – both urban and rural – who are at risk of flooding or have experienced impacts from flooding. In addition to reducing flood risk, the flood plan will help promote clean water, healthy habitat, improved recreation and

open space, and sustainable agriculture, demonstrating the co-benefit approach of [Clean Water Healthy Habitat](#).

These meetings are one of many ways the public can help shape the way King County will manage flooding in the future. Planning will continue throughout the year and will be submitted to the King County Council for its consideration in 2024.

Visit kingcounty.gov/FloodPlan for meeting details, and watch this [video](#) to learn more about King County's plan to create a flood-resilient future. For more information about the flood plan, contact Jason Wilkinson, project manager, via email at jason.wilkinson@kingcounty.gov or call 206-477-4786.

King County Flood Management Plan – Public Workshops, Meeting Agendas and Meeting Summaries (CRS Step 2.d.)

King County Flood Management Plan
Coastal Flooding Workshop #1 – Agenda
January 18, 2023 | 2:00 – 4:00 p.m.

- 2:00 – 2:10 **Welcome and Introductions**
- 2:10 – 2:20 **Purpose and Context**
- Flood Management Plan process, scope, schedule
 - Purpose and approach to workshops
- 2:20 – 2:50 **Coastal Flooding Problem Areas Mapping Exercise**
- 2:50 – 3:35 **Coastal Flooding Problem Identification Discussion**
- What is your/your organization’s experience with these flooding problems?
 - What are the impacts?
 - What concerns do you have about this type of flooding in the future?
 - Where are we most exposed to coastal flooding problems?
 - What is the need for actions to address coastal flooding?
- 3:35 – 3:55 **Initial Brainstorm: Potential Solutions**
- 3:55 – 4:00 **Wrap-Up and Next Steps/Adjourn**

King County Flood Hazard Management Plan Update
Coastal Flooding Workshop #1 – Meeting Notes
January 18, 2023 | 2:00 p.m. – 4:00 p.m.

List of attendees:

Adam Bettcher (City of Seattle), Adrienne Hampton (Duwamish River Community Coalition), Ann Grodnik-Nagle (Seattle Public Utilities), Chris Ensor (resident), Dan Beckley (ESA), Dan Brubaker (King County), David Goldberg (City of Seattle), Grant Gutierrez (City of Seattle), Jason Wilkinson (King County), Joel Lehn (City of Seattle), Kayla Eicholtz (Washington Department of Ecology), Ken Zweig (King County), Kollin Higgins (King County), Laura Casey (resident), Laura Hendrix (King County), Laura Wolfe (Port of Seattle), Martha Neuman (Seattle Public Utilities), Matt Goehring (WRIA 9), Mike Tipton (City of Carnation), Mimi Reed (King County), Nancy Sackman (Duwamish Tribe), Spencer Easton (ESA), Steven Souriyadeth (City of Seattle), Stewart Reinbold

(Washington Department of Fish and Wildlife), T.J. McDonald (City of Seattle), Tom Dean (Vashon-Maury Island Land Trust)

Introductions

Spencer Easton began the workshop with an introduction to the Flood Plan update process and provided background on the purpose of the workshops. Spencer gave a brief tutorial on using the Mural software that would be used for engagement during the workshop. The Mural is available at:

<https://app.mural.co/t/esassoc5274/m/esassoc5274/1673824857021/01c7df23a9ed31af2e0fa6be11e4e1538a40e241?sender=u03b40326661c27e60b4b3436>

Purpose and Context

Jason Wilkinson gave a presentation on the risks that flooding presents in King County, including impacts to property, infrastructure, and the economy. Jason described the ongoing process to update the 2006 and 2013 King County Flood Plans, which largely focused on flooding of major rivers. This update to the Flood Plan will expand upon the scopes of past Flood Plans to consider equity, climate change, and all sources of flooding, including tributary, coastal, and urban flooding. In response to questions about the opportunity to review the draft flood plan, Jason Wilkinson indicated that public comment will be a part of the draft flood plan and Draft Environmental Impact Statement, which are both intended to be made publicly available toward the end of 2023.

Map Exercise

Spencer Easton introduced an exercise in Mural, which provided an opportunity for participants to indicate on a map of King County where they had observed flooding and where they were concerned about future flooding. (See the end of this document for images from the map exercise and Mural input.) Participants provided descriptions of the areas they had marked on the map and descriptions of the flooding in those locations. Many of the flood occurrences identified on the map were in areas surrounding the Duwamish River, the east side of Vashon Island, and the along shoreline from West Seattle to Des Moines.

Commonly observed flood issues included:

- Flooding during king tide and high tide events, especially near tidally-influenced areas of rivers and streams
- Overtopping of roads that access beach properties, with occasional flood impacts to the waterfront properties/structures
- Overwhelmed sewer and stormwater systems in urbanized areas of the lower Duwamish, especially South Park and Georgetown

Concerns about future flood issues included:

- Impacts to coastal railroad infrastructure from sea level rise
- Flood impacts in the SODO neighborhood
- Worsening flood impacts to the built environment along the lower Duwamish River

- Compound flooding and related hazards are not well understood and can be difficult to assess. For example, sea level rise’s impact on coastal erosion, which could trigger landslides, is not considered when identifying landslide risk areas

Problem Identification

Spencer Easton encouraged participants to further discuss the flood issues that they had identified on the map of King County.

There was substantial discussion of flood issues on the Duwamish River, including details of recent flood impacts to the South Park neighborhood during a king tide event. Coastal flooding in South Park was described as a recurring issue over the years, with sewer backup issues and contaminated floodwaters from the combined sewer overflow system being highlighted as notable flood impacts to public health and homes in the neighborhood. It was reported that flood response personnel lacked informational materials in languages commonly spoken in the South Park neighborhood, other than English.

Questions were raised about King County’s ability to address compound flood impacts, such as when a king tide under sea level rise conditions affects a neighborhood with a combined sewer overflow. Jason Wilkinson indicated that the models currently used for projecting flood impacts on the west coast are not capable of assessing compound issues. Other King County staff indicated that models that are intended to be developed in the future should be able to assess compound flooding issues.

Flood impacts to Vashon Island were discussed as a difficult issue to fully grasp. Models exist that show the flooded areas, but it was noted that much of the flooded area on the island is private property—the extent of impacts cannot be observed by King County or other agency personnel, and property owners don’t always report flooding. Landslides were noted as a major issue that often occurs around flood events on Vashon Island, being exacerbated by extreme precipitation. For Vashon Island, landslides were described as a more significant hazard than flooding due to the potential for significant damage, while flooding has historically caused minor impacts, such as overtopping roads. The steep terrain on Vashon and landslide risks were identified as an obstacle to adapting waterfront properties to climate change, as setting homes further back from shorelines could put them at greater risk from landslides. Roads becoming impassable due to overtopping was also noted. Some residents on Vashon Island have armored the shoreline, which reduces erosion, but does not prevent flooding. The issue of flood impacts worsening to waterfront homes was also highlighted as an issue in Des Moines, Federal Way, Normandy Park, and West Seattle.

The Port of Seattle described their facilities as being mostly resilient to current flooding, with most of their facilities being set above base flood elevation. A small number of facilities have been indicated as vulnerable based on projected future base flood elevations, and work is being pursued to address long-term solutions at those properties.

Other flood impacts in vulnerable areas, mostly near the Duwamish River, that were described included:

- Mental health impacts of displacement, property loss, and relocation

- Challenges to renters getting support, compared with homeowners
- Deficiencies in coordinated flood response from public agencies and a lack of state and federal resources for public agencies to support responses in localized emergencies
- Impacts to the economy from flooding in industrial areas
- Public health impacts from exposure to contaminated floodwater and wastewater

Jason Wilkinson indicated that there is a role for the plan to address the issues discussed, identify needs for preparation, response, and recovery planning, and articulate how best to address these issues in the future.

Solutions

Spencer Easton prompted the participants to review what others had written in Mural about problems and solutions to guide further discussion.

Some of the solutions that were mentioned or added to the Mural included:

- Code amendments that account for sea level rise and address issues at waterfront properties, such as allowing for homes that cannot be moved or elevated to be rebuilt with flood resilient materials and utilities elevated above base flood elevation, which allows structures to be inundated without being damaged (also referred to as wet floodproofing)
- Nature-based solutions for mitigating flooding and improving habitat
- Upgrading sewer and stormwater infrastructure to be flood resilient
- Funding to support home buyouts, elevations, and relocations in coastal areas
- Increasing equity and social justice focus in flood response, such as providing translated support materials, culturally appropriate relief services, and coordination with community partners
- Managed retreat and home buyout mechanisms that support affordable relocation and renters

Follow-up discussion on recent flooding focused on the responsibilities of the government to the people impacted by flood events. Having pre-positioned resources in place to support vulnerable communities with recurring flood issues was noted as one solution. There was broader discussion about a need for systemic change in the way counties and cities respond, such as increasing flexibility to accommodate the specific needs of impacted communities.

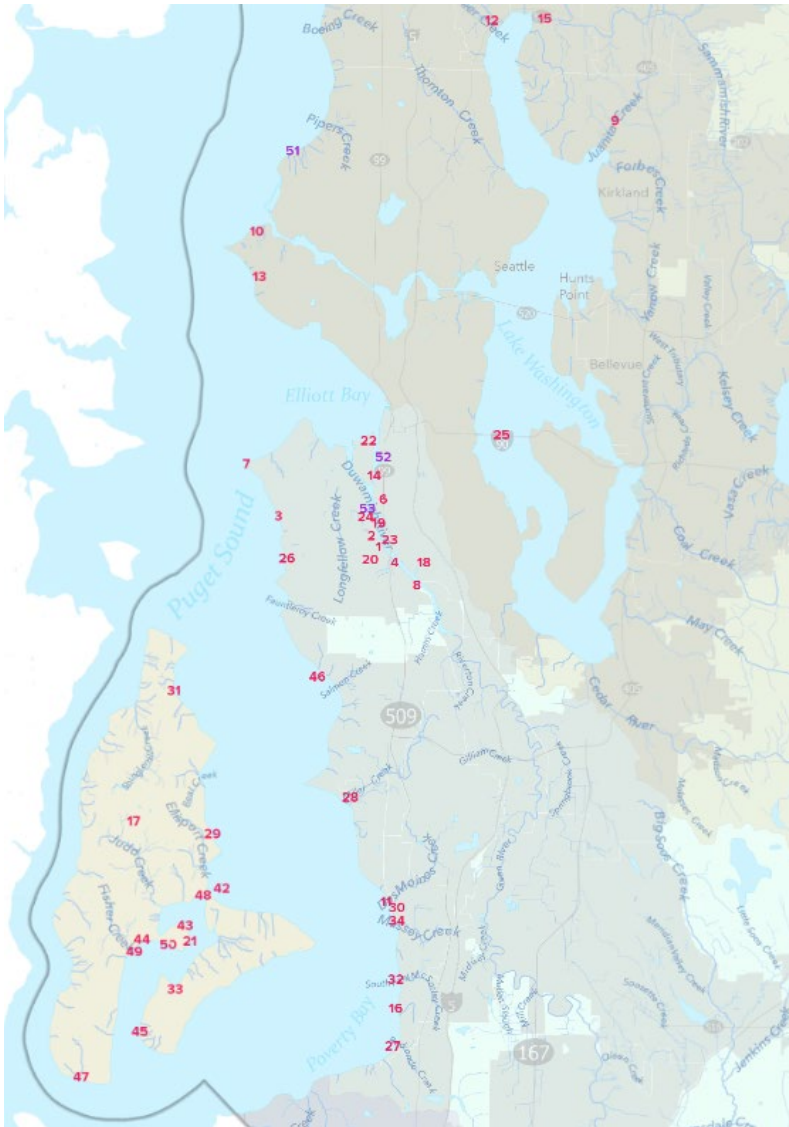
In reviewing solutions that were added to the Mural, some concerns were expressed about raising homes in flood hazard areas and adding new shoreline armoring infrastructure.

Next Steps

Spencer Easton noted that there is an urban flooding workshop scheduled for February 1st, 2023, as well as follow-up workshops for tributaries and coastal flooding that will focus more on solutions.

Mural Map Exercise and Solutions Brainstorm

Mapping exercise: Red numbers reflect observed flood issues and purple number reflect potential future flood issues.



King County Flood Management Plan
Coastal Flooding Workshop #2 – Agenda
February 15, 2023 | 10:00 a.m. – 12:00 p.m.

10:00 – 10:10 **Welcome and Introductions**

10:10 – 10:20 **Purpose and Context**

- Flood Management Plan process, scope, schedule
- Purpose and approach to workshops
- Brief summary of Workshop #1

10:20 – 10:30 **Problem Areas**

- Opportunity to revisit/add to discussion of problem areas from Workshop #1

10:30 – 11:30 **Potential Solutions**

- Discuss pros and cons and considerations of various solutions brainstormed at Workshop #1
- Identify additional potential solutions

11:30 – 11:50 **Solutions Mapping Exercise**

11:50 – 12:00 **Wrap-up and Next Steps/Adjourn**

King County Flood Hazard Management Plan Update
Coastal Flooding Workshop #2 – Meeting Notes
February 15, 2023 | 10:00 a.m. – 12:00 p.m.

List of attendees:

Adam Bettcher (City of Seattle), Angela Donaldson (resident), Ann (resident), Ann Grodnik-Nagle (Seattle Public Utilities), Carolyn Carnahan (resident), Chris Ensor (resident), Dan Beckley (ESA), Dan Brubaker (King County), David Goldberg (City of Seattle), Diane Hoyer (resident), Jackie Underberg (resident), Jason Wilkinson (King County), Joel Lehn (City of Seattle), John Klochak (King County), Jon Sloan (Port of Seattle), Kayla Eicholtz (Washington Department of Ecology), Ken Zweig (King County), Kollin Higgins (King County), Laura Casey (resident), Laura Hendrix (King County), Laura Wolfe (Port of Seattle), Lorin Reinelt (King County), Martha Neuman (Seattle Public Utilities), Mike S (resident), Molly Lawrence (resident), Spencer Easton (ESA), Steven Souriyadeth (City of Seattle), T.J. McDonald (City of Seattle), Tom Dean (Vashon-Maury Island Land Trust), Tyler Beekley (City of Des Moines)

Introductions

Spencer Easton began the workshop with an overview of the agenda. Spencer gave a brief tutorial on using the Mural software that would be used for engagement during the workshop. The Mural is available at:

<https://app.mural.co/t/esassoc5274/m/esassoc5274/1673824857021/01c7df23a9ed31af2e0fa6be11e4e1538a40e241?sender=u03b40326661c27e60b4b3436>

Purpose and Context

Jason Wilkinson provided an overview of the role of the flood plan and the schedule for updating the flood plan. Participants asked how the flood plan will be used and what implementation of the plan would entail. Jason explained that the flood plan provides a policy framework for King County flood hazard management and it contains an action plan that spans capital and non-capital initiatives. The Flood Control District is a separate entity from King County and the updated flood plan will not direct their work, but the Flood Control District could consider adopting this plan or use it to inform their work.

Problem Areas

Spencer Easton provided a summary of Coastal Flooding Workshop #1 and identified the flood topics that were discussed in the workshop, which included:

- Impacts of flood events that occurred in December 2022
- Flooding during king tide and high tide events
- Overtopping of roads that access beach properties
- Overwhelmed sewer and stormwater systems in urbanized areas
- Flood impacts to public health
- Concerns about future flood issues for coastal railroad infrastructure and effects of compound flooding

Based on input about potential solutions brainstormed by participants in the first workshop, Spencer outlined eight types of solutions, as well as examples of each solution category. The categories were:

- Managed retreat
- Floodproofing and elevations
- Equity-centered actions
- Multi-benefit projects and restoration
- Flood risk reduction infrastructure
- Stormwater management
- Programmatic actions
- Education and outreach

Participants discussed the need for better communication and transparency regarding flood risks to properties amongst mortgage lenders, realtors, insurance agents, and prospective property owners. There was discussion of the importance of communicating flood risk to properties as a spectrum, as properties outside of a Special Flood Hazard Area can still be impacted.

Potential Solutions

Spencer Easton prompted participants to input their ideas for potential solutions under the appropriate categories in Mural, as well as to share input on considerations, pros, and cons for those solutions.

Discussion of managed retreat solutions included:

- Efficacy of single home buyouts vs. entire streets or neighborhoods
- Identifying high-risk neighborhoods where managed retreat may be preferred or necessary
- King County's limited ability to pay more than appraised value for property
- King County and other entities' ability to pay relocation assistance in addition to buyouts
- Developing a list of acceptable mitigation options with affected communities
- Studying best practices from other states or coastal flood areas
- Recognition of the higher complexity of relocating businesses affected by coastal flooding, including water-dependent uses

Discussion of floodproofing and elevations included:

- Challenges of moving or retrofitting septic systems for elevated buildings
- Continued risk of landslides or earthquake risk for elevated buildings, especially on Vashon Island
- Challenges of floodproofing, elevating homes, and retrofits due to shoreline codes or flood hazard area designations
- Limitations of FEMA-approved floodproofing options
- Limitations of wet floodproofing for residential properties; benefits of wet floodproofing for commercial properties
- Need for flood resilience solutions to be in alignment with the Shoreline Master Plan and to be coordinated with the Department of Local Services

Discussion of programmatic action solutions included:

- Incorporating language in the flood plan to increase competitiveness for grants, including new Community Disaster Resilience Zone funding from FEMA
- Challenges to home elevations or relocations from increasing regulatory standards
- Relief from regulatory standards for flood resilience improvements
- Landslide risk assessment mapping

One participant asked about the timeline for sea level rise impacts to coastal properties and whether there will be large areas flooded that were previously unaffected or if the severity of flooding would mostly increase in areas that are already at risk. Multiple King County staff spoke to the County's efforts to model for sea level rise and coastal flooding impacts using the USGS's Coastal Storm Modeling System (CoSMoS). The CoSMoS modelling is not projected to be completed until after the flood plan, so the flood plan will need to draw references to new information such as this as best available science for guiding implementation.

Discussion of flood risk reduction infrastructure solutions included:

- Building a levee or berm in the South Park neighborhood
- Challenges to building a new levee and alternatives for extending or adapting existing levees
- Need to align infrastructure programs with WRIA priorities

Discussion of equity-centered action solutions included:

- Prioritizing outreach to communities that have faced harm in the past
- Engaging communities most vulnerable to future risks
- Providing culturally-appropriate resources to communities

Other topics that were discussed included:

- Coordination between ecological restoration and flood protection efforts
- Retrofitting stormwater management infrastructure at existing developments
- Encouraging the purchase of flood insurance
- Education of mortgage lenders, realtors, and insurance agents about flood risks

Solutions Mapping Exercise

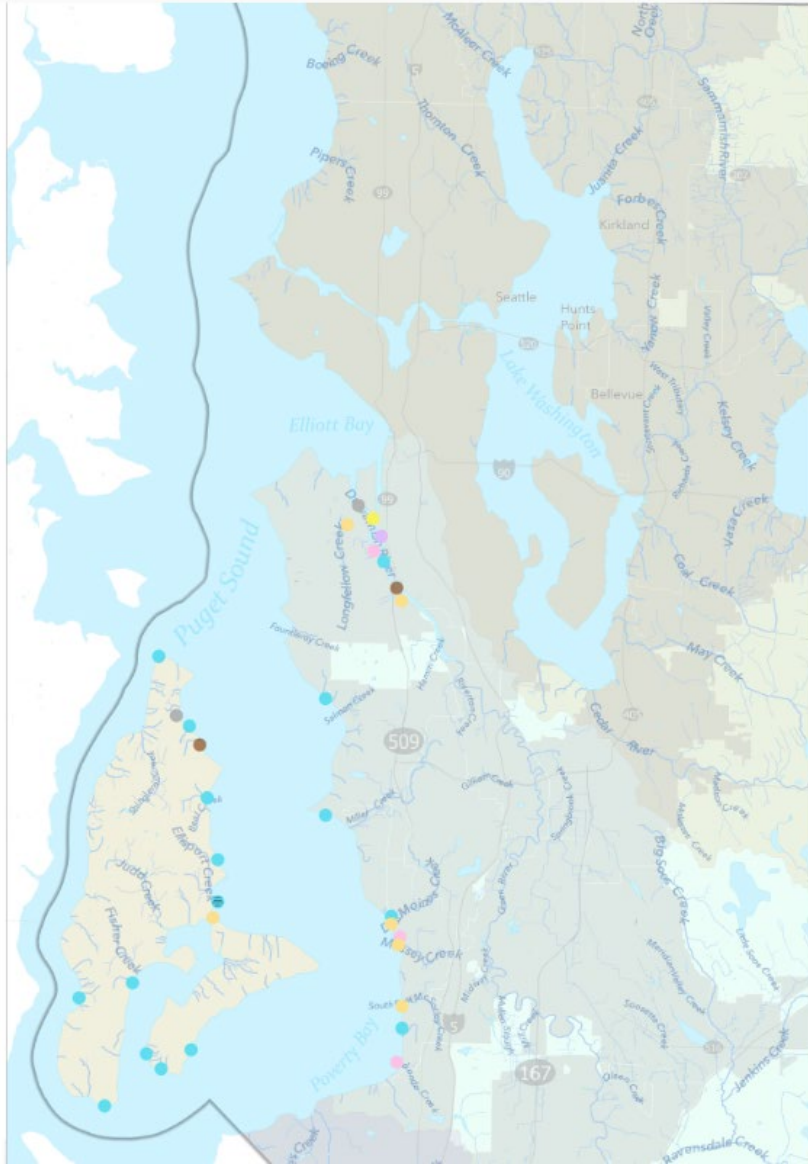
Spencer Easton prompted participants to mark locations on a King County map in Mural, showing where they think different types of solutions may help to address flood issues. An image of the map is below.

Next steps

Spencer Easton detailed upcoming participation opportunities and that the public will have an opportunity to comment on the draft flood plan in late 2023.

Mural Input

Participants marked locations on this map of King County with dots corresponding to the color of the solution type they suggested.



Category #1: Managed Retreat



Category #2: Floodproofing/Elevation



Category #3: Equity-Centered Actions



Category #4: Multi-Benefit/Restoration



Category #5: Flood Infrastructure



Category #6: Stormwater Management



Category #7: Programmatic Actions



Category #8: Outreach/Education



King County Flood Management Plan
 Tributary Flooding Workshop #1 – Agenda
 January 12, 2023 | 2:00 – 4:00 p.m.

- 2:00 – 2:10 **Welcome and Introductions**
- 2:10 – 2:20 **Purpose and Context**
- Flood Management Plan process, scope, schedule
 - Purpose and approach to workshops
- 2:20 – 2:50 **Tributary Flooding Problem Areas Mapping Exercise**
- 2:50 – 3:35 **Tributary Flooding Problem Identification Discussion**
- What is your/your organization’s experience with these flooding problems?
 - What are the impacts?
 - What concerns do you have about this type of flooding in the future?
 - Where are we most exposed to tributary flooding problems?
 - What is the need for actions to address tributary flooding?
- 3:35 – 3:55 **Initial Brainstorm: Potential Solutions**
- 3:55 – 4:00 **Wrap-Up and Next Steps/Adjourn**

King County Flood Hazard Management Plan Update
 Tributary Flooding Workshop #1 – Meeting Notes
 January 12, 2023 | 2:00 p.m. – 4:00 p.m.

List of attendees:

Adam Bettcher (City of Seattle), Brandon Pitts (resident), Eric Palmer (City of Enumclaw), Ginny Marsh (resident), Chris Hilton (Seattle Public Utilities), Jackie Underberg (resident), Janet Geer (City of Bothell), Joe Farah (City of Renton), Joel Lehn (City of Seattle), Eric Beach (King County), Erin Ericson (Snoqualmie Valley Watershed Improvement District), John Edgerly (Seattle Public Utilities), Kate Ryan (People to Preserve the Tualco Valley), Kayla Eicholtz (Washington Department of Ecology), Laura Casey (resident), Lauren Silver (Snoqualmie Valley Preservation Alliance), Lisa Nelson (Washington Department of Ecology), Lou Beck (King County), Martha Neuman (Seattle Public Utilities), Matt Baerwalde (Snoqualmie Indian Tribe), Mike Tipton (City of Carnation), Peter Lamanna (Washington Sensible Shorelines Association), Regina Fletcher (Snoqualmie Valley Preservation Alliance), Sherry Edquid (City of Tukwila), Shawn Gilbertson (City of Kent), Steven Souriyadeth (City of Seattle), Stewart Reinbold (Washington Department of Fish and Wildlife), Tyler Beekley (City of Des Moines), Karl Burton (Seattle Public Utilities), Iris Kemp (King County), Jamie Brakken (Washington Sensible Shorelines Association), Helen

Westphal (Seattle Public Utilities), David Goldberg (City of Seattle), Stephanie Sullivan (City of Sammamish), Virginia Russell (resident), Jason Wilkinson (King County), Spencer Easton (ESA), Dan Beckley (ESA)

Introductions

Spencer Easton began the workshop with an introduction to the Flood Plan update process and provided background on the purpose of the workshops. Spencer gave a brief tutorial on using the Mural software that would be used for engagement during the workshop. The Mural is available at:

<https://app.mural.co/t/esassoc5274/m/esassoc5274/1672179394520/cbf44fcb28191693620548412a90ed187d736f47?sender=u03b40326661c27e60b4b3436>

Purpose and Context

Jason Wilkinson gave a presentation on the risks that flooding presents in King County, including impacts to property, infrastructure, and the economy. Jason described the ongoing process to update the 2006 and 2013 King County Flood Plans, which had largely focused on flooding of major rivers. This update to the Flood Plan would expand upon the scopes of past Flood Plans to consider equity, climate change, and all sources of flooding, including tributary, coastal, and urban flooding.

Map Exercise

Spencer Easton introduced an exercise in Mural, which provided an opportunity for participants to indicate on a map of King County where they had observed flooding and provide descriptions of the observed flooding. (See the end of this document for images of the map and input from Mural.) Many of the identified flood areas were in areas surrounding Lake Sammamish, lower sections of the Snoqualmie River Basin, and in the Duwamish River Basin near the City of Kent.

Commonly observed flood issues included:

- Sediment transport and aggradation, including resulting environmental impacts.
 - Alluvial fans were identified as an issue in tributaries flowing into Lake Sammamish and in the Snoqualmie River Basin, being described as contributing to flooding that impacts private property and an issue that is challenging to respond to, especially in priority fish habitat areas. Stormwater management officials noted there are challenges to returning tributaries to original channels when they avulse due to sediment buildup.
- Inundation of roads, especially in the Snoqualmie River Basin.
- Flooding on private properties or obstacles to implementing solutions, as well as challenges identifying the appropriate King County agencies/resources for property owner support.
 - King County Stormwater Services responds to drainage concerns with inspections and makes efforts to reroute the issue to the proper authority, but if there is not a King County program for an issue on private property, the County may not be able to address the problem directly.

- Inadequacy of flood and stormwater management infrastructure to handle flood volumes.
- Beaver activity was identified as a topic that should be discussed because beavers can create long-term changes to flooding patterns, although beaver activity is not always an issue.

Potential future flood problems that were identified included:

- Avulsion issues on tributaries of Snoqualmie River.
- Fish passage issues on Skunk Creek and the need to daylight streams on a tributary off Kimball Creek near the Snoqualmie Reservation were noted, also referencing flood impacts from the small capacity of pipes and culverts.
- General concerns about balancing fish habitat needs with flood and sediment management issues into the future were referenced throughout the discussion.
- Inadequacy of floodwater storage in wetlands and tributaries.
- General concerns about Lake Sammamish as a receiving water body for a large drainage area.

Problem Identification

After participants marked observed and potential future flood risks on the King County map, further discussion and analysis of these flood risks was opened to the participants.

Discussion of flood problems included:

- Multiple people expressed an interest in performing more dredging or making sediment removal an easier process to permit, indicating that the obstacles to permitting sediment removal can exacerbate flooding, and sediment buildup can overwhelm drainage infrastructure.
 - Tributaries in Renton, near Lake Sammamish, and in the Snoqualmie River Basin were discussed as areas with sediment aggradation issues where there is an interest in pursuing dredging or other resolutions.
 - Jason Wilkinson indicated that dredging and sediment management is a topic that will be discussed further as the Flood Plan moves forward.
- Piped streams and other infrastructure for managing water resources were identified as being outdated or having insufficient capacity for flooding.
- The relicensing process at Tolt Dam was suggested as a potential opportunity for aligning the Flood Plan with planning activities at dams, with the intent to increase floodwater storage in upper watersheds.
- Private property flooding and sediment aggradation, suggested to be the result of alluvial fans, were identified as issues at Lake Sammamish. There was additional discussion about issues of drainage and runoff into Lake Sammamish.

Solutions

Participants were given the opportunity to have an unstructured conversation on solutions that could be considered for the identified flood problems. The discussion of solutions included:

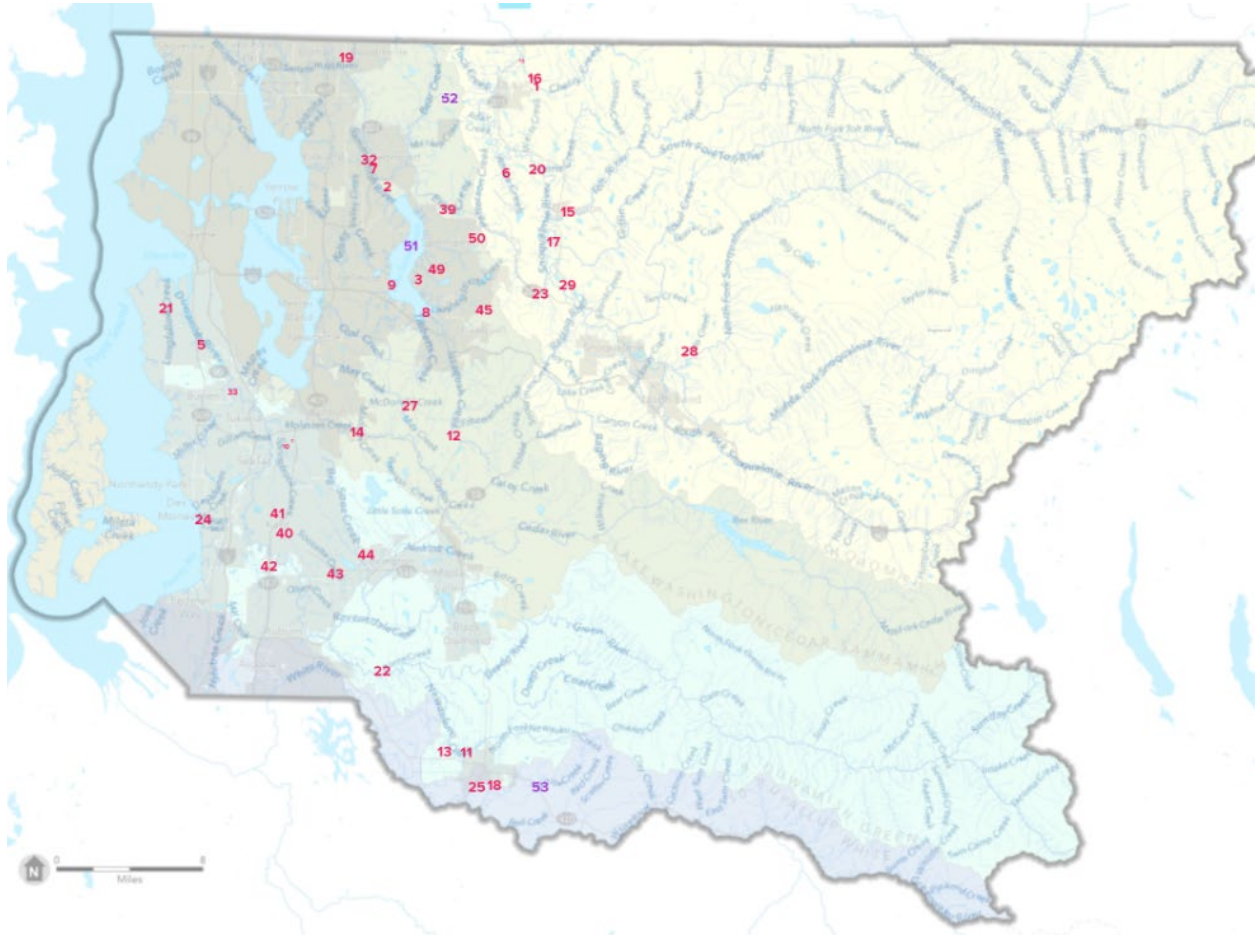
- In a follow-up on the topic of alluvial fans and dredging, it was noted that dredging permits are granted each year by the Washington Department of Fish and Wildlife, including for alluvial fan areas, but part of the understanding of providing dredging permits is that they are part of a larger improvement project that would not require dredging as an ongoing maintenance activity. Otherwise, fish stocks are negatively impacted. Past discussions between King County and the Department of Fish and Wildlife about current dredging projects have involved looking for solutions to avoid future dredging and support fish resources.
 - In response, there was a suggestion to establish a mechanism for responding to flooding and sedimentation issues in a time frame that is shorter than what is typical for permitting dredging in order to address emerging issues. Restoration projects combined with dredging projects require a longer timeline for implementation. Increased funding for stormwater services was also suggested.
- Updating or retrofitting stormwater and flood infrastructure to accommodate increased volumes during flood was identified as a solution by multiple people.
- A participant asked if the full scale of flood issues is understood by King County and if a risk assessment had been performed.
 - Jason Wilkinson noted that the flood plan will involve an updated understanding of risk, including a vulnerability assessment using a common Federal Emergency Management Agency tool that quantifies potential impacts. That tool only covers areas that have been identified as special flood hazard areas, which do not cover all areas that are exposed to flooding.
- In response to concerns about increased runoff into Lake Sammamish, officials with knowledge of stormwater management issues noted that, while permitted developments need to mitigate runoff to meet local or state standards, older developments may not meet current standards and jurisdictions across the region do not coordinate on total allowable runoff into the lake.
 - Increasing capacity of stormwater storage in upper watershed areas through low impact development and improved stormwater infrastructure, especially at new developments, was suggested as a solution for the Lake Sammamish area.
 - Coordination across jurisdictions within basins to manage total runoff into a receiving water body was also discussed.
- Increasing regulations around development in flood hazard areas and regulating activities around alluvial fans was discussed.
- Acquisition of properties in the floodplain, including repetitive loss properties, and implementing flood management projects was suggested.

Wrap-up and Next Steps

Jason Wilkinson stated that all comments are being considered for the Flood Plan and, while participants may not receive individual responses, the intent is to explain how comments are being addressed. Spencer Easton noted that there are coastal and urban flooding workshops scheduled for the near future.

Mural Input: Map Exercise and Solutions Brainstorm

Mapping exercise: Red numbers reflect observed flood issues and purple number reflect potential future flood issues.



King County Flood Management Plan
Tributary Flooding Workshop #2 – Agenda
February 8, 2023 | 10:00 a.m. – 12:00 p.m.

10:00 – 10:10 **Welcome and Introductions**

10:10 – 10:20 **Purpose and Context**

- Flood Management Plan process, scope, schedule
- Purpose and approach to workshops
- Brief summary of Workshop #1

10:20 – 10:30 **Problem Areas**

- Opportunity to revisit/add to discussion of problem areas from Workshop #1

10:30 – 11:30 Potential Solutions

- Discuss pros and cons and considerations of various solutions brainstormed at Workshop #1
- Identify additional potential solutions

11:30 – 11:50 Solutions Mapping Exercise**11:50 – 12:00 Wrap-up and Next Steps/Adjourn**

King County Flood Hazard Management Plan Update
 Tributary Flooding Workshop #2 – Meeting Notes
 February 8, 2023 | 10:00 a.m. – 12:00 p.m.

List of Attendees:

Angela Donaldson (resident), Conner Board (King 5), Diane Hoyer (resident), Diane Pasta (resident), Eric Palmer (City of Enumclaw), Erin Ericson (Snoqualmie Valley Watershed Improvement District), Helen Westphal (Seattle Public Utilities), Iris Kemp (WRIA 9), Jackie Underberg (resident), John Edgerly (Seattle Public Utilities), Kayla Eicholtz (Washington Department of Ecology), Laura Casey (resident), Lauren Silver (Snoqualmie Valley Preservation Alliance), Laurie Lyford (Washington Sensible Shorelines Association), Liz Stockton (King Conservation District), Lou Beck (King County), Martha Neuman (Seattle Public Utilities), Mike Mactutis (City of Kent), Nancy Sackman (Duwamish Tribe), Patrick Haluptzok (resident), Peter Lamanna (Washington Sensible Shorelines Association), Regina Fletcher (Snoqualmie Valley Preservation Alliance), Reid Brockway (Sammamish Homeowners), Saffa Bardaro (King County), Sherry Edquid (City of Tukwila), Jason Wilkinson (King County), Spencer Easton (ESA), Dan Beckley (ESA)

Introductions

Spencer Easton introduced the Mural software, which would be used to collect input and map flood risk reduction solutions during the workshop. The Mural is available at:

<https://app.mural.co/t/esassoc5274/m/esassoc5274/1672179394520/cbf44fcb28191693620548412a90ed187d736f47?sender=u03b40326661c27e60b4b3436>

Purpose and Context

Jason Wilkinson provided an overview of the Flood Plan update process, discussed the project timeline, and outlined how workshop input is used to develop the Flood Plan. A participant asked what guides the work of the King County Flood Control District if they do not adopt the updated Flood Plan. Jason indicated that the Flood Control District has looked to the 2006 King County Flood Plan for guidance and follows annual budgeting processes and capital investment strategies to determine what projects are implemented. Spencer Easton provided an overview of the Tributary Flooding Workshop #1, which included discussion of commonly observed flood

issues including sediment transport and aggradation, inundation of roads, flooding on private property, inadequate flood and stormwater management infrastructure, and beaver activity.

Problem Areas

Based on ideas about potential solutions brainstormed by participants in the first workshop, Spencer outlined eight types of solutions, as well as examples of each solution category. The categories were:

- Stormwater management
- Staying out of/moving out of hazard areas
- Channel conveyance
- Floodplain reconnection and restoration
- Infrastructure upgrades/management
- Education
- Studies and planning
- Programmatic actions

Multiple participants supported including a solution category for emergency management, with some discussion around the possibility of future engagement opportunities related to flood emergency management. Emergency management was included in the Mural as an independent category for solutions.

Other issue areas that were discussed included resources for unhoused populations in flood emergencies, damage that unhoused populations may cause to critical areas and restored floodplains by residing in them, potential vulnerability of infrastructure to vandalism, water quality issues related to flooding, and equity in areas with tributary flooding.

Potential Solutions

Spencer Easton prompted participants to input their ideas for potential solutions under the appropriate categories in Mural, as well as input on considerations, pros, and cons for solutions.

Discussion of stormwater management solutions included:

- Retrofitting existing development
- Low impact development techniques
- Increased capacity of stormwater infrastructure and King County Stormwater Services

Discussion of emergency management solutions included:

- Better defining King County's role in emergency response and raising public awareness of the County's role
- Support property owners with resources for on-site flood response action plans and other short-term response tools for property owners
- Increased training for emergency responders related to flooding and providing resources to impacted populations

Discussion of education solutions included:

- Coordination between urban and rural areas to learn more about how communities with different types of flood issues and environments address flooding
- Improve understanding of what role King County plays and what communities can do to seek short and long-term solutions to flooding
- Providing translated educational materials and emergency information

Discussion of solutions for staying out of/moving out of hazard areas included:

- Balancing equity considerations, cultural needs, and best uses of resource lands when considering relocation of floodplain inhabitants or acquisition of floodplain properties
- Acknowledgement of floodplain compatible land uses, including agriculture and golf courses
- Acquisition of properties, moving structures out of the floodplain, and elevating structures
- Increasing restrictions on development in the floodplain

Discussion of channel conveyance solutions included:

- Beaver management and potential landowner tools
- Impacts of private flood control infrastructure and changes in private flood control practices
- Volunteers and outreach to work with private property owners that manage drainage infrastructure
- Daylighting streams, improving fish passage, and expanding culvert capacity

Discussion of floodplain reconnection and restoration solutions included:

- Working with farmers to implement riparian buffers, native plantings, and flood resilience measures on agricultural land in the floodplains
- Implementing more setback levees
- Water quality monitoring
- Habitat restoration, wetland restoration and protection, and floodplain reconnection projects

There was limited discussion of other solutions topics, but [Mural input](#) included:

- Infrastructure (dam and upper watershed storage, road drainage, home elevations)
- Studies and planning (improved flood modelling, climate change projections in regulations, floodplain mapping and assessments)
- Programmatic actions (flexibility for urgent projects, technical assistance for sediment issues, increasing departmental resources, addressing criminal behavior that damages infrastructure)

Solutions Mapping Exercise

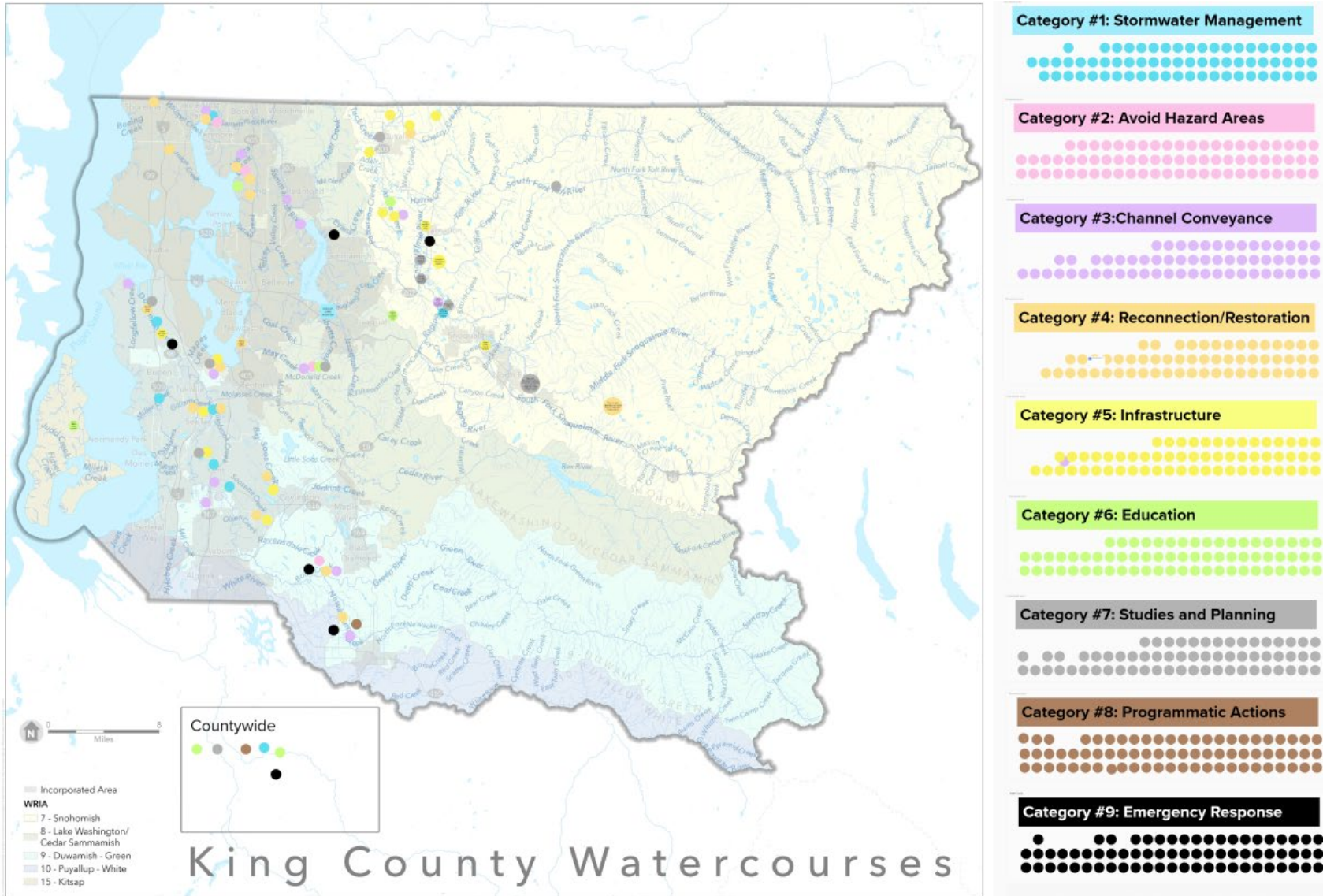
Spencer Easton prompted participants to mark locations on a King County map in Mural, showing where they think types of solutions may help to address flood issues. An image of the map is below.

Next steps

A participant asked if there would be other opportunities to provide input. Jason Wilkinson detailed that King County was developing a web-based engagement platform with a survey component that would be made public soon. King County also intends to host in-person public meetings and attend meetings hosted by community organizations for outreach. The public also can comment on the draft Flood Plan and Draft Environmental Impact Statement near the end of 2023.

Mural Input

Participants marked locations on this map of King County with dots corresponding to the color of the solution type they suggested.



King County Flood Management Plan
 Urban Flooding Workshop #1 – Agenda
 February 1, 2023 | 10:00 a.m. – 12:00 p.m.

10:00 – 10:10 **Welcome and Introductions**

10:10 – 10:20 **Purpose and Context**

- Flood Management Plan process, scope, schedule
- Purpose and approach to workshops

10:20 – 10:50 **Urban Flooding Problem Areas Mapping Exercise**

10:50 – 11:35 **Urban Flooding Problem Identification Discussion**

- What is your/your organization’s experience with these flooding problems?
- What are the impacts?
- What concerns do you have about this type of flooding in the future?
- Where are we most exposed to urban flooding problems?
- What is the need for actions to address urban flooding?

11:35 – 11:55 **Initial Brainstorm: Potential Solutions**

11:55 – 12:00 **Wrap-Up and Next Steps/Adjourn**

King County Flood Hazard Management Plan Update
 Urban Flooding Workshop #1 – Meeting Notes
 February 1, 2023 | 10:00 a.m. – 12:00 p.m.

List of attendees:

Adam Bettcher (City of Seattle), Chapin Pier (Seattle Public Utilities), Cheryl Paston (City of Bellevue), Diane Pasta (resident), Eric Palmer (City of Enumclaw), Grant Gutierrez (City of Seattle), Jamie Hearn (Duwamish River Community Coalition), Janet Geer (City of Bothell), Jenny Gaus (City of Kirkland), Joel Lehn (City of Seattle), Krista Camenzind (King County), Laura Wolfe (Port of Seattle), Laurie Lyford (Washington Sensible Shorelines Association), Leslie Webster (Seattle Public Utilities), Maggie Glowacki (City of Seattle), Martha Neuman (Seattle Public Utilities), Matt Baerwalde (Snoqualmie Tribe), Mike Mactutis (City of Kent), Mimi Reed (King County), Miranda Fix (resident), Molly Lawrence (resident), Nancy Sackman (Duwamish Tribe), Patrick Haluptzok (resident), Reid Brockway (Sammamish Homeowners), Russ Avery (City of Algona), Sherry Edquid (City of Tukwila), Stewart Reinbold (Washington Department of Fish and Wildlife), T.J. McDonald (King County), Troy Linnell (City of Algona), Lex Bumm (resident), Scott Sheffield (resident), Dan Beckley (ESA), Spencer Easton (ESA), Jason Wilkinson (King County)

Introductions

Spencer Easton began the workshop with an introduction to the Flood Plan update process and provided background on the purpose of the workshops. Spencer gave a brief tutorial on using the Mural software that would be used for engagement during the workshop. The Mural is available at:

<https://app.mural.co/t/esassoc5274/m/esassoc5274/1674845179680/48aafa97c1c5e4608a4a4f6d60f6f18179a9850a?sender=u03b40326661c27e60b4b3436>

Purpose and Context

Jason Wilkinson gave a brief presentation on the risks that flooding presents in King County, including impacts to property, infrastructure, and the economy. Jason described the ongoing process to update the 2006 and 2013 King County Flood Plans, which had largely focused on flooding of major rivers. This update to the Flood Plan will expand upon the scopes of past Flood Plans to consider equity, climate change, and all sources of flooding, including tributary, coastal, and urban flooding. This workshop is focused on urban flooding, such as shallow flooding with no defined channel, stormwater runoff, and flooding resulting from overwhelmed urban stormwater infrastructure.

Urban Flooding Problem Areas Map Exercise

Spencer Easton introduced an exercise in Mural, which provided an opportunity for participants to indicate on a map of King County where they had observed flooding and where they were concerned about future flooding. See the end of this document for images from the map exercise and Mural input.

Participants provided descriptions of the areas they had marked on the map and descriptions of the flooding in those locations. Many of the flood occurrences identified on the map were in areas surrounding the Duwamish River, Lake Sammamish, Kirkland, Bothell, and Snoqualmie, though many other issue areas were identified.

Commonly observed flood issues included:

- Tributaries in urban areas overtopping their banks, especially due to high volumes of stormwater runoff
- Large sediment loads overwhelming small streams and stormwater infrastructure
- Flooding and backups due to inadequate capacity of stormwater infrastructure, combined sewer overflows, and culverts
- Lack of natural drainage or floodwater storage capacity in urban areas
- Inundation of roads and related transportation impacts

Potential future flood problems that were identified included:

- Flooding in areas that have historically not flooded, including highly developed inland areas with significant impervious surface
- Worsening flood impacts to private property and related economic impacts

- Reduced effectiveness of pumping systems and increased inundation of low-lying areas due to sea level rise

Urban Flooding Problem Identification Discussion

Spencer Easton encouraged participants to further discuss the flood issues that they had identified on the map of King County.

There was discussion of flooding in urban tributaries and lakes near Kirkland and Bothell. Juanita Creek and other urban streams have experienced regularly occurring erosion and high streamflow events, driven by intense rain events and runoff. Structural impacts were noted as minimal, but development in areas near urban streams was described as driving these high runoff and high streamflow events. This discussion brought questions of how to address flood risks in areas that are not in a FEMA special flood hazard area.

Issues in the Snoqualmie Valley that were identified related to small stream flooding caused by backups from high streamflow in the South Fork Snoqualmie River. Opportunities to setback levees and reconnect floodplains were discussed as ways to increased floodplain capacity.

Stormwater infrastructure and runoff were discussed as issues in numerous cities, including Kent, Kirkland, and Enumclaw. Increasing culvert capacity to improve fish passage was discussed as potentially increasing downstream flooding through higher conveyance volumes. The need for additional funding and capacity to implement stormwater retrofits was discussed. Runoff from upper watershed areas was also discussed as being impactful to lower watershed stormwater infrastructure and tributaries. Runoff from higher elevations in Kent was described as overwhelming stormwater infrastructure in the valley with sediment, which is already strained due to high groundwater.

Flood impacts from beavers was identified as an issue in Algona, Kirkland, Bothell, Kent, Seattle, and Enumclaw.

Urban flooding was discussed as inundating roads and affecting private property areas in Seattle, Kent, Bothell, Duvall, Carnation, Sammamish, and Des Moines. In Seattle, portions of the stormwater system are private, such as some culvert mainlines, which prevents the city from retrofitting inadequate systems. Flooding was noted as especially impactful in extensive flat areas, which cannot be easily altered with capital projects. Pollution impacts from urban flooding were described as a concern, especially in the South Park neighborhood. Property damage and sewer overflows from flooding were described on Lake Sammamish.

In response to questions about the role of the King County Flood Control District, Jason Wilkinson clarified that the Flood Control District does use the 2006 Flood Plan for guidance and King County is coordinating with them to develop the updated Flood Plan, but that it is a County-led effort and the Flood Control District will not necessarily adopt the updated Flood Plan. Other participants noted that they would hope the Flood Control District would adopt the updated Flood Plan, but also recognized that coordinating projects across incorporated areas presents challenges.

Initial Brainstorm: Potential Solutions

Spencer Easton encouraged participants to share initial ideas about solutions to the flood issues they had identified. The solutions discussed included:

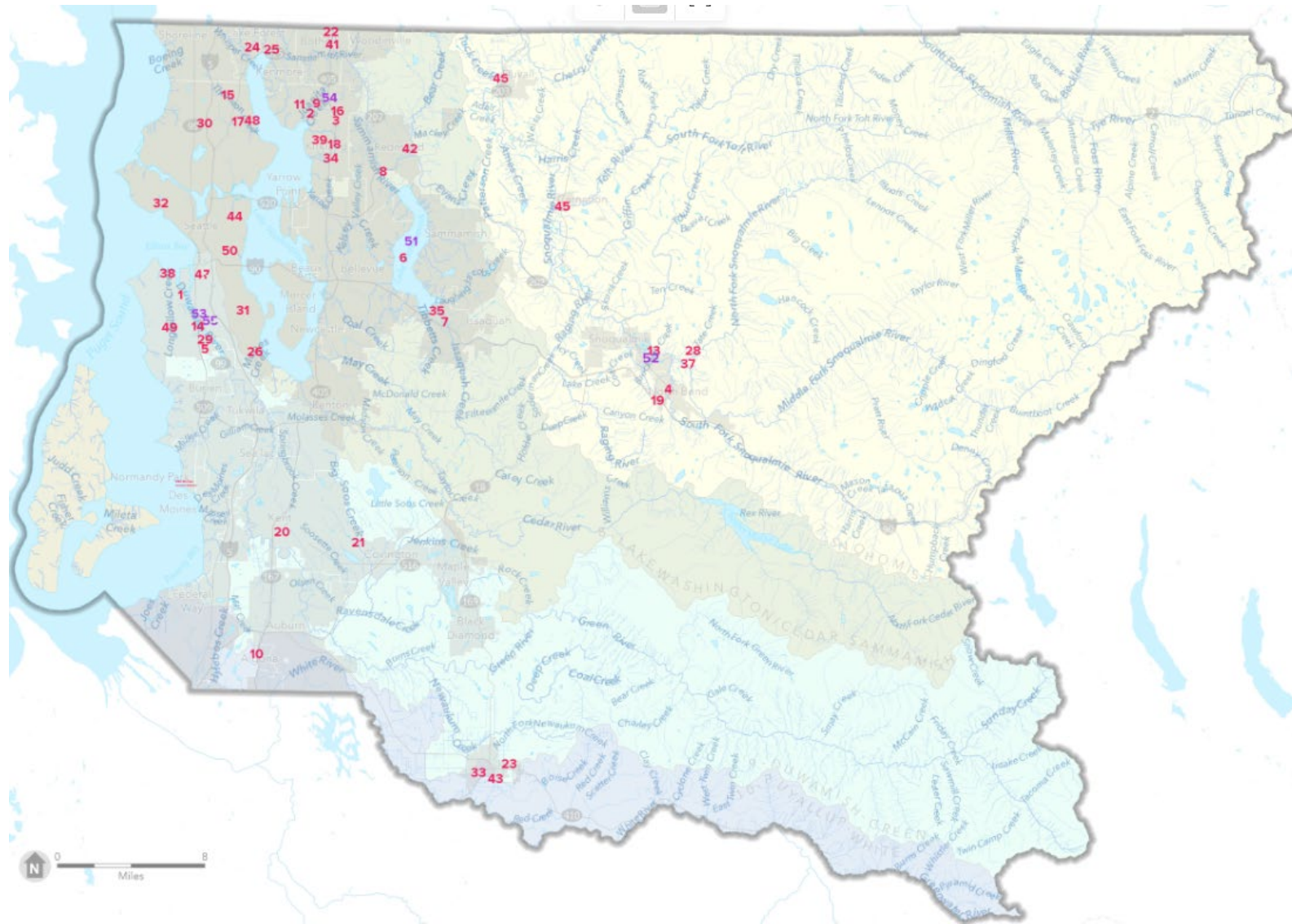
- Education, resources for homeowners, and improved outreach to the public to connect them with appropriate government services related to flood issues
- Nature-based solutions to increase resilience and floodwater storage capacity, such as swales along streets and incentives for low impact development
- Coordination across jurisdictions for improved basin-scale management, such as multiple cities adopting model stormwater management guidelines or planning cumulative allowable runoff into a drainage area
- Increased coordination between governments and community organizations to help community organizations pursue grants and implement small projects
- Improved beaver management strategies, such as temporary relocation for project implementation

Next Steps

Spencer Easton noted that there are upcoming workshops to discuss solutions for tributary, coastal, and urban flooding.

Mural Map Exercise and Solutions Brainstorm

Mapping exercise: Red numbers reflect observed flood issues and purple number reflect potential future flood issues.



King County Flood Management Plan
 Urban Flooding Workshop #2 – Agenda
 February 27, 2023 | 1:00 – 3:00 p.m.

1:00 – 1:10 **Welcome and Introductions**

1:10 – 1:20 **Purpose and Context**

- Flood Management Plan process, scope, schedule
- Purpose and approach to workshops
- Brief summary of Workshop #1

1:20 – 1:30 **Problem Areas**

- Opportunity to revisit/add to discussion of problem areas from Workshop #1

1:30 – 2:30 **Potential Solutions**

- Discuss pros and cons and considerations of various solutions brainstormed at Workshop #1
- Identify additional potential solutions

2:30 – 2:50 **Solutions Mapping Exercise**

2:50 – 3:00 **Wrap-up and Next Steps/Adjourn**

King County Flood Hazard Management Plan Update
 Urban Flooding Workshop #2 – Meeting Notes
 February 27, 2023 | 1:00 p.m. – 3:00 p.m.

List of attendees:

Adam Bettcher (City of Seattle), Angela Donaldson (resident), Danielle Butsick (Port of Seattle), Janet Geer (City of Bothell), Jenny Gaus (City of Kirkland), Laurie Lyford (Washington Sensible Shorelines Association), Leslie Webster (Seattle Public Utilities), Martha Neuman (Seattle Public Utilities), Mike Mactutis (City of Kent), Nicole Smith (King County), Patrick Haluptzok (resident), Russ Avery (City of Algona), Sherry Edquid (City of Tukwila), T.J. McDonald (City of Seattle), Toby Coenen (City of Sammamish), Troy Linnell (City of Algona), Dan Beckley (ESA), Spencer Easton (ESA), Jason Wilkinson (King County)

Introductions

Spencer Easton began the workshop with an overview of the agenda. Spencer gave a brief tutorial on using the Mural software that would be used for engagement during the workshop. The Mural is available at:

<https://app.mural.co/t/esassoc5274/m/esassoc5274/1674845179680/48aafa97c1c5e4608a4a4f6d60f6f18179a9850a?sender=u03b40326661c27e60b4b3436>

Purpose and Context

Jason Wilkinson provided an overview of the role of the flood plan and the schedule for updating the flood plan. Jason noted that engagement efforts would continue through 2023 and the public would have an opportunity to comment on the draft flood plan and draft Environmental Impact Statement in late 2023.

Problem Areas

Spencer Easton provided a summary of Urban Flooding Workshop #1, identifying flood topics that were discussed in the workshop, which included:

- Urban tributaries overtopping their banks, especially due to high levels of stormwater runoff
- Large sediment loads overwhelming small streams and stormwater infrastructure
- Inadequate capacity of stormwater infrastructure, combined sewer overflows, and culverts
- Flooding from beaver activity
- Lack of natural drainage or floodwater storage capacity in urban areas
- Inundation of roads and related transportation impacts
- Concerns about worsening impacts from higher volume precipitation and flooding in the future

Based on input on potential solutions brainstormed by participants in the first workshop, Spencer outlined seven categories of solutions, with example solutions. The categories were:

- Infrastructure and stormwater management
- Restoration, reconnection, and multiple benefit projects
- Beaver management
- Acquisition
- Regulations and incentives
- Maps, modeling, and planning
- Programmatic actions

Participants suggested separating multiple benefit projects into their own category. The framing of solutions in the Mural was updated to reflect this.

Spencer Easton prompted participants to review flood issues in the Mural that were identified in the first urban flooding workshop, asking if there were any other flood issues that had not been listed. Participants discussed a disconnect between FEMA flood programs and urban flooding issues, with urban flood areas often outside of FEMA-mapped floodplains and difficulties getting mitigation or recovery funding for urban floods. There was also discussion of sheet flow flooding in the Snoqualmie Valley, including in commercial areas upstream of the confluence of the South Fork and Middle Fork Snoqualmie and residential neighborhoods near downtown North Bend.

Potential Solutions

Spencer Easton prompted participants to input their ideas for potential solutions under the appropriate categories in Mural, as well as input on considerations, pros, and cons for solutions.

Discussion of infrastructure and stormwater management solutions included:

- Modelling to show increased frequency of flash flooding and sheet flow in urban areas
- Providing technical assistance and funding for updating infrastructure
- Encourage WSDOT to make more stormwater management improvements in urban areas
- Using a dynamic weir to actively manage Lake Sammamish water levels
- Concerns about permitting complexity, meeting regulatory requirements, cost, and upkeep requirements of expanded stormwater infrastructure
- Issues with the lack of flow control on stormwater infrastructure

Discussion of regulation and incentive solutions included:

- Information for homeowners about permitting requirements related to home resilience upgrades, and funding and technical assistance to support such work
- Relaxing regulatory standards for flood resilience upgrades to structures
- A program like CPACER that funds home improvements, where payment obligations follow the property, which would require state legislative or regulatory action
- Challenges to making retrofits in highly developed urban areas, such as Seattle

Discussion of acquisition solutions included:

- Preferences for seeing stormwater retrofits and resilience improvements over buyouts in areas that are not ecologically significant
- Cost challenges to buyouts in urban areas and other locations with expensive real estate
- Financial challenges and equity issues related to relocation after buyouts of low-income homes
- Concern about the use of condemnation of flood-prone properties and having standards in place to determine when condemnation of properties is acceptable

Discussion of restoration solutions included:

- Loss of space for restoration in urban areas due to increasing density in urban growth areas
- Benefits of using green infrastructure and corridor approaches to reduce flooding and risks
- Issues with restoration of urban areas requiring use of limited, expensive real estate
- Lack of funding for urban restoration and its high upfront costs, even though there are long-term benefits

Discussion of programmatic action solutions included:

- Outreach to lower watershed areas during permitting of development upstream
- Regional and cross-agency coordination for local emergency response
- Emergency response training and educational materials

- Engage communities about their needs with culturally-appropriate outreach

Other solution considerations and discussion topics included:

- Success with using a variety of funding sources for restoration and multiple benefit projects
- Need for better modelling of pluvial flooding
- Encourage beaver management in headwater areas
- Utilize Army Corps of Engineers design guidelines for multiple benefit projects

Solutions Mapping Exercise

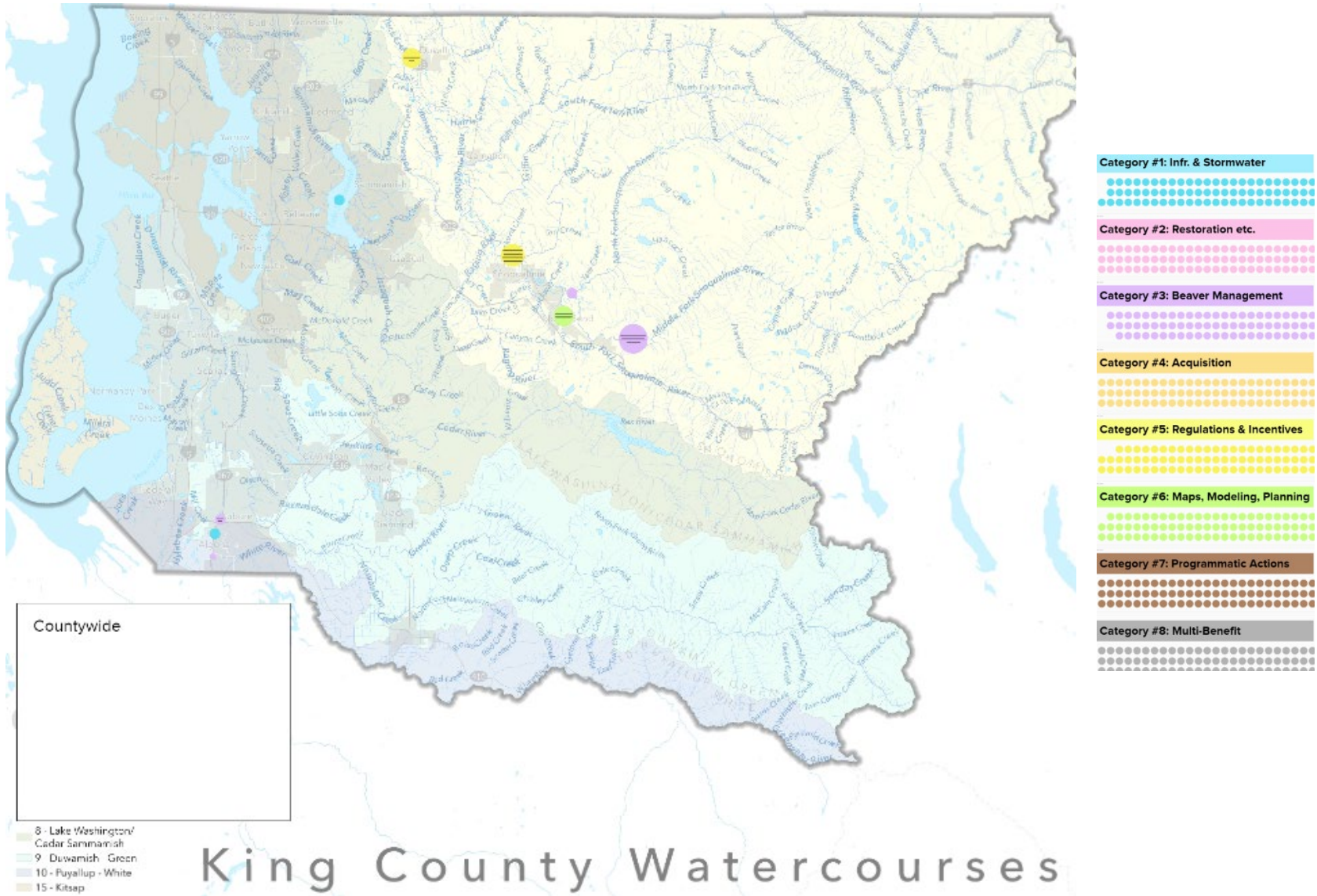
Spencer Easton prompted participants to mark locations on a King County map in Mural, showing where they think different types of solutions may help to address flood issues. An image of the map is below.

Next steps

Spencer Easton detailed how input from the topic-specific workshops would inform the description of flood impacts and the development of recommendations in the flood plan. The draft flood plan will be available for review and public comment in late 2023.

Mural Input

Participants marked locations on this map of King County with dots corresponding to the color of the solution type they suggested.



King County Flood Management Plan – Email Distributions to Flood Plan Distribution List (CRS Step 2.d.)

Kick-off meeting reflections + welcoming our Partner Planning Committee

King County, Washington sent this bulletin at 10/24/2022 05:50 PM PDT



Kick-off meeting recap

If you joined us earlier this month to kick-off the flood plan, thank you! We held two online meetings on October 4 and 6. With the help of guest speakers we shared information about flooding in King County and about the development of the next flood plan. More than 80 people participated across the two meetings. Meeting attendees shared how flooding affects them and ideas to help prepare for flooding or reduce flood risks. We gathered a lot of valuable feedback to shape the focus of the flood plan. Our staff is following up with folks who shared specific questions or comments in the meeting chat. Here is some of the collective feedback we heard:

- Interest in planning for climate change.
- Interest in Integrated Floodplain Management (IFM). Carol Macilroy, Carol Macilroy Consulting, and Brandon Parsons, American Rivers, introduced IFM in their presentations. IFM is a collaborative model designed to deliver more funding, more partners, more support, better results, and be a more efficient way to reduce flood risks.
- Need for solutions to stormwater, small stream, lakeshore, and coastal flooding.

- Interest in having flood risk reduction projects do more! Such as protecting and restoring habitat for fish and wildlife, supporting local agriculture, and improving water quality in streams, lakes, and Puget Sound.



Recordings from both meetings are available on the [King County Flood Management Plan](#) webpage. We invite you to watch and if you have feedback, please share it with Jason Wilkinson at Jason.Wilkinson@kingcounty.gov.

Couldn't make it to the kick-off meetings? King County is interested in coming to you. We welcome your suggestions for community events that we can attend to hear from you about flooding. Please contact Chrys Bertolotto at 206-263-2677 or cbertolotto@kingcounty.gov to discuss options.

Partner Planning Committee

We shared a broad invitation in September and October for people to join the Partner Planning Committee. This Committee is one important avenue for gathering public input on the flood plan, and will help inform the recommendations in the plan. We're grateful for our partners' time and interest in participating on it.

King County will hold the first Committee meeting this week on Wednesday, Oct. 26, 2022, from 11 a.m. to 1 p.m. Committee meetings are open to the public. If you are interested in attending, please contact Spencer Easton at seaston@esassoc.com for the virtual meeting information. The agenda is posted on the [Partner Planning Committee](#) webpage. Future Committee meeting dates will be posted when they are scheduled.

2023 events, workshops + our roadmap for community engagement

King County, Washington sent this bulletin at 11/28/2022 01:05 PM PST



Got events? Please tell us! What community events should we attend in 2023?

We're interested in coming to your community to raise awareness about flooding and listen to your ideas on what's important to include in the flood plan. Do you have suggestions on community events or meetings that we should attend? Do you have ideas for potential groups that we could partner with?

Your suggestions will make a difference. Please contact Chrys Bertolotto, Flood Plan Community Engagement Coordinator, at cbertolotto@kingcounty.gov or 206-263-2677 with your ideas.

Our roadmap for community engagement

Before kicking off the flood plan this fall, we conducted research, launched an online survey, and worked with a consultant to lead community interviews to learn how we can improve our approach to gathering public input. Thanks to the valuable insights people shared, we've created a [Community Engagement Implementation Plan](#). This will be our roadmap for providing better community engagement opportunities as we develop the flood plan together. The implementation plan is available on the [flood plan webpage](#).

Flood hazard workshops in 2023

King County's past flood plans focused on addressing mainstem river flooding. Our updated plan will also explore urban, coastal, and tributary flooding. We welcome your attendance at workshops covering these topics in early 2023. We'll have two virtual workshops on each topic. At the workshops we'll discuss the hazards and associated problems and identify potential risk reduction

approaches. King County staff and our consultant team will lead the workshops. Learn more details and how to register on the [flood plan webpage](#).

Reminder: Comment period on scope of EIS closes Dec. 9

An important part of our process to update the Flood Management Plan is to prepare an [environmental impact statement](#) (EIS). An EIS is a document that describes proposed actions and how they would affect the environment and people. Through the EIS process, King County will identify and analyze potential impacts of the flood plan on threatened or endangered species, water quality, historical and cultural resources, transportation, and more.

We're holding a 30-day comment period to collect input on the scope of the EIS. The comment period began Monday, Nov. 7 and ends Friday, Dec. 9, at 5 p.m. The draft EIS scope may be revised based on input received during the comment period.

To learn more about the flood plan's EIS scope and how to submit comments, please visit the [flood plan webpage](#). You can also learn more about the EIS in our [news release](#).



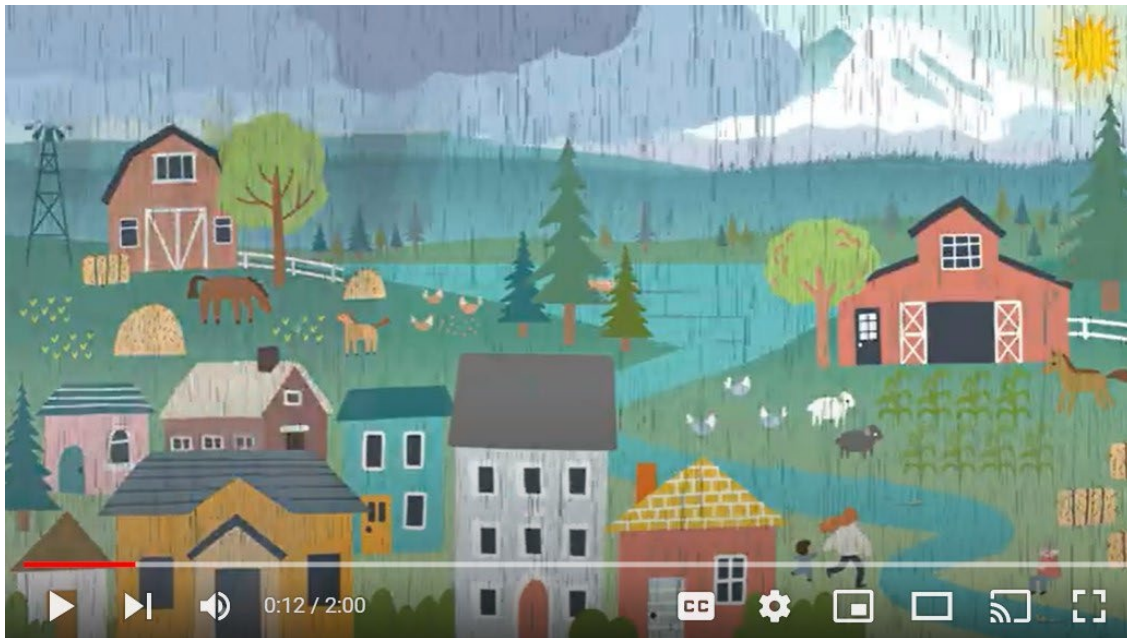
New flood plan video, workshop reminders, and a thank you!

King County, Washington sent this bulletin at 12/16/2022 10:35 AM PST



Watch and share our video about the flood plan!

To get more people involved in creating the flood plan, we developed a video to explain what the King County Flood Management Plan is and why it matters. Please [watch and share the video](#) with your friends and networks. We'll share versions of this video in additional languages in 2023.



Reminder: Join us for workshops on flood hazards in early 2023

King County's past flood plans focused on addressing mainstem river flooding. Our updated plan will also explore urban, coastal, and tributary flooding. We welcome your attendance at workshops on these topics in January and February. At the workshops we'll discuss the hazards and associated problems and identify potential solutions.

Check out the workshop dates and times and how to register on the [flood plan webpage](#).

Learn about the Partner Planning Committee

The flood plan's Partner Planning Committee includes the Snoqualmie Indian Tribe, King County residents, and representatives from state and local governments and community-based organizations. Partners provide critical input on:

- The plan's goals and objectives.
- The problems caused by flooding in King County.
- Key topics such as equity and climate change.
- Ways to achieve other community benefits while addressing flood hazards.

Committee meetings are held approximately monthly and are open to anyone who would like to attend! You can see the meeting schedule and what's on the agenda on the [Partner Planning Committee](#) webpage. If you'd like to join a committee meeting, please contact Spencer Easton at seaston@esassoc.com for the virtual meeting information.

Comment period on EIS scope is now closed

If you submitted comments on the scope of the flood plan [environmental impact statement](#) (EIS), thank you! The comment period began Monday, Nov. 7 and ended Friday, Dec. 9, at 5 p.m.

An EIS is a document that describes proposed actions and how they would affect the environment and people. Through the EIS process, King County will identify and analyze potential impacts of the flood plan on threatened or endangered species, water quality, historical and cultural resources, transportation, and more.

We appreciate commenters' time and input on the EIS scope. We will review all comments received. Once the scope of the EIS is determined, we will begin developing the Draft EIS. We will post a scoping summary on the webpage when available.

To learn more about the flood plan EIS, please visit the [flood plan webpage](#).

Flood plan engagement hub launch, workshop updates & an upcoming event

King County, Washington sent this bulletin at 02/21/2023 10:10 AM PST



New, easy way to get involved with the flood plan

This month we launched the [2024 King County Flood Management Plan engagement hub](#). This resource shares information about:

- Flooding in King County and actions people can take to get prepared.
- Background and milestones for the flood plan and our roadmap for community engagement.
- Feedback we've heard from community members so far.
- Events and meetings where we'll be gathering input to inform the flood plan.

The hub also includes a survey where we ask about experiences with flooding, community priorities, and what is needed to build flood resilience. **Please visit the [survey](#) and share your ideas!**

The survey will be open until June 30, 2023. Another survey will be available after that date to gather input on specific strategies and priorities that have emerged.

The site and survey are available in nine languages (Spanish, Traditional Chinese, Korean, Russian, Somali, Vietnamese, Mandinka, French, and Swahili). Check out the engagement hub and share it with your friends and networks: publicinput.com/FloodPlan.English.

If you have feedback on the engagement hub, contact Jason Wilkinson, Project Manager, at 206-477-4786 or Jason.Wilkinson@kingcounty.gov.



Update on coastal, tributary, and urban flood hazard workshops

In January and February King County hosted public meetings to explore sources of flooding beyond mainstem river flooding. Participants shared their knowledge of problem areas and ideas for potential solutions that will be considered in the flood plan. Some of the problem areas included:

- Compound flooding where high tides and storm surge combine with freshwater to cause flooding. This is what South Park and Vashon Island community members experienced in late December.
- The significant impact flooding has on communities, including on people's mental health and challenges to public health.
- An acknowledgment that flooding conditions are changing, resulting in more flood impacts or flooding in unexpected areas.

Workshop participants contributed many ideas for potential solutions, such as:

- Retrofit stormwater systems to manage larger volumes of water and consider opportunities for infiltration.
- When considering property acquisition and home elevation as tools to reduce risk, ensure the programs promote equity and

social justice goals and reflect the needs of renters. Expand access to these tools to areas affected by coastal flooding.

- Build capacity within communities. Provide technical help so that residents can better prepare and recover from flooding.
- Develop approaches that support ecological functions, fish habitat, and agricultural land uses, while reducing flood risks.

Thanks to everyone that participated in these meetings. There's one workshop left in the series! The last meeting on urban flooding will take place Monday, Feb. 27 from 1-3 p.m. If you're interested in attending, please contact Spencer Easton at seaston@esaassoc.com for the virtual meeting information. More information about the flood hazard workshops is available on the [flood plan webpage](#).

Catch us at the Washington State Coalition for African Community Leaders' Summit

We're thrilled to have a table where we'll share information about flooding and gather input on priorities for the flood plan at the [Washington State Coalition for African Community Leaders](#) (WSCACL) 5th Annual Leadership Summit on Saturday, Feb. 25 from 11 a.m. – 3 p.m. at the Bellevue Botanical Garden.

This year's Summit will cover topics related to leadership development, marketing to gain influence and attract funders, the power of unity, how to win and manage grants, recruit and retain volunteer talent, and youth issues. Visit the [WSCACL website](#) for more information and to register.

Flood plan team members, what we've heard, and more

King County, Washington sent this bulletin at 03/30/2023 04:45 PM PDT



Meet Samara and Dahira – interns working on the flood plan!

We are fortunate to have Dahira Abukar (she/her/hers) and Samara Pendley (she/her/hers) on our team to support a wide variety of flood plan community engagement activities. Over the next several months, they will join our team showing up in communities, sharing information about flooding in King County, and gathering input to inform the development of the flood plan. Get to know Dahira and Samara and why they are excited to work on building the next flood plan:



Hi! My name is Dahira Abukar. I'm from West Seattle, Washington and I'm currently in my second year at University of Washington studying Informatics with a focus in human interaction and information management. I enjoy cooking during my free time and trying out new recipes. Being a Seattle native, I always felt a strong desire to make an impact in my community, and I am looking forward to meeting everyone and making a difference together!

Hello, my name is Samara Pendley. I'm so glad to get started because I have a huge passion for the environment and environmental sciences. I am currently a dual enrollment student at South Seattle College majoring in Environmental Science, and I'll be majoring in the same subject next year at the University of Washington. Most of my time is spent doing environmental work such as restoration, outdoor education, studying for Envirothon (an environmental science competition) and being a Youth Ocean Advocate at the Seattle Aquarium. Other than that, I also love to thrift and listen to music in my free time. My favorite thrift store is red light vintage which is in the U District of Seattle and my favorite genre of music to listen to is Rock! Thanks for having me :)



Keep an eye out for Dahira and Samara at future community events and meetings! If you have suggestions for events for us to attend, contact Chrys Bertolotto, Flood Plan Community Engagement Coordinator, at 206-263-2677 or cbertolotto@kingcounty.gov.

What we learned at the Washington State Coalition for African Community Leaders' Summit

Last month we joined approximately 40 African community leaders and members for their fifth annual summit. We shared information about flooding

and the flood plan while also conducting a live poll. Check out [what we learned](#) from attendees at the event.

As we attend community events, we'll continue to share the feedback we've received by posting to the [what we've heard from you](#) section of the Engagement Hub.

Flood plan video now available in Spanish



We're excited to share the flood plan video in Spanish! We created this video to explain what the King County Flood Management Plan is and why it matters. The video is available on [YouTube](#).

Reminder: 2024 King County Flood Management Plan engagement hub has launched

In February we shared the [2024 King County Flood Management Plan engagement hub](#). This online resource includes information about:

- Flooding in King County and actions people can take to get prepared.
- Background and milestones for the flood plan and our roadmap for community engagement.
- Feedback we've heard from community members so far.
- Events and meetings where we'll be gathering input to inform the flood plan.

The hub also includes [a survey](#) that asks about experiences with flooding, community priorities, and what is needed to build flood resilience. The survey will be open until June 30, 2023. Another survey will be available after that date to gather input on specific strategies and priorities. Please visit the

engagement hub and share it with your friends and networks: publicinput.com/FloodPlan.English.

If you have feedback on the engagement hub, contact Jason Wilkinson, Project Manager, at 206-477-4786 or Jason.Wilkinson@kingcounty.gov.

More flood plan events, our first community partner, and an EIS update

King County, Washington sent this bulletin at 05/23/2023 04:50 PM PDT



Thank you to our Partner Planning Committee

Public input is critical to shaping the next King County Flood Management Plan. Our Partner Planning Committee is a dedicated group of people who have worked to help shape flood plan goals and objectives and guiding principles. The committee includes community members; floodplain residents; staff from tribal governments, local jurisdictions, and state agencies; non-profit organizations and interest groups; and King County staff. The committee has been meeting since October 2022. Members have also helped identify flood hazards and risks that the flood plan should address, as well as potential policies and strategies that the plan should consider. To those who have been participating in committee meetings, thank you! Your participation is crucial to this effort.

All Partner Planning Committee meetings are open to the public and held virtually. To learn more about the committee and how to attend an upcoming meeting, visit the [Partner Planning Committee webpage](#).

Save the date: June flood plan workshops!

King County will host two workshops next month to share progress on the flood plan. We look forward to talking with community members and hearing what is important to you as the plan moves forward. We'll share information on how to register soon. In the meantime, please save these dates and join us next month!

- Wednesday, June 14, 6:30-8 p.m. at the Tukwila Community Center
- Tuesday, June 27, 6:30-8 p.m. will be a virtual meeting

More upcoming events

We're attending community events to talk with people about flood risks and the King County Flood Management Plan. Check out our [meetings and events](#) page to see all upcoming events we'll be attending.

- Saturday, June 10 – Indigenous People Festival
- Monday, June 12 – Green River Coalition meeting

If you have suggestions for events for us to attend, contact Chrys Bertolotto, Flood Plan Community Engagement Coordinator, at 206-263-2677 or cbertolotto@kingcounty.gov.



Community partner highlight: Washington State Coalition of African Community Leaders

The African diaspora is the worldwide collection of communities descended from native Africans or people from Africa, predominantly in the Americas. Washington State Coalition of African Community Leaders (WSCACL) is the only African diaspora-led nonprofit in Washington state, serving 140 community leaders from nonprofits and businesses. They serve 100,000 native Africans or people descended from Africans living within

Washington.

As a community partner on the flood plan, WSCACL leaders are working with their networks to raise awareness about flooding. Leaders are sharing videos in multiple languages about flood risks and flood preparedness resources. They are also using surveys to capture their communities' ideas that will shape the next flood plan. We are grateful for the opportunity to

learn from and co-create with WSCACL on this project. Learn more about Washington State Coalition of African Community Leaders at wscacl.org.

Image caption: WSCACL leaders attend a workshop with King County staff on the flood plan and local flood hazards.

Environmental Impact Statement Scoping Summary now available

As part of the process to update the flood plan, King County will prepare an [environmental impact statement](#) (EIS). An EIS is a document that describes how proposed actions could affect the environment and people. Through the EIS process, King County will identify and analyze potential impacts of the flood plan on threatened or endangered species, water quality, historical and cultural resources, transportation, and more.

In November and December 2022, we held a public comment period to gather feedback on the scope of the EIS. We greatly appreciate all the comments that were provided, and those comments will be used to inform the evaluation in the draft EIS, which is expected to be released for public comment later this year. A final scoping summary that describes the types of comments received during the scoping period has been posted on the [project webpage](#).

If you have questions about the EIS, contact Jason Wilkinson, Project Manager, at 206-477-4786 or Jason.wilkinson@kingcounty.gov.



The Greenwater River is pictured where it joins the White River.

Join us this month for a Flood Planning Community Workshop

King County, Washington sent this bulletin at 06/02/2023 11:35 AM PDT



We're hosting two workshops for community members to join the conversation on flooding and help shape how King County manages future flood risks. Register today and join us on either:

- [Wednesday, June 14](#) from 6:30 to 8 p.m. at the Tukwila Community Center, 12424 42nd Ave. S. Tukwila, or
- [Tuesday, June 27](#) from 6:30 to 8 p.m. for an online meeting

At both interactive workshops you'll have the opportunity to learn about local flood risks and free or low-cost resources for family and community preparedness. You'll be able to share ideas to shape how the county manages flood risks for people, homes, and businesses in unincorporated areas. King County will also provide an update on progress being made to develop the next [King County Flood Management Plan](#).

Both workshops will offer interpretation in Spanish and Somali. Additional interpretation and translation services are available at no cost to you. To request other language interpretation or accommodations for people with disabilities, select those options when you register or call Chrys Bertolotto at 206-263-2677, (TTY) Relay: 711, at least five days before the meeting you want to attend.

More ways to shape the next flood plan

Can't join us in June? We are still interested in hearing from you. Share your flooding concerns and ideas for what services would help community members be more resilient to flooding in our [online survey](#), or join us at an [upcoming community event](#) near you.

If you have questions about the flood plan or how to get involved, contact Chrys Bertolotto, Flood Plan Engagement Coordinator, at cbertolotto@kingcounty.gov or 206-263-2677.



A Flood Planning Workshop and working together for regional solutions

King County, Washington sent this bulletin at 06/21/2023 03:20 PM PDT



Reminder: You're invited to a Flood Planning Virtual Community Workshop!

Join us to learn about local flood risks and free or low-cost resources for flood preparedness. You'll also be able to share your ideas to shape how the county manages flood risks. We look forward to talking with community members and hearing what is important to you as the flood plan moves forward.

Learn more and register to attend on [Tuesday, June 27](#) from 6:30 to 8 p.m. for an online meeting.

The workshop will offer interpretation in Spanish and Somali. Interpretation and translation services are available at no cost to you. To request additional language interpretation or accommodations for people with disabilities, select those options when you register or call Chrys Bertolotto at 206-263-2677, (TTY) Relay: 711, by June 22.

Visit us at these upcoming community events

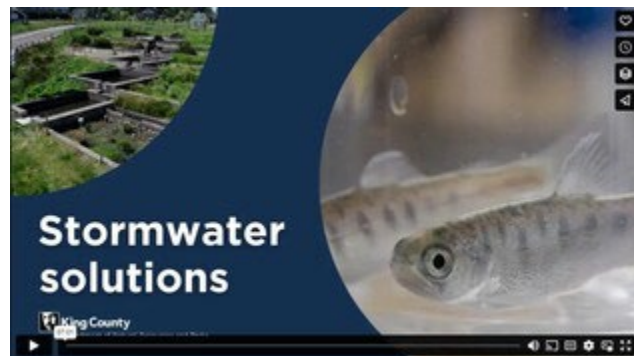
Summer is here and we're attending community events to talk with people about flood risks and the King County Flood Management Plan. Check out our [meetings and events](#) page to see all the upcoming events we'll be attending.

- Friday, July 14 - King County Fair in Enumclaw
- Saturday, July 15 - Pacific Days in Pacific
- Saturday, Aug. 5 - Duwamish River Festival in Seattle
- Saturday, Sept. 23 – Maple Valley Health and Safety Fair in Maple Valley

If you have suggestions for events for us to attend, contact Chrys Bertolotto, Flood Plan Community Engagement Coordinator, at 206-263-2677 or cbertolotto@kingcounty.gov.

Watch a video on regional solutions to reduce stormwater pollution

Stormwater pollution is a big problem caused by runoff that pushes toxics like motor oil, metals, pesticides, fertilizer, and pet waste into rivers, lakes, and Puget Sound. Our stormwater infrastructure – and our floodplains – play an important role in helping manage runoff and capturing and filtering rainwater. Watch a [video](#) to learn more about stormwater solutions.



Floodplain restoration projects can help improve water quality and habitat for fish and wildlife. Through the flood plan we can also identify and provide more

opportunities for stormwater to be able to soak into the ground. Together, we can create solutions that will benefit people, fish, and orca.

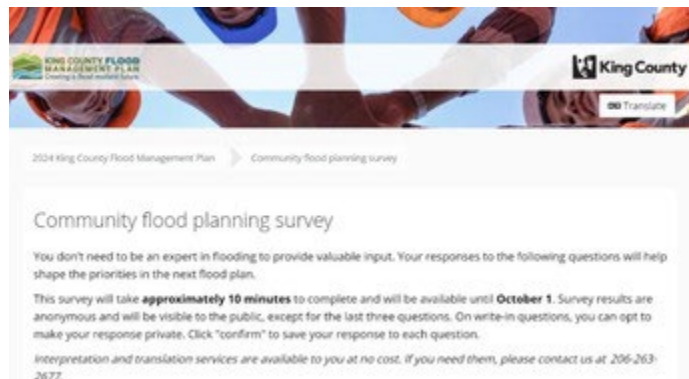
What are your top priorities for the next flood plan?

King County, Washington sent this bulletin at 08/25/2023 03:20 PM PDT



Take a new Community Flood Planning Survey today

To shape the next flood plan, we asked community members this spring and summer about their flooding problems and what services would help them. Now, we're seeking input on top priorities for the next flood plan.



Your voice makes a difference –take a [new survey](#) today. Share what actions you would focus on to help your community reduce flood risks or improve flood preparedness. You can also submit photos of locations where you think specific actions should take place.

The survey should only take 10 minutes to complete and will be available until Oct. 1, 2023. Feel free to share the survey and encourage your friends, family, and neighbors to take it. If you have questions about the survey or flood plan, contact Jason Wilkinson, Project Manager, by [email](#) or 206-477-4786.

FLOODING HAPPENS. LET'S PLAN FOR THE FUTURE, TOGETHER.

KING COUNTY FLOOD MANAGEMENT PLAN
Creating a flood-resilient future.

- ✓ Flooding is the most common natural disaster in King County. It's likely to get worse with climate change.
- ✓ The King County Flood Plan includes policies and programs that affect our communities.
- ✓ The Flood Plan is being updated. Your ideas and suggestions can make a difference!

Get involved. Take the Flood Plan survey today.
publicinput.com/floodplansurvey

Scan to learn more.

King County

Look for the flood plan at a Metro station, bus or light rail car near you

To help people learn about the latest flood plan survey, we're teaming up with King County Metro. Look for advertisements promoting the survey in the Renton, Bellevue and Issaquah bus stations, and inside buses in south and east King County or on light rail cars.

Why are we working with Metro? Bus advertising allows us to bring the flood plan survey to areas of King County

with priority communities for flooding. Our goal is to capture riders' attention while they wait or travel to their destination and increase online survey responses. The advertisements will appear in English and Spanish and run through September.

Join us at these last few community events!

It's been a busy summer attending community events talking with people about flood risks and the flood plan. Join us at these last events of the season as we gather community input with live polls. Check our [meetings and events](#) page for more information.

- Saturday, Aug. 26 – Holder Creek Interpretative Hike – Taylor Mountain
- Sunday, Sept. 17 – Sea Mar Fiestas Patrias at Seattle Center
- Saturday, Sept. 30 – Maple Valley Health and Safety Fair

If you have questions about upcoming events or how to share your comments, contact Chrys Bertolotto, Flood Plan Community Engagement Coordinator, by [email](#) or 206-263-2677.

Flood plan updates and community event photos

King County, Washington sent this bulletin at 09/15/2023 11:50 AM PDT



Flood plan community engagement update

As we transition to fall, we're appreciative of all the community events that we've been able to attend so far this year. We had one-on-one conversations with over 900 people at festivals, field trips, and events. We also connected with another 250 people at community meetings. Through these opportunities we gathered valuable input on flooding concerns and how to reduce local flood risks and help residents prepare for flooding.

Thank you to all the organizations and community leaders who hosted us at these events! Take a look at some of the events we attended.



Pacific Days, July 2023



Skykomish Open Air Market, August 2023



King County Fair, July 2023

There are two events left on our calendar! Check our [meetings and events](#) page for details on how to join us.

- Sunday, Sept. 17 – Sea Mar Fiestas Patrias at Seattle Center
- Saturday, Sept. 30 – Maple Valley Health and Safety Fair at the Maple Valley Farmers Market

If you have questions about upcoming events or how to share your comments, contact Chrys Bertolotto, Flood Plan Community Engagement Coordinator, by [email](#) or 206-263-2677.

Thank you to our flood plan interns, Dahira and Samara!

It takes a team to develop the next King County Flood Management Plan, and we're grateful to Dahira Abukar and Samara Pendley, who recently completed internships with our team. Both contributed to community outreach efforts. With their involvement, we were able to expand the ways we connect with people about the flood plan. A few of their accomplishments that we'd like to acknowledge:

- Samara explored opportunities to connect with youth and Black, Indigenous, and People of Color communities. Her work led to the flood plan being shared in Runta News (check out the [article!](#)), which serves the Somali community in King County, as well as displays on Metro buses, light rail cars, and stations.
- Dahira helped plan our June 2023 Community Flood Planning workshop. She also analyzed survey results and started a pictorial representation of community feedback. This visualization will help incorporate community input into the draft flood plan.



Dahira and Samara also shared information about the flood plan with hundreds of people at community events during their internships. We extend a big thanks for all their contributions! If you're interested in interning with King County, look for opportunities on the [Careers](#) webpage or on [King County Department of Natural Resources and Parks LinkedIn](#).

Reminder: Take our Community Flood Planning Survey

Your voice makes a difference! We're seeking input on top priorities for the next flood plan. **Take the [survey](#) today.** Share what actions would help reduce flood risks or improve flood preparedness in your community.

The survey should only take 10 minutes to complete and will be available until Oct. 15, 2023. If you have questions about the survey or flood plan, contact Jason Wilkinson, Project Manager, by [email](#) or 206-477-4786.

King County Flood Management Plan – Planning Process and Online Survey in the News⁴ (CRS Step 2.d.)

County flood plan update looks at flood challenges facing the Valley

King County is making the first update to its flood management plan in a decade

By [Conor Wilson](#) • April 28, 2023 11:30 am



Crews assess the damage to State Route 202 during the 2009 Snoqualmie River flood. Photo courtesy of King County Department of Natural Resources.

Anyone living in the Snoqualmie Valley in 2009 surely has a flood story.

Flows from the Snoqualmie River that January reached 60,000 cubic feet per second — 22,000 cubic feet over what’s required for a phase 4 flood

⁴ Story ran in *Snoqualmie Valley Record* on April 28, 2023: <https://www.valleyrecord.com/news/county-flood-plan-update-looks-at-flood-challenges-facing-the-valley/>

alert. Evacuation orders were issued, roads were closed or destroyed, and some residents were airlifted to safety by helicopter.

River system floods, like the 2009 event, have historically been a focus of King County's Flood Management Plan, a document that outlines how the county addresses and mitigates flood risks.

But as county officials prepare to update the flood plan for the first time in a decade, they are hoping to take a more holistic approach. This time around, they are putting a greater emphasis on climate change and less severe but increasingly frequent flood events.

King County's Flood Management Plan is a strategic vision that identifies where flooding happens and narrows in on policies or projects that can address the risks they cause, said Jason Wilkinson, a project manager with King County's Department of Natural Resources, who is leading the plan.

"It's a super important document because it's essentially how we plan to address flooding over the next ten years," Wilkinson said.

The flood plan is receiving its first update since 2013, and its first comprehensive update since 2006, Wilkinson said. County officials will create the plan, taking feedback from stakeholders and residents of at-risk communities. A draft plan is expected to come near the end of the year.

The new plan will make several key changes. Notably, it is the first flood plan to explicitly address the impacts of climate change on flooding. The county has partnered with groups like the University of Washington's Climate Impact Group to better understand what changes can be anticipated.

"We're gaining a much better understanding of the potential implications of climate change," Wilkinson said. "We have a real good opportunity before us to be able to take that updated information and apply it to the strategies that we use to address flooding."

Additionally, the plan will target flooding beyond river-caused events, something that had also been neglected in prior plans. Urban, coastal and small tributary flooding, known for being low in severity but high in frequency, are all expected to become more common in the future.

“What we have seen is an increase in the frequency of lower severity floods that affect our day- to- day lives,” said Angela Donaldson, a flood insurance agent in Fall City and member of a committee working on the flood plan. “It’s not enough to warrant property damage, but it is enough to impact the crops for the farmers to close roads and have [State Route] 203 topping over.”

Donaldson said the most significant flood- related change for the Valley over the last decade has been an increased risk of landslides. With warm, dry summers and wildfires becoming more common, there is increased soil erosion, making it easier for flood waters to cause landslides or pull down trees.

“Because we’ve had such long dry summers, our trees and our plants are less resilient when we do get flooding,” Donaldson said.

Farms and their crops have been hit particularly hard by climate change, said Lauren Silver, executive director of the Snoqualmie Valley Preservation Alliance and another committee member.

Silver said the flood plan’s focus on climate change is “very relevant to us in the Valley,” due to drier summers coupled with more frequent flooding events, making it more difficult for farmers to produce crops.

While farmers anticipate flooding, she said, they have more frequently faced floods late into the season, sometimes into the early summer. Last year, there was a predicted flood event in early June, Silver said.

“Farming in a floodplain, you’re going to have floods during the flood season. And actually it really produces a great environment for agricultural production,” she said. “But over time, in the last couple of decades, we’ve been seeing more frequent and much more severe flooding events.”

Silver said the Snoqualmie Valley Preservation Alliance would like to see the new flood plan better focus on strategies specific to mitigate tributary flooding in the Valley as well as differentiate management strategies for rural areas vs. urban ones, making it easier for farmers to implement small mitigation projects. She also hopes the county will evaluate water storage strategies as the demand for water increases.

“It’s nice to be at every one of these meetings and bringing issues and challenges to decision makers,” she said. “Hopefully it will lead to the

prioritization and allocation of funding and support to implement actions that will alleviate these issues in the future.”

Check it out:

Through June, King County is running an online survey for residents to share their ideas on flood resiliency. The survey is one step in the development of the Flood Management Plan. Take the survey at bit.ly/3LvzDQC.

Appendix H

King County Repetitive Loss Area Analysis



King County

REPETITIVE LOSS AREA ANALYSIS

External Version
July 26, 2022



King County, Washington

REPETITIVE LOSS AREA ANALYSIS

External Version
July 26, 2022



King County

King County Department of Natural Resources and Parks
Water and Land Resources Division

River and Floodplain Management Section

King Street Center, KSC-NR-0600
201 South Jackson Street, Suite 600
Seattle, WA 98104-3855
206-477-4812
TTY Relay: 711

Alternate Formats Available

206-477-4812 TTY Relay: 711



OSG | O'Neill Service Group



Table of Contents

PART 1 – PLANNING PROCESS

INTRODUCTION.....	2
REPETITIVE LOSS PROPERTIES IN KING COUNTY.....	3
CRS REPETITIVE LOSS REQUIREMENT	4
SETTING.....	5
IDENTIFYING REPETITIVE LOSS AREAS.....	7
REPETITIVE LOSS AREA ANALYSIS PLANNING PROCESS	10
REPETITIVE LOSS AREA ANALYSIS APPROVAL.....	10

PART 2 – FIVE STEP PROCESS

STEP 1. ADVISE ALL PROPERTY OWNERS.....	12
PROPERTY OWNER NOTIFICATION	12
SURVEY RESULTS.....	12
STEP 2. CONTACT AGENCIES AND ORGANIZATIONS	20
STEP 3. BUILDING DATA COLLECTION	23
STEP 4. REVIEW ALTERNATIVE MITIGATION APPROACHES.....	24
TYPES OF MITIGATION.....	24
LAND ACQUISITION AND STRUCTURE DEMOLITION.....	25
HOME ELEVATION	26
FUNDING	28
MITIGATION PLAN.....	28
STEP 5. DOCUMENT THE FINDINGS.....	30

PART 3 – REPETITIVE LOSS PROPERTY ANALYSIS

BASIN 1 – CEDAR RIVER.....	31
REPETITIVE LOSS AREA 1: ORCHARD GROVE (CDR 1)	34
REPETITIVE LOSS AREA 2: LOWER DORRE DON (CDR 2).....	40
REPETITIVE LOSS AREA 3: SE 218TH STREET (CDR 3).....	45
REPETITIVE LOSS AREA 4: ROYAL ARCH (CDR 4).....	49
REPETITIVE LOSS AREA 5: BYERS (CDR 5).....	52
BASIN 2 – SAMMAMISH RIVER BASIN.....	56
REPETITIVE LOSS AREA 1: ISSAQUAH-HOBART ROAD (SAM 1)	58
REPETITIVE LOSS AREA 2: MAY VALLEY (SAM 2)	60
REPETITIVE LOSS AREA 3: REDMOND (SAM 3).....	62
BASIN 3 – SOUTH FORK SKYKOMISH RIVER BASIN	64
REPETITIVE LOSS AREA 1: SKYLANDIA (SKY 1)	66
REPETITIVE LOSS AREA 2: INDEX CREEK (SKY 2)	69
REPETITIVE LOSS AREA 3: OLD CASCADE HIGHWAY (SKY 3).....	71



REPETITIVE LOSS AREA 4: TIMBERLANE VILLAGE (SKY 4)	75
BASIN 4 – SNOQUALMIE RIVER BASIN	78
REPETITIVE LOSS AREAS 1 AND 2: WILDERNESS RIM (SNOQ 1) AND 177TH STREET SE (SNOQ 2).....	81
REPETITIVE LOSS AREA 3: 147TH PLACE SE (SNOQ 3).....	85
REPETITIVE LOSS AREA 4: 136TH STREET SE (SNOQ 4).....	88
REPETITIVE LOSS AREA 5: 131ST STREET SE (SNOQ 5)	93
REPETITIVE LOSS AREA 6: CLOUGH CREEK (SNOQ 6)	98
REPETITIVE LOSS AREA 7: 413TH AVENUE SE (SNOQ 7)	103
REPETITIVE LOSS AREA 8: MOUNT SI (SNOQ 8)	110
REPETITIVE LOSS AREA 9: CIRCLE RIVER RANCH (SNOQ 9).....	114
REPETITIVE LOSS AREA 10: REINIG ROAD (SNOQ 10)	119
REPETITIVE LOSS AREA 11: KIMBALL CREEK (SNOQ 11)	122
REPETITIVE LOSS AREA 12: SNOQUALMIE FALLS (SNOQ 12)	132
REPETITIVE LOSS AREA 13: FALL CITY 1 (SNOQ 13).....	134
REPETITIVE LOSS AREAS 14, 15, AND 16: FALL CITY 2 (SNOQ 14), SNOQUALMIE RIVER (SNOQ 15), AND BLUE HERON (SNOQ 16).....	138
REPETITIVE LOSS AREA 17: FALL CITY CARNATION ROAD (SNOQ 17).....	146
REPETITIVE LOSS AREA 18: NORTH OF CARNATION (SNOQ 18).....	150
REPETITIVE LOSS AREA 19: CARNATION FARM (SNOQ 19)	156
REPETITIVE LOSS AREA 20: CARNATION RANCH (SNOQ 20).....	160
REPETITIVE LOSS AREA 21: CHERRY VALLEY (SNOQ 21)	162
REPETITIVE LOSS AREA 22: DUVAL (SNOQ 22).....	165
BASIN 5 – VASHON ISLAND	170
REPETITIVE LOSS AREA 1: DOLPHIN POINT (VI 1).....	172
REPETITIVE LOSS AREA 2: SHAWNEE (VI 2)	176
BASIN 6 – GREEN RIVER.....	180
REPETITIVE LOSS AREA 1: HORSESHOE LAKE (GRN 1).....	183
REPETITIVE LOSS AREA 2: 192ND AVENUE SE (GRN 2)	186
REPETITIVE LOSS AREA 3: GREEN VALLEY (GRN 3).....	188
REPETITIVE LOSS AREA 4: 440TH STREET (GRN 4).....	191
REPETITIVE LOSS AREA 5: NEWAUKUM CREEK (GRN 5)	193
 Exhibits	
EXHIBIT 1. REPETITIVE LOSS STATISTICS.	3
EXHIBIT 2. KING COUNTY MAP.	5
EXHIBIT 3. KING COUNTY WRIA BASIN MAP.....	6
EXHIBIT 4. REPETITIVE LOSS PROPERTIES PER BASIN.	7
EXHIBIT 5. KING COUNTY REPETITIVE LOSS AREAS.	9
EXHIBIT 6. PROPERTY OWNER NOTIFICATION LETTER (ENGLISH).....	13
EXHIBIT 7. PROPERTY OWNER NOTIFICATION LETTER (SPANISH).....	14
EXHIBIT 8. SURVEY RESULTS.	15
EXHIBIT 9. MOBILE FIELD SURVEY.....	23
EXHIBIT 10. CEDAR RIVER BASIN.	33
EXHIBIT 11. REPETITIVE LOSS AREA SUMMARY (CDR 1).....	34
EXHIBIT 12. REPETITIVE LOSS AREA DETAILED ANALYSIS (CDR 1).....	35
EXHIBIT 13. REPETITIVE LOSS AREA FIELD SURVEY DATA (CDR 1)	36
EXHIBIT 14. ORCHARD GROVE (CDR 1).....	37
EXHIBIT 15. REPETITIVE LOSS AREA SUMMARY (CDR 2).....	40
EXHIBIT 16. REPETITIVE LOSS AREA DETAILED ANALYSIS (CDR 2).....	40
EXHIBIT 17. REPETITIVE LOSS AREA FIELD SURVEY DATA (CDR 2)	41



EXHIBIT 18. LOWER DORRE DON (CDR 2)	42
EXHIBIT 19. REPETITIVE LOSS AREA SUMMARY (CDR 3).....	45
EXHIBIT 20. REPETITIVE LOSS AREA DETAILED ANALYSIS (CDR 3).....	45
EXHIBIT 21. REPETITIVE LOSS AREA FIELD SURVEY DATA (CDR 3)	45
EXHIBIT 22. SE 218TH STREET (CDR 3).....	46
EXHIBIT 23. REPETITIVE LOSS AREA SUMMARY (CDR 4).....	49
EXHIBIT 24. REPETITIVE LOSS AREA DETAILED ANALYSIS (CDR 4).....	49
EXHIBIT 25. REPETITIVE LOSS AREA FIELD SURVEY DATA (CDR 4)	49
EXHIBIT 26. ROYAL ARCH (CDR 4).....	50
EXHIBIT 27. REPETITIVE LOSS AREA SUMMARY (CDR 5).....	52
EXHIBIT 28. REPETITIVE LOSS AREA DETAILED ANALYSIS (CDR 5).....	52
EXHIBIT 29. REPETITIVE LOSS AREA FIELD SURVEY DATA (CDR 5)	52
EXHIBIT 30. BYERS (CDR 5).....	53
EXHIBIT 31. SAMMAMISH BASIN.....	57
EXHIBIT 32. REPETITIVE LOSS AREA SUMMARY (SAM 1).....	58
EXHIBIT 33. REPETITIVE LOSS AREA DETAILED ANALYSIS (SAM 1).....	58
EXHIBIT 34. REPETITIVE LOSS AREA FIELD SURVEY DATA (SAM 1).....	58
EXHIBIT 35. ISSAQUAH-HOBART ROAD (SAM 1).....	59
EXHIBIT 36. REPETITIVE LOSS AREA SUMMARY (SAM 2).....	60
EXHIBIT 37. REPETITIVE LOSS AREA DETAILED ANALYSIS (SAM 2).....	60
EXHIBIT 38. REPETITIVE LOSS AREA FIELD SURVEY DATA (SAM 2).....	60
EXHIBIT 39. MAY VALLEY (SAM 2).....	61
EXHIBIT 40. REPETITIVE LOSS AREA SUMMARY (SAM 3).....	62
EXHIBIT 41. REPETITIVE LOSS AREA DETAILED ANALYSIS (SAM 3).....	62
EXHIBIT 42. REPETITIVE LOSS AREA FIELD SURVEY DATA (SAM 3).....	62
EXHIBIT 43. REDMOND (SAM 3).....	63
EXHIBIT 44. SKYKOMISH RIVER BASIN.....	65
EXHIBIT 45. REPETITIVE LOSS AREA SUMMARY (SKY 1).....	66
EXHIBIT 46. REPETITIVE LOSS AREA DETAILED ANALYSIS (SKY 1).....	66
EXHIBIT 47. REPETITIVE LOSS AREA FIELD SURVEY DATA (SKY 1).....	66
EXHIBIT 48. SKYLANDIA (SKY 1).....	67
EXHIBIT 49. REPETITIVE LOSS AREA SUMMARY (SKY 2).....	69
EXHIBIT 50. REPETITIVE LOSS AREA DETAILED ANALYSIS (SKY 2).....	69
EXHIBIT 51. REPETITIVE LOSS AREA FIELD SURVEY DATA (SKY 2).....	69
EXHIBIT 52. INDEX CREEK (SKY 2).....	70
EXHIBIT 53. REPETITIVE LOSS AREA SUMMARY (SKY 3).....	71
EXHIBIT 54. REPETITIVE LOSS AREA DETAILED ANALYSIS (SKY 3).....	71
EXHIBIT 55. REPETITIVE LOSS AREA FIELD SURVEY DATA (SKY 3).....	72
EXHIBIT 56. OLD CASCADE HIGHWAY (SKY 3).....	73
EXHIBIT 57. REPETITIVE LOSS AREA SUMMARY (SKY 4).....	75
EXHIBIT 58. REPETITIVE LOSS AREA DETAILED ANALYSIS (SKY 4).....	75
EXHIBIT 59. REPETITIVE LOSS AREA FIELD SURVEY DATA (SKY 4).....	75
EXHIBIT 60. TIMBERLANE VILLAGE (SKY 4).....	76
EXHIBIT 61. SNOQUALMIE RIVER BASIN.....	80
EXHIBIT 62. REPETITIVE LOSS AREA SUMMARY (SNOQ 1 AND 2).....	81
EXHIBIT 63. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 1 AND 2).....	81
EXHIBIT 64. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 1).....	82
EXHIBIT 65. WILDERNESS RIM AND 177TH STREET SE (SNOQ 1 AND 2).....	83
EXHIBIT 66. REPETITIVE LOSS AREA SUMMARY (SNOQ 3).....	85
EXHIBIT 67. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 3).....	85
EXHIBIT 68. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 3).....	85
EXHIBIT 70. REPETITIVE LOSS AREA SUMMARY (SNOQ 4).....	88
EXHIBIT 71. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 4).....	88



EXHIBIT 72. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 4).89

EXHIBIT 73. 136TH STREET SE (SNOQ 4).90

EXHIBIT 74. REPETITIVE LOSS AREA SUMMARY (SNOQ 5).93

EXHIBIT 75. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 5).93

EXHIBIT 76. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 5).94

EXHIBIT 77. 131ST STREET SE (SNOQ 5).95

EXHIBIT 78. REPETITIVE LOSS AREA SUMMARY (SNOQ 6).98

EXHIBIT 79. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 6).98

EXHIBIT 80. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 6).99

EXHIBIT 81. CLOUGH CREEK (SNOQ 6).100

EXHIBIT 82. REPETITIVE LOSS AREA SUMMARY (SNOQ 7).103

EXHIBIT 83. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 7).104

EXHIBIT 84. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 7).105

EXHIBIT 85. 413TH AVENUE SE (SNOQ 7).106

EXHIBIT 86. REPETITIVE LOSS AREA SUMMARY (SNOQ 8).110

EXHIBIT 87. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 8).110

EXHIBIT 88. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNO 8).111

EXHIBIT 89. MOUNT SI (SNOQ 8).112

EXHIBIT 90. REPETITIVE LOSS AREA SUMMARY (SNOQ 9).114

EXHIBIT 91. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 9).114

EXHIBIT 92. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 9).115

EXHIBIT 93. CIRCLE RIVER RANCH (SNOQ 9).116

EXHIBIT 94. REPETITIVE LOSS AREA SUMMARY (SNOQ 10).119

EXHIBIT 95. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 10).119

EXHIBIT 96. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 10).119

EXHIBIT 97. REINIG ROAD (SNOQ 10).120

EXHIBIT 98. REPETITIVE LOSS AREA SUMMARY (SNOQ 11).122

EXHIBIT 99. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 11).123

EXHIBIT 100. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 11).126

EXHIBIT 101. KIMBALL CREEK (SNOQ 11).129

EXHIBIT 102. REPETITIVE LOSS AREA SUMMARY (SNOQ 12).132

EXHIBIT 103. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 12).132

EXHIBIT 104. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 12).132

EXHIBIT 105. SNOQUALMIE FALLS (SNOQ 12).133

EXHIBIT 106. REPETITIVE LOSS AREA SUMMARY (SNOQ 13).134

EXHIBIT 107. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 13).134

EXHIBIT 108. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 13).134

EXHIBIT 109. FALL CITY 1 (SNOQ 13).135

EXHIBIT 110. REPETITIVE LOSS AREA SUMMARY (SNOQ 14, 15, AND 16).138

EXHIBIT 111. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 14, 15, AND 16).138

EXHIBIT 112. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 14, 15, AND 16).139

EXHIBIT 113. FALL CITY 2 AND SNOQUALMIE RIVER (SNOQ 14 AND 15).140

EXHIBIT 114. BLUE HERON (SNOQ 16).141

EXHIBIT 115. REPETITIVE LOSS AREA SUMMARY (SNOQ 17).146

EXHIBIT 116. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 17).146

EXHIBIT 117. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 17).146

EXHIBIT 118. FALL CITY CARNATION ROAD (SNOQ 17).147

EXHIBIT 119. REPETITIVE LOSS AREA SUMMARY (SNOQ 18).150

EXHIBIT 120. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 18).150

EXHIBIT 121. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 18).151

EXHIBIT 122. NORTH OF CARNATION (SNOQ 18).153

EXHIBIT 123. REPETITIVE LOSS AREA SUMMARY (SNOQ 19).156

EXHIBIT 124. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 19).156



EXHIBIT 125. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 19).	156
EXHIBIT 126. CARNATION FARM (SNOQ 19).....	157
EXHIBIT 127. REPETITIVE LOSS AREA SUMMARY (SNOQ 20).....	160
EXHIBIT 128. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 20).....	160
EXHIBIT 129. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 20).	160
EXHIBIT 130. CARNATION RANCH (SNOQ 20).	161
EXHIBIT 131. REPETITIVE LOSS AREA SUMMARY (SNOQ 21).	162
EXHIBIT 132. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 21).....	162
EXHIBIT 133. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 21).	162
EXHIBIT 134. CHERRY VALLEY (SNOQ 21).	163
EXHIBIT 135. REPETITIVE LOSS AREA SUMMARY (SNOQ 22).....	165
EXHIBIT 136. REPETITIVE LOSS AREA DETAILED ANALYSIS (SNOQ 22).....	165
EXHIBIT 137. REPETITIVE LOSS AREA FIELD SURVEY DATA (SNOQ 22).	166
EXHIBIT 138. DUVALL (SNOQ 22).....	167
EXHIBIT 139. VASHON ISLAND.	171
EXHIBIT 140. REPETITIVE LOSS AREA SUMMARY (VI 1).	172
EXHIBIT 141. REPETITIVE LOSS AREA DETAILED ANALYSIS (VI 1).	172
EXHIBIT 142. REPETITIVE LOSS AREA FIELD SURVEY DATA (VI 1).....	173
EXHIBIT 143. DOLPHIN POINT (VI 1).	174
EXHIBIT 144. REPETITIVE LOSS AREA SUMMARY (VI 2).	176
EXHIBIT 145. REPETITIVE LOSS AREA DETAILED ANALYSIS (VI 2).	176
EXHIBIT 146. REPETITIVE LOSS AREA FIELD SURVEY DATA (VI 2).....	177
EXHIBIT 147. SHAWNEE (VI 2).	178
EXHIBIT 148. GREEN RIVER BASIN.	182
EXHIBIT 149. REPETITIVE LOSS AREA SUMMARY (GRN 1).	183
EXHIBIT 150. REPETITIVE LOSS AREA DETAILED ANALYSIS (GRN 1).	183
EXHIBIT 151. REPETITIVE LOSS AREA FIELD SURVEY DATA (GRN 1).....	183
EXHIBIT 152. HORSESHOE LAKE (GRN 1).	184
EXHIBIT 153. REPETITIVE LOSS AREA SUMMARY (GRN 2).	186
EXHIBIT 154. REPETITIVE LOSS AREA DETAILED ANALYSIS (GRN 2).	186
EXHIBIT 155. REPETITIVE LOSS AREA FIELD SURVEY DATA (GRN 2).....	186
EXHIBIT 156. 192ND AVENUE SE (GRN 2).	187
EXHIBIT 157. REPETITIVE LOSS AREA SUMMARY (GRN 3).	188
EXHIBIT 158. REPETITIVE LOSS AREA DETAILED ANALYSIS (GRN 3).	188
EXHIBIT 159. REPETITIVE LOSS AREA FIELD SURVEY DATA (GRN 3).....	188
EXHIBIT 160. GREEN VALLEY (GRN 3).	189
EXHIBIT 161. REPETITIVE LOSS AREA SUMMARY (GRN 4).	191
EXHIBIT 162. REPETITIVE LOSS AREA DETAILED ANALYSIS (GRN 4).	191
EXHIBIT 163. REPETITIVE LOSS AREA FIELD SURVEY DATA (GRN 4).....	191
EXHIBIT 164. 440TH STREET (GRN 4).	192
EXHIBIT 165. REPETITIVE LOSS AREA SUMMARY (GRN 5).	193
EXHIBIT 166. REPETITIVE LOSS AREA DETAILED ANALYSIS (GRN 5).	193
EXHIBIT 167. REPETITIVE LOSS AREA FIELD SURVEY DATA (GRN 5).....	193
EXHIBIT 168. NEWAUKUM CREEK (GRN 5).	194

Appendices

Appendix A – Repetitive Loss Property Notification Letter

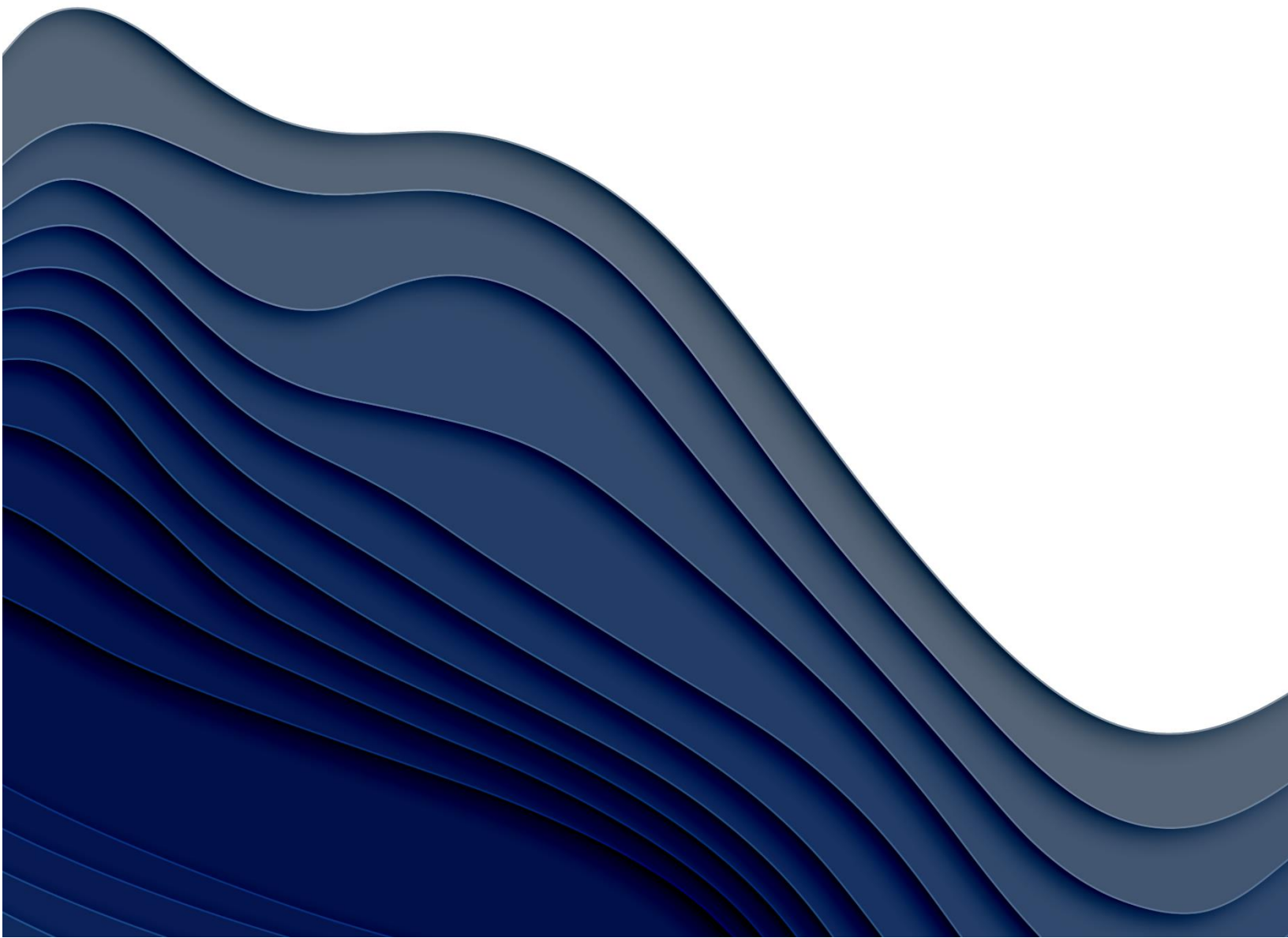
Appendix B – Survey Results

Appendix C – Field Survey



PART 1

Planning Process



INTRODUCTION

Flooding is one of the most common natural hazards in the United States. More than 20,000 communities experience floods and this hazard accounts for more than 70 percent of all Presidential Disaster Declarations. In the United States, over eight million residential and commercial structures are currently built in areas at risk to flooding. The cost of recovery is spread over local, state, and federal governments and the victims themselves, who are directly affected by these disasters.

The National Flood Insurance Program (NFIP) is continually faced with the challenge of balancing the financial soundness of the program with the competing expectation of keeping premiums affordable. Repetitive loss properties are one of the two largest obstacles to achieving financial soundness of the NFIP. Since the inception of the NFIP, almost \$12.5 billion have been paid to repetitive loss properties, about one-fourth of all NFIP payments. There are currently about 160,000 repetitive loss properties in the US. About 10,000 of those properties are considered to be severe repetitive loss properties. Even though only about 44% of the repetitive loss properties are insured, they are still a drain on the NFIP. Currently, repetitive loss properties represent 1.3% of all policies, but account for 15% to 20% of flood claims.



TERMINOLOGY

REPETITIVE LOSS: Any insurable building for which the NFIP paid two or more claims of more than \$1,000 within any 10-year period since 1978.

SEVERE REPETITIVE LOSS: Any insurable building for which the NFIP paid four or more claims of more than \$5,000 or paid at least two claims that cumulatively exceed the building's value.



REPETITIVE LOSS PROPERTIES IN KING COUNTY

King County, Washington (Community Number 530071) has been a regular participant in the NFIP since September 29, 1978. In addition to meeting the basic requirements of the NFIP, the County has taken additional steps to participate in the Community Rating System (CRS) program. King County is currently a CRS Class 2 community which rewards all NFIP policyholders with a 40 percent reduction in their flood insurance premiums. King County has been participating in the CRS program since October 1, 1991.

As of January 2, 2022, there are currently 1,541 NFIP Policies in force in King County with a total annual premium of \$1.5 million and coverage of \$429 million. The County has 1,327 paid losses against the NFIP totaling more than \$21.8 million. Of those losses, 500 are from repetitive loss properties with losses totaling \$12.9 million, or almost 60 percent of the total losses.

Once a property is designated as a repetitive loss property it stays on the list until it has been mitigated, even if the property sells to a new owner or the owner drops the flood insurance policy. According to repetitive loss data received from FEMA as of April 21, 2022, there are a total of 166 repetitive loss properties within unincorporated King County. Exhibit 1 breaks down those properties into their classifications.

Exhibit 1. Repetitive Loss Statistics.

Classification	Unmitigated	Mitigated	Total Repetitive Loss Properties	Total Losses	Total Claims Paid (millions)
Repetitive Loss	80	56	136	347	\$7.9
Severe Repetitive Loss	8	22	30	153	\$5.0
TOTAL	88	78	166	500	\$12.9



CRS REPETITIVE LOSS REQUIREMENT

Repetitive loss data must be maintained and updated annually in order to participate in the CRS. Since many of the losses under the NFIP come from repetitively flooded properties, addressing these properties is a priority for participating in the CRS Program. Depending on the severity of the repetitive loss problem, a CRS community has different responsibilities:

- **Category A:** A community with no unmitigated repetitive loss properties. No special requirements from the CRS.
- **Category B:** A community with at least one, but fewer than 50, unmitigated repetitive loss properties. Category B communities are required by the CRS to research and describe their repetitive loss problem, create a map showing the location of all repetitive loss properties (areas) and complete an annual outreach activity directed to repetitive loss properties.
- **Category C:** A community with 50 or more unmitigated repetitive loss properties. Category C communities are required to do everything in Category B and prepare either a floodplain management plan that covers all repetitive loss properties (areas) or prepare a RLAA for all repetitive loss areas.

Because the latest repetitive loss data obtained from FEMA for King County contained a total of 88 unmitigated repetitive loss properties, King County is designated as a Category C repetitive loss community.



SETTING

King County is located in the Puget Sound region of Washington State. It is bounded by Snohomish County to the north, Kitsap County to the west, Kittitas County to the east, and Pierce County to the south, along with a sharing a small border with Chelan County to the northeast. It also includes Vashon Island and Maury Island in Puget Sound. According to the US Census Bureau, King County has a total area of 2,307 square miles, of which approximately 2,116 square miles are land area, and 191 square miles are water area. This analysis covers only the unincorporated areas of King County.

King County has a mild Pacific maritime climate, which means its weather is heavily influenced by atmospheric conditions over the Pacific Ocean. About two-thirds of the Pacific Northwest precipitation occurs during half of the year from October through March, due to the Pacific storm track, and much of this precipitation is captured in the mountains. Precipitation declines from late spring to early fall with high pressure systems to the west, generally keeping the region fairly dry with pleasant summertime temperatures. On average, King County gets about 46 inches of precipitation every year.

Exhibit 2 depicts King County’s location as well as the incorporated municipalities and major roads. Exhibit 3 depicts the major drainage basins that cover the County.

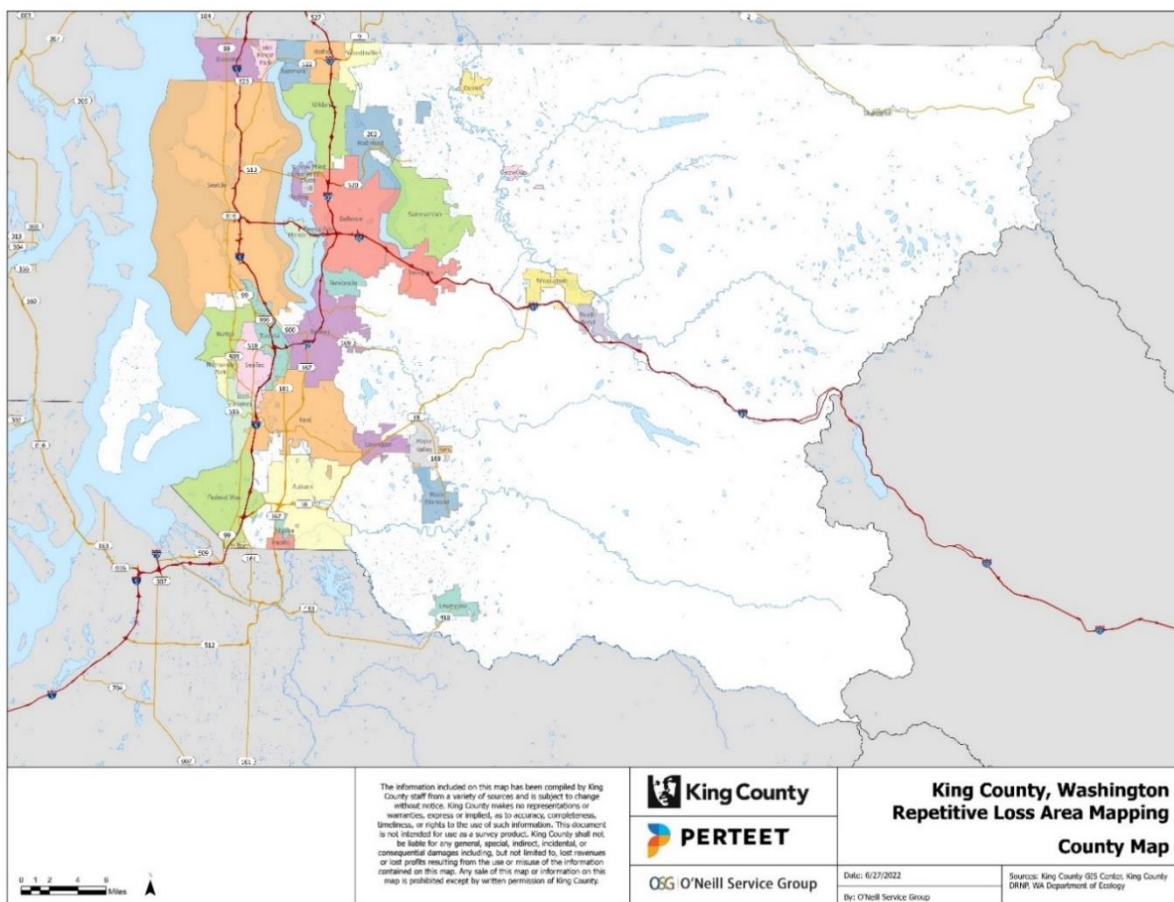


Exhibit 2. King County Map.



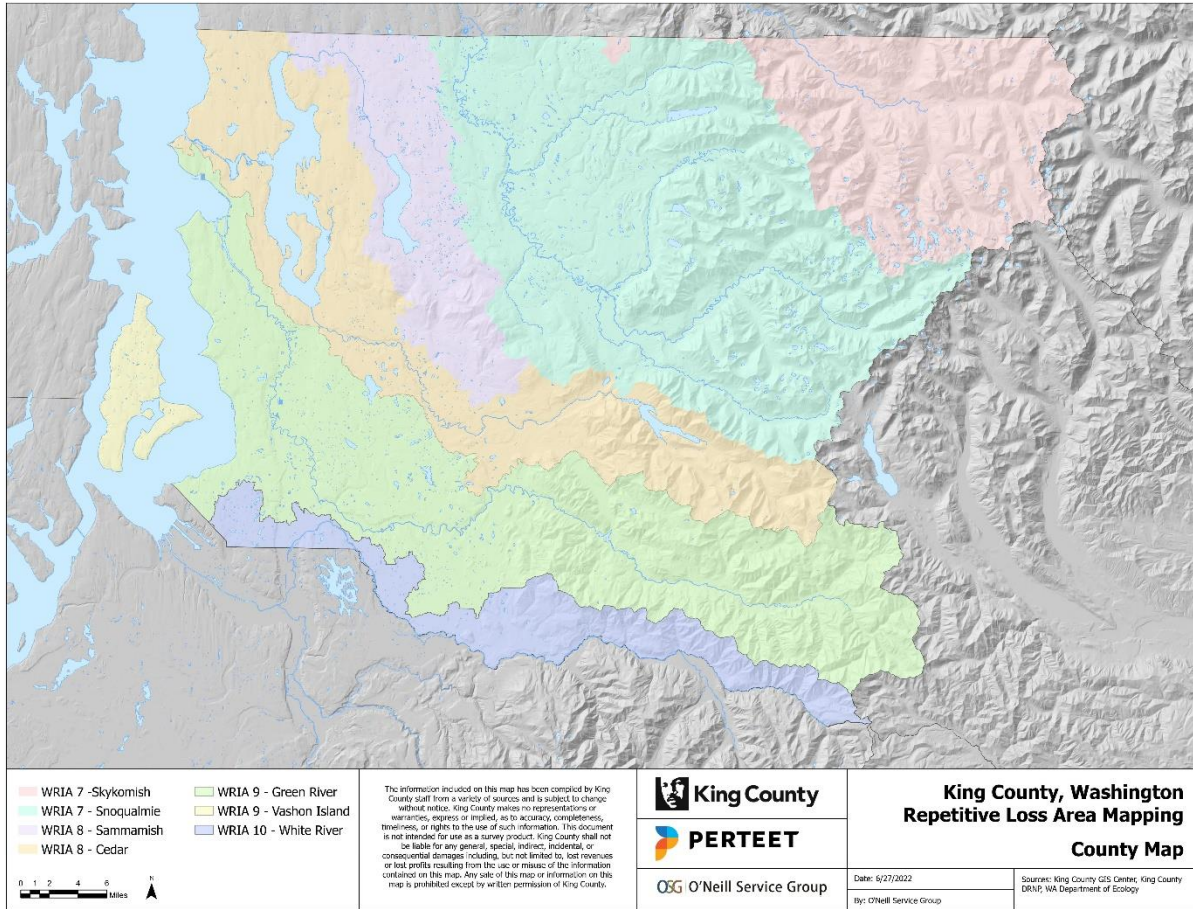


Exhibit 3. King County WRIA Basin Map.



IDENTIFYING REPETITIVE LOSS AREAS

Before identifying repetitive loss areas, King County reviewed the repetitive loss data provided by FEMA to ensure accuracy. The initial list of repetitive loss properties included 186 properties assigned to the unincorporated county. During review, the County found that 22 of the properties are located within cities or other counties, one property is listed twice, and 20 properties have been mitigated that were listed as unmitigated. These corrections reduced the number of unmitigated repetitive loss properties to 88. Of those 88 properties, several had incorrect identifying information, such as old addresses or incorrect latitude and longitude. The County’s CRS Coordinator will address these corrections and updates through the NFIP Repetitive Loss Update Worksheet (AW-501) process.

After the repetitive loss properties were checked for accuracy and mapped using latitude and longitude, King County staff identified 42 repetitive loss areas in accordance with the principles outlined in the CRS guidance titled *Developing a Repetitive Loss Area Analysis, 2017*. The 42 repetitive loss areas include 88 unmitigated repetitive loss properties plus an additional 523 properties that have the same or similar flood conditions but have either been mitigated, constructed to higher standards, or do not have repetitive claims paid against the NFIP. Therefore, a total of 611 properties are included within this RLAA.

The repetitive loss areas are organized by drainage basin, also known as a watershed. Within King County, there are nine basins total, and seven basins with repetitive loss properties, as shown in Exhibit 4.

Exhibit 4. Repetitive Loss Properties per Basin.

Basin	Repetitive Loss Properties		Other Properties	Total Properties ¹
	Unmitigated	Mitigated		
Sammamish River Basin	3	1	0	3
Skykomish River Basin	6	8	34	40
Green River Basin	5	0	16	21
Vashon Island (Central Puget Sound)	3	0	28	31
Cedar River Basin	6	14	59	65
Snoqualmie River Basin	65	54	386	451
White River Basin	0	1	0	0
TOTAL	88	78	523	611

¹ Total properties in repetitive loss areas. Many mitigated properties are not within repetitive loss areas and were not included in this analysis. The mitigated properties within the repetitive loss areas are included in the Other Properties total.

King County River and Floodplain Management Section assigns a basin lead and support staff to each drainage basin that comprise a “basin team.” The basin teams are very familiar with the repetitive loss properties and areas and the cause of flooding within their basin. To determine the repetitive loss areas, the basin teams met with the CRS Coordinator and consultant staff to discuss each of the repetitive loss properties.

Prior to meeting with the basin teams, the consultant staff reviewed the data and identified clusters of mitigated and unmitigated repetitive loss properties. These clusters were easily distinguished and generally in two categories:

- Repetitive loss properties in neighborhoods alongside the river, comprised of small, urban sized lots. Many of these areas were subdivided in the 1930s, 40s, and 50s, before subdivision



regulations, zoning codes, and environmental restrictions existed. Initially intended to be recreational lots where families from the cities could get away to their cabin, many property owners eventually built larger homes and became full-time residents. This was encouraged by the improvement of road and other infrastructure systems, expansion of the suburbs, and river management policies of the time that focused on keeping the flow within the channel through frequent dredging and construction of levees, river training structures, and reservoirs.

- Repetitive loss properties in agricultural areas, primarily along the lower Snoqualmie River. This area's expansive fertile soil is King County's leading agricultural area, and also the County's leading repetitive loss area.

The consultant team also identified repetitive loss properties that were individual and did not include adjacent properties with similar flood risks. In accordance with the Privacy Act of 1974, specific identifying details on individual repetitive loss properties will not be shared with the general public.

The basin teams used several sources of information to determine the boundaries of the repetitive loss areas, including:

- Location of repetitive loss properties
- Aerial photos of flood events spanning from the 1990s to current
- Firsthand knowledge from previous experience and communications with landowners
- King County Flood Warning System flood phases
- FEMA floodplain boundaries, effective and preliminary
- Flood studies and historical flood simulation models
- Elevation certificates
- Aerial photo basemaps from 1998 to 2022
- Hillshade basemaps derived from LiDAR
- County assessor data and parcel boundaries
- Google Street View
- Drainage complaint records
- Watercourse and waterbody data
- Field surveys

An overview map of the King County Repetitive Loss Areas is shown in Exhibit 5 on the following page.



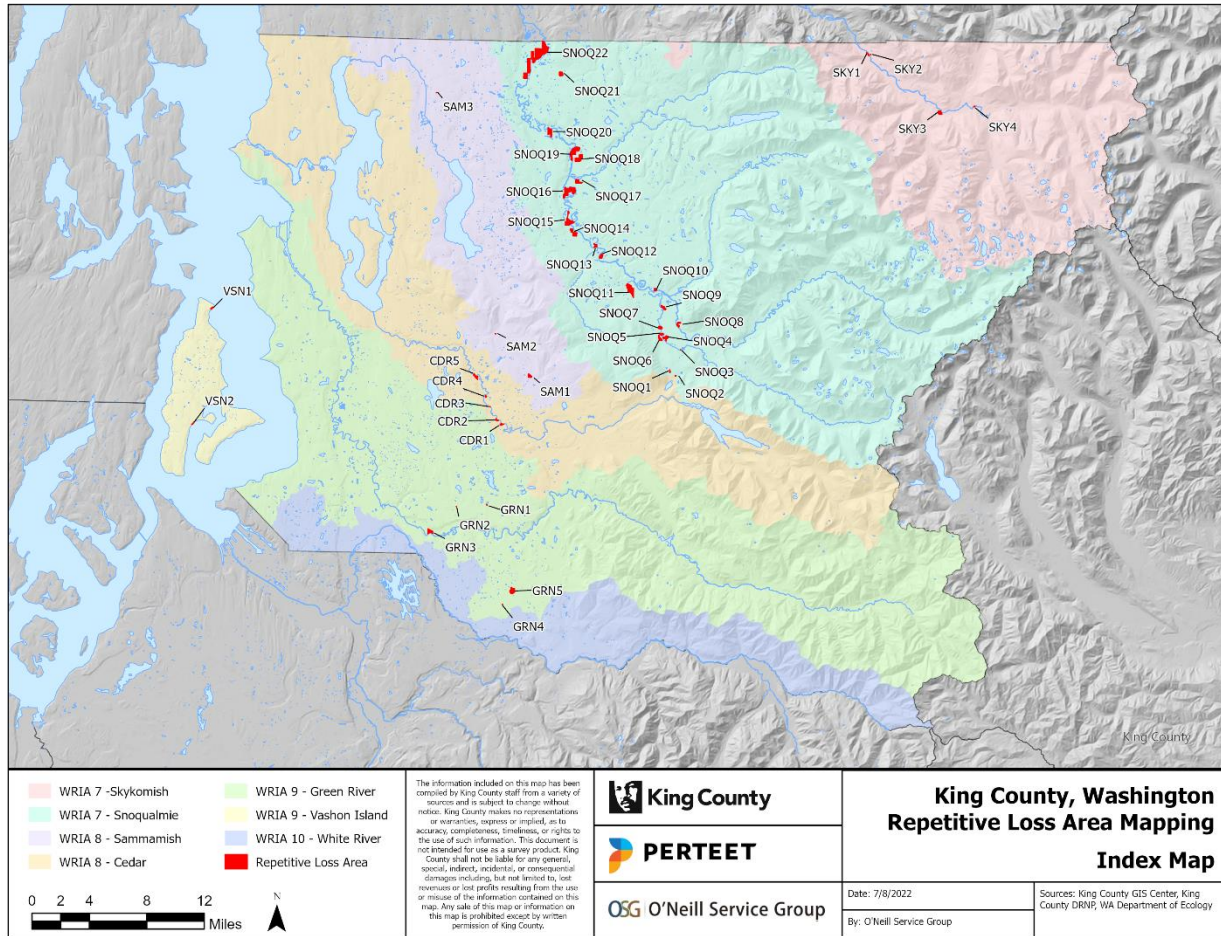


Exhibit 5. King County Repetitive Loss Areas.



REPETITIVE LOSS AREA ANALYSIS PLANNING PROCESS

The RLAA planning process incorporated requirements from Section 510 of the 2017 *CRS Coordinator’s Manual* and the Activity 510 guidance document from 2017, *Developing a Repetitive Loss Area Analysis*. This RLAA included all five planning steps included in the 2017 *CRS Coordinator’s Manual* and guidance document:

Step 1: Advise all the properties in the repetitive loss areas that the analysis will be conducted and request their input on the hazard and recommended actions.

Step 2: Contact agencies or organizations that may have plans or studies that could affect the cause or impacts of the flooding. The agencies and organizations must be identified in the analysis report.

Step 3: Visit each building in the repetitive loss area and collect basic data.

Step 4: Review alternative approaches and determine whether any property protection measures or drainage improvements are feasible.

Step 5: Document the findings. A separate analysis report must be conducted for each area.

Beyond the five planning steps, additional credit criteria must be met:

1. The community must have at least one repetitive loss area delineated in accordance with the criteria in Section 503.
2. The repetitive loss area must be mapped as described in Section 503.a. A Category “C” community must prepare analyses for all of its repetitive loss areas if it wants to use RLAA to meet its repetitive loss planning prerequisite.
3. The repetitive loss area analysis report(s) must be submitted to the community’s governing body and made available to the media and the public. The complete repetitive loss area analysis report(s) must be adopted by the community’s governing body or by an office that has been delegated approval authority by the community’s governing body.
4. The community must prepare an annual progress report for its area analysis.
5. The community must update its repetitive loss area analyses in time for each CRS cycle verification visit.

Repetitive Loss Area Analysis Approval

Prior to approval by CRS, the RLAA must be made available to the owners of the properties in the RLAA for review and comment, and the County Council must adopt the plan.

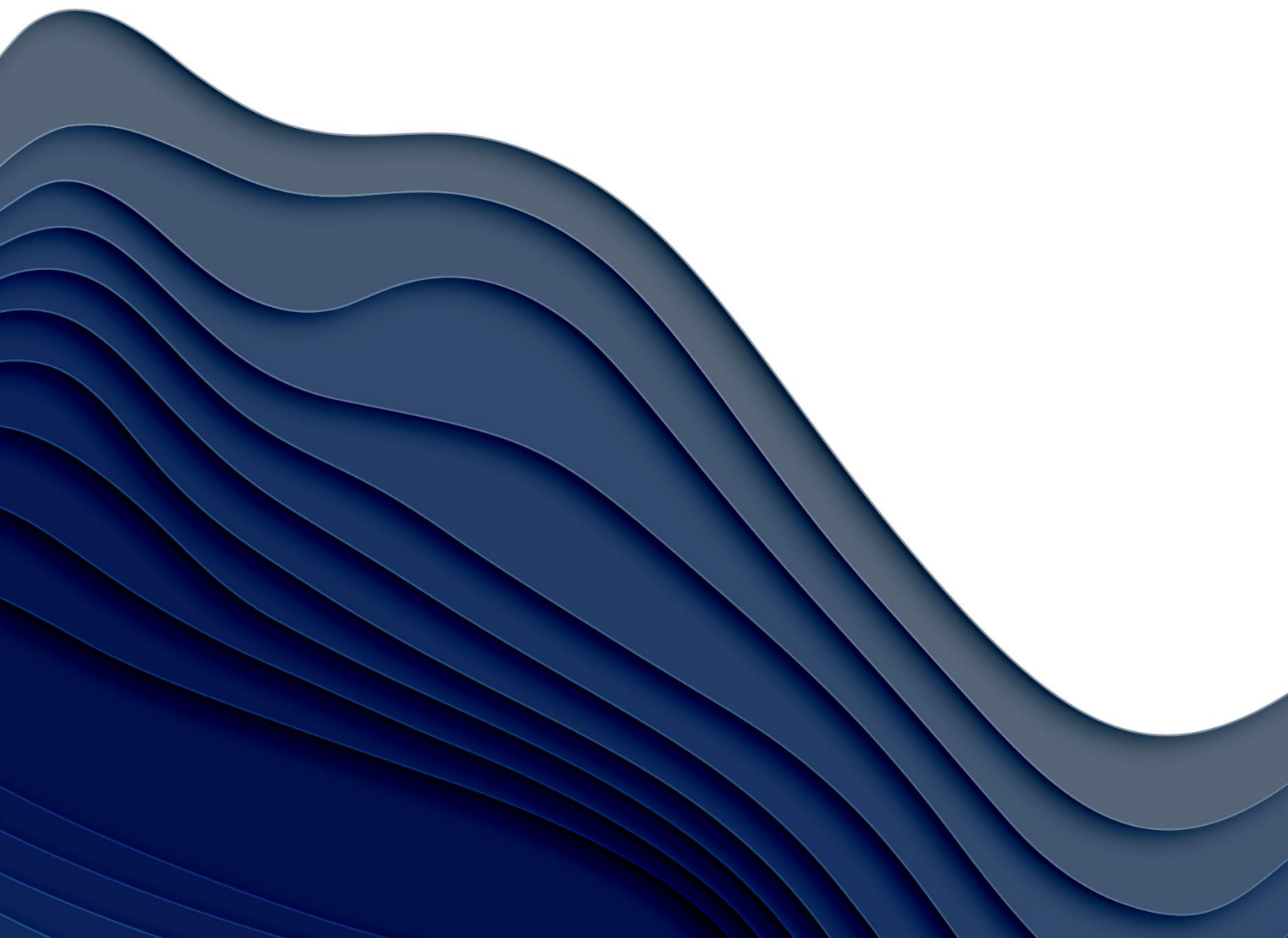
On July 11, 2022, King County released the Draft RLAA to interested repetitive loss area property owners and posted the RLAA on the County website. The comment period ended on July 21, 2022.

The County received one comment on the draft RLAA from a landowner in the Snoqualmie Basin. The commenter provided additional information regarding the cause of flooding in their area and concerns about future development. The comments have been incorporated into the RLAA.



PART 2

Five Step Process



STEP 1. ADVISE ALL PROPERTY OWNERS

Property Owner Notification


The County mailed letters to all property owners and residents within the 41 identified repetitive loss areas on June 13, 2022. Exhibits 6 and 7 show the property owner notification letter (full size letter is in Appendix A). All properties in the repetitive loss area received the letter in both English and Spanish and regardless of their level of protection (e.g., mitigated or built to a higher standard). In accordance with the Privacy Act of 1974, the mailing list will not be shared with the general public.

The letter included a request for the property owner to provide information about flooding on their property or in their repetitive loss area by completing a survey. The letter provided several options, including a paper version of the survey that could be mailed back, a link and QR code for the online version, and phone number and email for the CRS Coordinator. The survey asked several questions about their experience with past flooding and whether or not they have flood insurance or are interested in mitigation.


Survey Results

Repetitive loss property owners submitted 51 survey responses. The property owners who completed the survey live in the Snoqualmie, Cedar, Skykomish, and Green basins. The complete survey results are in Appendix B. A summary of survey results is provided in Exhibit 8.





Water and Land Resources Division
 Service providers to the King County Flood Control District
 Department of Natural Resources and Parks
 King ID: net Garden
 201 South Jackson Street, Mallotop 5600
 Seattle, WA 98104-3855
 206-477-4800 Fax 206-396-0192
 TTY Relay: 711




June 13, 2022

Address
 City, State Zip Code

Dear Property Owner or Resident,

At King County, we're concerned about flooding on properties and working to better understand where and how it happens. You have received this letter because your property is in a Repetitive Loss Area that has flooded several times. This does not mean that your property has flooded, only that it is in the same neighborhood as a property that has flooded multiple times. While we work to reduce flood risks, here are things you can do to prepare and help protect yourself from floods:

- Tell us about flooding at your property and what you think causes it.** Take our online survey at: surveyMonkey.com/r/KC_RLAA. You can also share your responses by completing the enclosed survey below and returning it by mail. **Surveys must be completed and returned by June 30, 2022.** We encourage you to provide any relevant flood information.



Scan with smart phone

To help determine causes of repeated flooding, King County field teams will visit your neighborhood over the next two weeks to assess the flood risk and to take photographs. Field staff will not access your property and will only gather information viewable from the street. Staff will be looking at drainage patterns to identify possible sources of flooding (rivers, streams, ditches, ponding water, etc.) as well as the type and condition of building foundations.

Once our evaluation is complete, we will provide a draft copy of the report to survey participants and will be accepting your feedback. If you would like a copy of the draft report, please provide your email address within the survey.

- Buy flood insurance:** Homeowners or renters insurance does not cover loss caused by flooding. Purchasing flood insurance is important. Your property is eligible for a 40 percent flood insurance premium discount. Flood insurance to protect contents is available to both renters and property owners. To learn more visit floodsmart.gov, talk to your insurance agent, or contact me.
- Prepare for flooding:**
 - Sign up for King County Flood Alerts by visiting kingcounty.gov/flood and download the King County Flood Warning mobile app to find out when rivers are rising.
 - Update your emergency plans and put together an emergency kit.


Sincerely,

Laura Hendrix, CFM
 Floodplain Management Planner

Alternative Formats Available
 Interpretation and translation services are available to you at no cost. If you need them, please contact us at lahendrix@kingcounty.gov or 206-477-7568 (TTY) Relay: 711.

King County Repetitive Loss Area Analysis

You can respond to the survey online at surveyMonkey.com/r/KC_RLAA or fill out the hard copy below. Please return your responses by June 30, 2022 to:
 Attn: Laura Hendrix
 King County Water and Land Resources Division
 201 South Jackson Street, Suite 5600
 Seattle, WA 98104



Scan with smart phone

- Please provide your address. Your response will be used by King County to better understand the flooding in your area.**
 Address: _____
- If you would like to review the draft Repetitive Loss Area Analysis, please provide your email address.**
 Email address: _____
- How many years have you lived at this address or owned the property? Select one.**
 - Less than 1 year
 - 1-5 years
 - 5-10 years
 - 10+ years
- Do you rent or own the property? Select one.**
 - Rent
 - Own
- What type of foundation does the home/building have? Select all that apply.**
 - Slab
 - Crawlspace
 - Basement
 - Ground floor garage
 - Piers
 - I don't know
- Has the home/building or property ever flooded or had a water problem? Select one.**
 - Yes
 - No (if "no," skip to question 10)
 - I don't know
- In what year(s) did it flood? Please list all years.**

- Where did you get flood water and how deep was it? Circle the depth in each location.**



	No flood water	Less than 1 foot	1-2 feet	3-4 feet	5+ feet
In the basement					
In the crawlspace					
In the first floor					
In the yard/hold only					

- If flood water entered your home/building, how long did it stay?**
 - Less than 1 day
 - 1-2 days
 - 3+ days
- What do you think causes the flooding in your area? Check all that apply.**
 - Flooding from a waterbody (river, creek, lake, etc.)
 - Saturated ground / ground water
 - Blocked or undersized drainages/ditches/stormwater system
 - Other (please specify)
- What flood protection measures have you installed on your property? Check all that apply.**
 - Sump pump
 - Waterproofed the outside walls
 - Re-graded yard to keep flood water away
 - Moved things out of basement
 - Backup power system/generator
 - Elevated structure
 - Other (please specify)
- Is the home/building located in the 1% chance floodplain (also known as the FEMA 100-year floodplain)? Select one.**
 - Yes
 - No
 - I don't know
- Do you have FEMA flood insurance? Select one.**
 - Yes
 - No
 - I don't know
- Please provide any additional information or comments you have about flooding in your area.**

- Would you like to receive additional information about how you can protect your home/building from flooding?**
 - No
 - Yes, please contact me with more information.

Exhibit 6. Property Owner Notification Letter (English).







Water and Land Resources Division
 Services provided by the King County Flood Control District
 Department of Natural Resources and Parks
 King Street Center
 201 South Jackson Street, Mattotop 5600
 Seattle, WA 98104-3805
 206-477-4500 Fax 206-296-0192
 TTY Relay: 711

Estimado/a propietario/a o residente:

En el Condado de King estamos preocupados por las inundaciones en propiedades y estamos trabajando para entender mejor dónde y cómo ocurren. Usted ha recibido esta carta debido a que su propiedad está en un Área de Pérdida Repetitiva que se ha inundado varias veces. Esto no significa que su propiedad se haya inundado, solo que está en el mismo vecindario de una propiedad que se ha inundado en múltiples ocasiones. Mientras trabajamos para reducir los riesgos de inundaciones, aquí hay cosas que puede hacer para prepararse y ayudar a protegerse de las inundaciones:

1. Díganos sobre las inundaciones en su propiedad y sobre lo que usted piensa que las causan. Tome la encuesta en línea en: surveymonky.com/r/AAPR. También puede compartir sus respuestas al completar la encuesta adjunta a continuación y devolverla por correo postal. **Las encuestas deben completarse y devolverse a más tardar el 30 de junio de 2022.** Le motivamos a que nos comparta cualquier información relevante a las inundaciones.



Escanear con el teléfono

Para ayudar a determinar las causas de las inundaciones recurrentes, los equipos en campo del Condado de King visitarán su vecindario en las próximas dos semanas para evaluar los riesgos de inundación y para tomar fotografías. El personal en campo **no** accederá a su propiedad y solo recabará información visible desde la calle. El personal estará buscando a patrones de drenaje para identificar posibles fuentes de inundaciones (ríos, arroyos, diques, agua estancada, etc.) así como el tipo y condición de los cimientos de la construcción.

Una vez que se complete la evaluación, le otorgaremos un borrador del reporte a los participantes de la encuesta y aceptaremos sus comentarios. Si quiere una copia del borrador del reporte, por favor, otorgue su dirección de correo electrónico junto con la encuesta.

2. Compre seguro para inundaciones: El seguro para propietarios o arrendatarios de vivienda, no cubre las pérdidas causadas por las inundaciones. Comprar un seguro para inundaciones es importante. Su propiedad es elegible para un descuento de 40 por ciento de la prima del seguro para inundaciones. El seguro para inundaciones para proteger los contenidos de su propiedad está disponible tanto para arrendatarios como para propietarios de vivienda. Para obtener más información, visite floodsmart.gov, hable con su agente de seguro o contácteme.

5

3. Prepárese para las inundaciones:

- Regístrese para recibir Alertas de Inundaciones en el Condado de King al visitar kingcounty.gov/flood y descargue la aplicación móvil de Advertencia de Inundaciones del Condado de King para saber cuándo está subiendo el nivel de los ríos.
- Actualice sus planes de emergencia y prepare un kit de emergencia.
- Sepa cómo cortar la electricidad y el gas de su casa antes de un evento de inundación.
- Guarde los objetos de valor y las sustancias químicas para la casa arriba de los niveles del suelo.

4. Proteja su propiedad en contra de inundaciones:

- Mueva los vehículos, equipo, ganado o mascotas a una zona más alta.
- Ancle y asegure los tanques de propano y otros contenedores de combustible.
- Instale un tapón de desagüe en el piso o una válvula antirretorno de drenaje.
- Mantenga las alcantarillas de la calle, las rejillas y compuertas para el desagüe libres de hojas y basura.
- Considere elevar el nivel de su propiedad. Obtenga más información en kingcounty.gov/buyout-elevation.

(Gracias por su interés y apoyo para reducir las pérdidas repetitivas por inundaciones en su vecindario! Juntos, podemos minimizar las pérdidas por inundaciones y maximizar la seguridad y el disfrute de su casa. Si tiene preguntas o si prefiere responder a la encuesta por teléfono, por favor, no dude en contactarme directamente al 206-477-7568 o a lahendrix@kingcounty.gov. Espero saber de usted.

Atentamente,

Laura Hendrix, CFM
 Planeadora de Gestión de Terrenos Inundables

Formatos Alternativos Disponibles


Hay servicios de interpretación y traducción disponibles para usted, sin costo. Si los necesita, por favor, contáctenos a lahendrix@kingcounty.gov o al 206-477-7568 Retransmisión TTY: 711.

6

Análisis del Área de Pérdida Repetitiva del Condado de King

Puede responder a la encuesta en línea en surveymonky.com/r/AAPR o llenar la siguiente copia en papel. Por favor, devuelva las respuestas a más tardar el 30 de junio de 2022 a:

Attn: Laura Hendrix
 King County Water and Land Resources Division
 201 South Jackson Street, Suite 5600
 Seattle, WA 98104



Escanear con el teléfono

1. Por favor, otorgue su dirección. Su respuesta será usada por el Condado de King para entender mejor las inundaciones en su área.

Dirección: _____

5. Si quiere revisar el borrador del Análisis del Área de Pérdida Repetitiva, por favor, agregue su correo electrónico.

Correo electrónico: _____

6. ¿Cuántos años ha vivido en esta dirección o ha sido dueño/a de la propiedad? Seleccione una opción.

Menos de 1 año 5-10 años
 1-5 años Más de 10 años

7. ¿Usted renta o es dueño/a de la propiedad? Seleccione una opción.

Rento Soy dueño/a

8. ¿Qué tipo de cimientos tiene la casa/edificio? Seleccione todas las opciones que correspondan.

Losa de concreto Cochera en el primer piso
 Bloques y con espacio entre el suelo y la construcción Pilares
 Sótano No sé

9. ¿La casa/edificio o propiedad alguna vez se ha inundado o ha tenido un problema de agua? Seleccione una opción.

Sí No sé
 No (en caso que "no," pase a la pregunta 10)

10. ¿En qué año(s) se inundó? Por favor, indique todos los años.

11. ¿En qué parte tuvo agua de inundación y qué tan profunda estaba? Circule la profundidad en cada lugar.

	No ha habido agua de inundación	Menos de 1 pie	1-2 pies	3-4 pies	Más de 5 pies
En el sótano					
En el espacio entre el suelo y la casa					
En el primer piso					

7

Solo en el patio/campo	No ha habido agua de inundación	Menos de 1 pie	1-2 pies	3-4 pies	Más de 5 pies

12. Si el agua de inundación entró a su casa/edificio, ¿por cuánto tiempo permaneció ahí?

Menos de 1 día Más de 3 días
 1-2 días

13. ¿Qué es lo que cree que causa las inundaciones en su área? Marque todas las opciones que correspondan.

Inundaciones a partir de un cuerpo de agua (río, arroyo, lago, etc.)
 Terreno saturado / agua subterránea
 Drenajes/diques/ sistemas para agua pluvial bloqueados o de tamaño insuficiente
 Otro (por favor, especifique)

14. ¿Qué medidas de protección en contra de las inundaciones ha instalado usted en su propiedad? Marque todas las opciones que correspondan.

Bomba de sumidero Sistema de energía de respaldo/generador del agua
 Paredes exteriores en contra del agua Estructura elevada
 Nivelación del patio para alejar el agua Otro (por favor, especifique)
 Sacar las cosas del sótano

15. ¿Está la casa/edificio ubicado en un terreno inundable con 1% de posibilidad (también conocido como terrenos inundables de 100 años de FEMA)? Seleccione una opción.

Sí No sé
 No

16. ¿Tiene seguro para inundaciones de FEMA? Seleccione una opción.

Sí No sé
 No

17. Por favor, agregue cualquier información adicional o comentarios que tenga sobre las inundaciones en su área.

18. ¿Le gustaría recibir información adicional sobre cómo puede proteger su casa/edificio en contra de inundaciones?

No
 Sí, por favor, contácteme con más información.

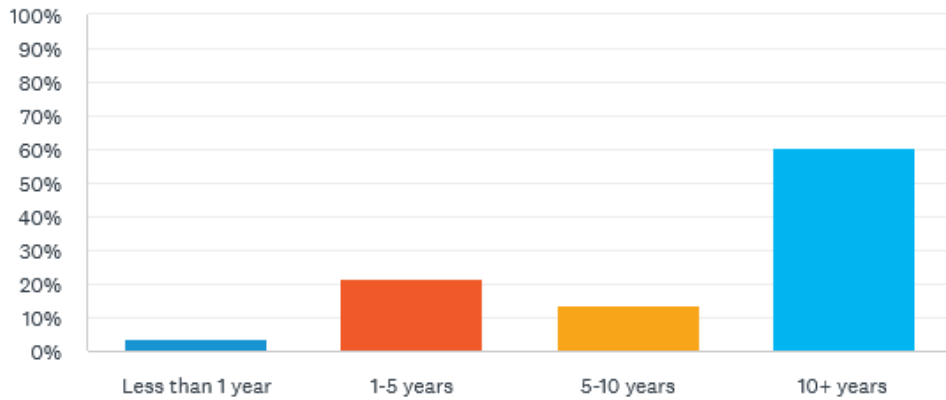
8

Exhibit 7. Property Owner Notification Letter (Spanish).

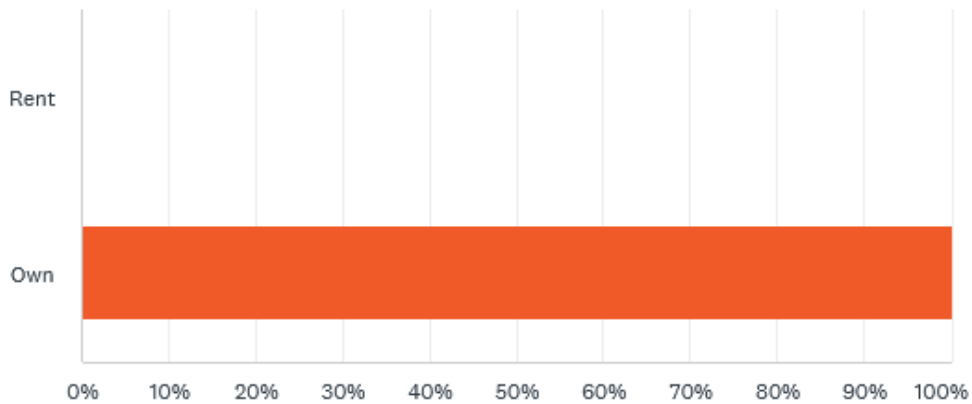


Exhibit 8. Survey Results.

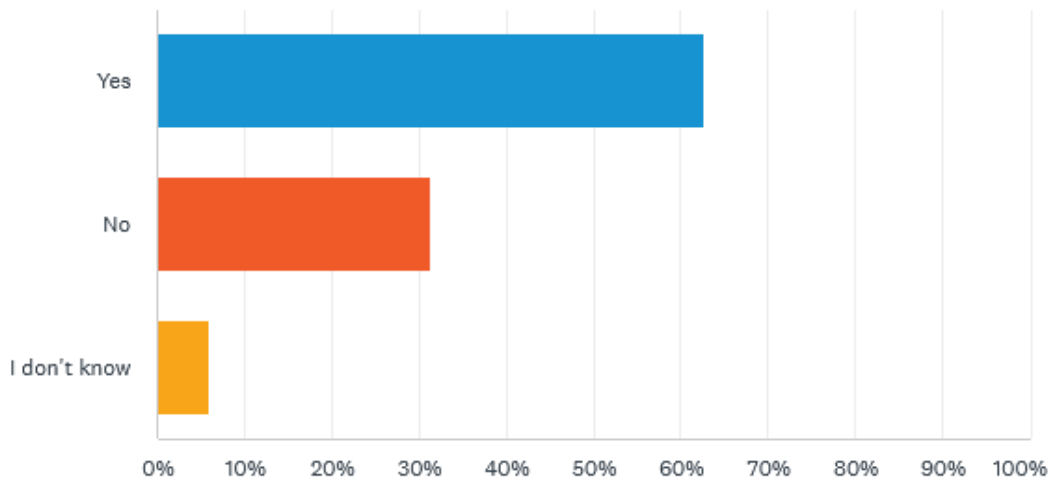
How many years have you lived at this address or owned the property?



Do you rent or own the property?



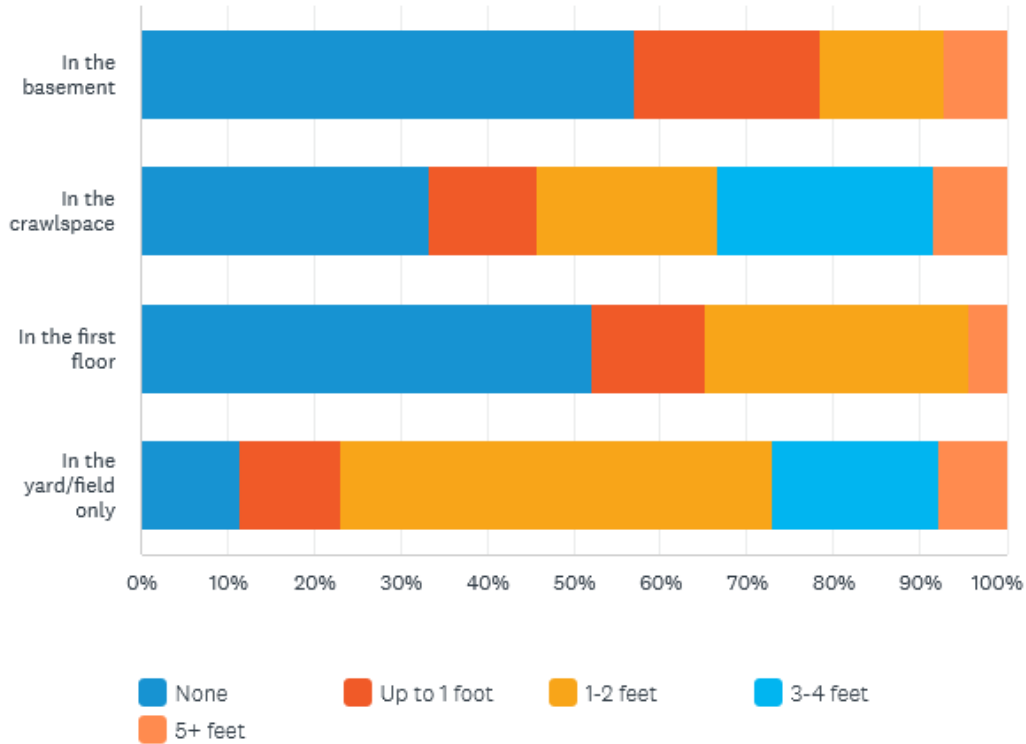
Has the home/building or property ever flooded or had a water problem?



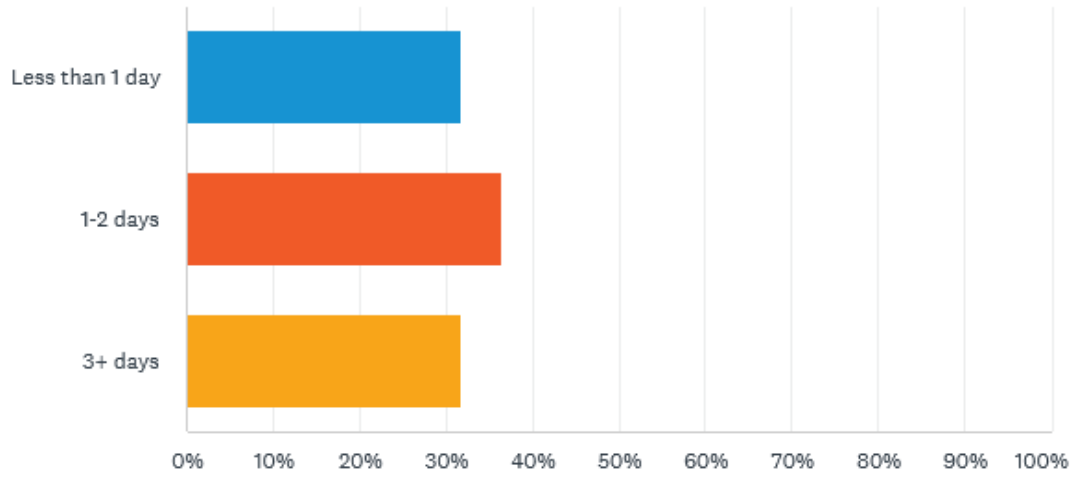
In what year(s) did it flood?



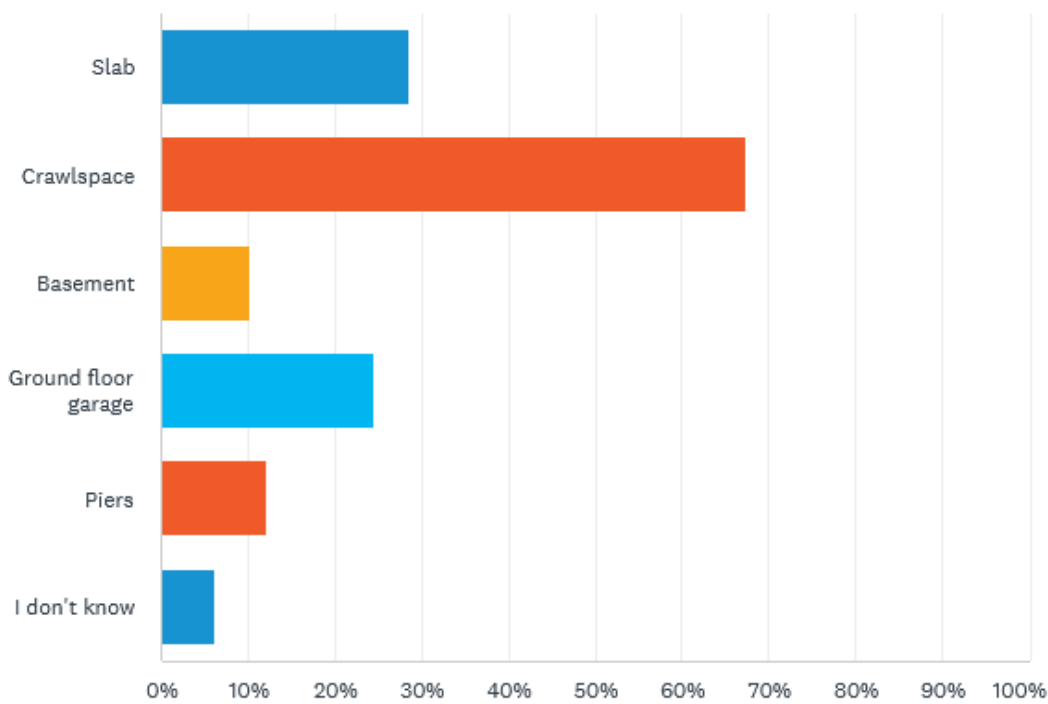
Where did you get flood water and how deep was it?



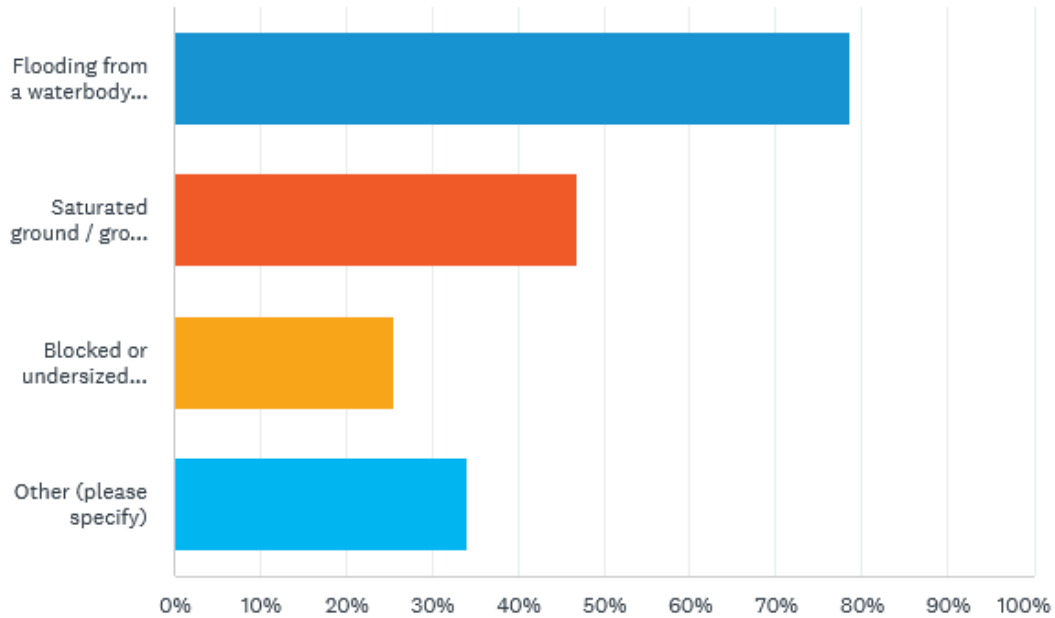
If flood water entered your home/building, how long did it stay?



What type of foundation does the home/building have?

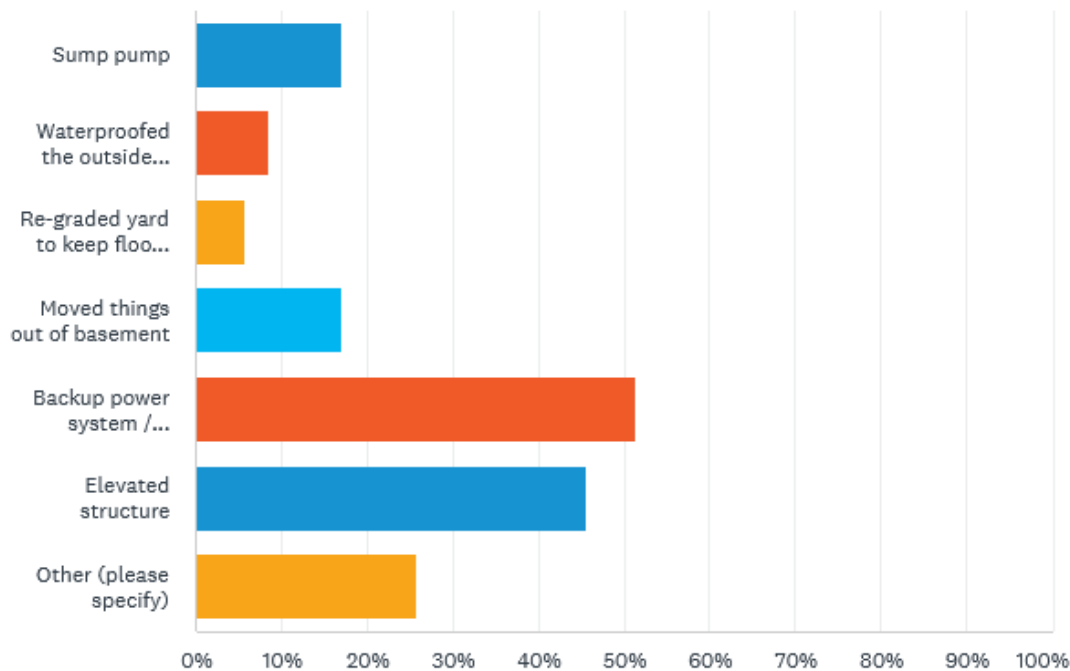


What do you think causes the flooding in your area?



Other responses include: increased sediment in riverbed, too much water released from upstream dams, rain on snow, over-development, deforestation, downstream bridge capacity, insufficient drainage, valves not operating, clogged trash racks, excessive building, clear cutting, and paving in the area, and warming winters.

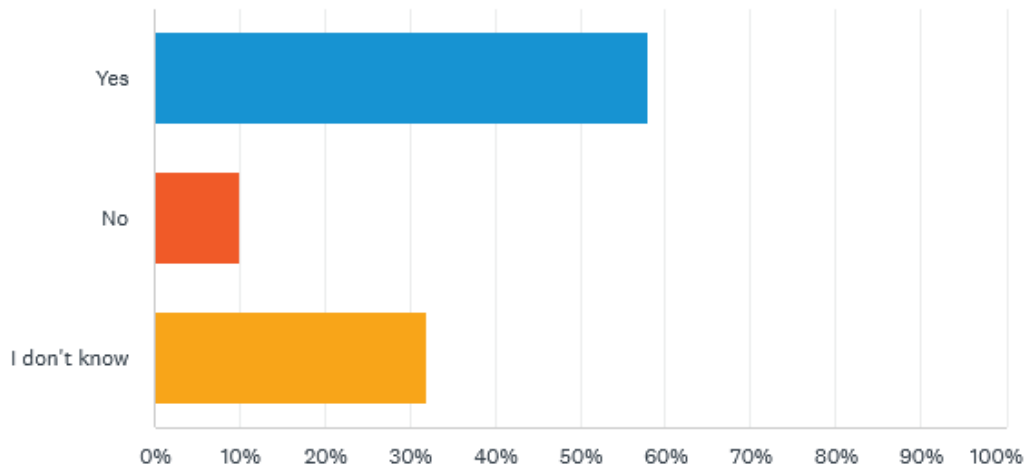
What flood protection measures have you installed on your property?



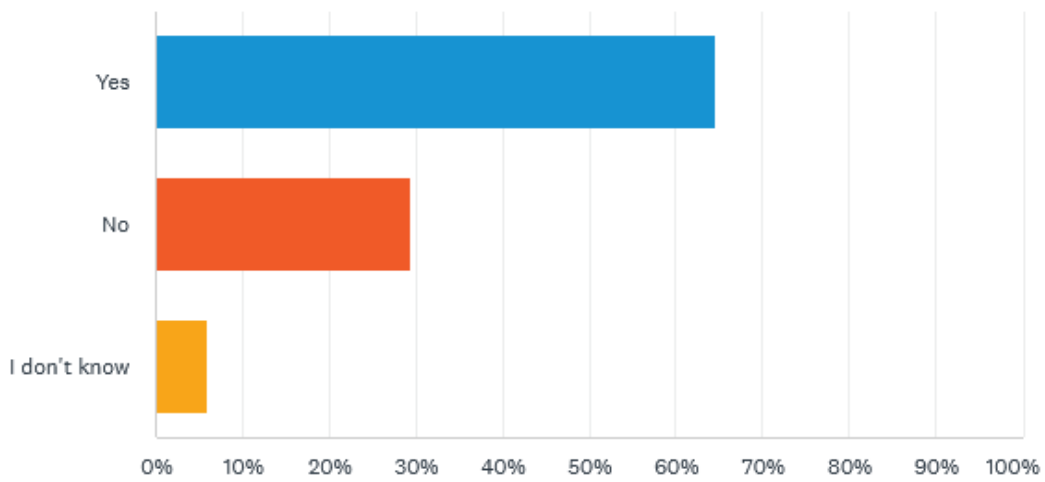
Other responses include: protecting interior of accessory structures (barn, garage), elevating appliances in the basement, and purchasing a backup sump pump.



Is the home/building located in the 1% chance floodplain (also known as the FEMA 100-year floodplain)?



Do you have FEMA flood insurance?



STEP 2. CONTACT AGENCIES AND ORGANIZATIONS

King County contacted external agencies and internal departments that have plans or studies that could affect the cause or impacts of flooding within the identified repetitive loss areas. The County used the data to analyze the problems further and to help identify potential solutions and mitigation measures for property owners. Those agencies, reports, and associated data which were analyzed and reviewed included:

- King County Code
 - Zoning Ordinance
 - Subdivision Regulations
 - Floodplain Management Ordinance
 - Critical Areas Ordinance
 - Stormwater Management Ordinance
- American Rivers
- Army Corps of Engineers Seattle District
- King County Strategic Climate Action Plan (SCAP), 2020
- King County Comprehensive Plan, 2022
- King County Hazard Mitigation Plan, 2020
- Washington Department of Ecology, NFIP Coordinator
- King County, Washington and Incorporated Areas Flood Insurance Study (FIS), August 19, 2020
- Federal Emergency Management Agency
 - Repetitive Loss Data: 4-21-2022
 - Flood Insurance Policy Data: 7-8-2022
 - Claims Data: 7-8-2022
- King County Strategic Climate Action Plan (SCAP)
- King County Flood Control District Plans and Investment Strategies
- Flood Studies/Reports/etc.

Summary of Studies and Reports

FEMA Flood Insurance Study

The most recent FIS for King County, WA is dated August 19, 2020. The FIS revises and updates information on the location and severity of flood hazards within King County. The FIS also includes revised digital Flood Insurance Rate Maps (FIRMs) which reflect updated Special Flood Hazard Areas (SFHAs) and flood zones for the County.

Flood Insurance Claims Data

FEMA provided a history of flood insurance claims and current flood insurance policies for King County. The Privacy Act of 1974 (5 U.S.C. 522a) restricts the release of flood insurance policy and claims data to the public. This information can only be released to state and local governments for the use in floodplain management related activities. Therefore, all claims data in this report are only discussed in general terms.



Flood Control District Plans and Investment Strategies

The King County Flood Control District prepares plans and strategies for management of the river basins. These plans and strategies outline the near-term, medium-term, and long-term projects and actions that were identified during an assessment of key problem areas and potential solutions.

A capital investment strategy proposes a sequence of coordinated projects to address the most critical flood and erosion risks and to restore habitat along a specified stretch of river or within a river basin. Capital investment strategies are directed by the Flood Control District, completed by King County, and eventually approved as policy guidance by the District’s Executive Committee.

This analysis included a review of the 2022-2027 Six-Year Capital Improvement Plan, Cedar River Capital Investment Strategy, Middle and South Fork Snoqualmie Capital Investment Strategies, and other planning documents.

King County Comprehensive Plan, Updated 2020

The King County Comprehensive Plan is intended to guide growth and development decisions over the next 20 years. The Comprehensive Plan includes a set of goals and policies which are intended to inform decisions related to growth and land uses.

King County Hazard Mitigation Plan, 2020

The primary reason for developing a Hazard Mitigation Plan (HMP) is to reduce a community’s exposure to natural hazards by taking proactive, pre-disaster planning steps to limit development in hazard sensitive areas, particularly floodplain or flood hazard areas. The second reason is to comply with the hazard mitigation planning requirements established by the Federal Emergency Management Agency (FEMA).

- **DNRP-WLR-1 – Flood Insurance Program.** Continue to maintain compliance and good standing under the National Flood Insurance Program. This will be accomplished through the implementation of floodplain management programs, at a minimum, will meet the minimum requirements of the NFIP, which include the following:
 - Enforcing the adopted flood damage prevention ordinance.
 - Participating in floodplain identification and mapping updates.
 - Providing public assistance and information on floodplain requirements and impacts.
- **DNRP-WLR-5 – Flood Protection Facility Maintenance.** Maintain and repair damaged structural elements for King County’s extensive inventory of flood protection facilities.
- **DNRP-WLR-7 – Flood Hazard Mitigation.** Acquire repetitively damaged homes, purchase underdeveloped land to prevent future development in flood prone areas, and, where cost-effective and feasible, elevate residential homes that sustain recurring deep, low-velocity flooding.
- **DNRP-WLR-9 – Flood Hazard Reduction Programs.** Conduct activities that are vital to the mitigation of the natural hazards impacting King County, such as hazard identification, warning, information dissemination, and public outreach.

King County Flood Hazard Management Plan, 2006/2013 Update

The County is currently in the process of updating their Flood Hazard Management Plan. The purpose of the FMP is to identify, assess, and mitigate flood hazards and flood risk in the County. This plan documents the County’s flood hazard mitigation planning process and identifies relevant flood hazards



and vulnerabilities as well as strategies the County will use to decrease vulnerability and increase resiliency and sustainability. The Plan examines flood occurrences and flood risk in the 100- and 500-year floodplain; localized flooding areas identified by the County, including those areas located in the Zone X flood zone; stream bank erosion, coastal erosion, and erosion hazards caused by flooding; flooding associated with sea level rise and climate change; and dam failure inundation.

King County Strategic Climate Action Plan

King County's Strategic Climate Action Plan (SCAP) is a five-year blueprint for County climate action, integrating climate change into all areas of County operations and work with King County cities, partners, communities, and residents. Strategic multi-benefit Floodplain Management initiatives include: Evaluate climate impacts on flood mitigation infrastructure and activities (PREP 2.2.1); Develop a climate change capital planning strategy for flood mitigation projects (PREP 1.2.1); Incorporate climate impacts on flooding into outreach for floodplain property owners; Help farmland owners elevate homes and increase access to high ground (PREP 4.2.13); Support farmer participation in disaster insurance programs (PREP 5.1.6); Include climate change in the prioritization of fish passage barriers (PREP 1.2.5) and the design, operation, and maintenance of assets in streams (PREP 1.2.6); Assess levee setbacks on summer low-flow conditions for salmon recovery (PREP 2.2.6); Evaluate projected changes in summer streamflow (PREP 2.2.7); Evaluate the role of upper watershed forests in reducing climate impacts on salmon (PREP 4.2.4); Explore changes in regulated streamflow management (PREP 4.2.3), Increase sea level rise outreach and engagement on Vashon-Maury Island (PREP 5.1.2); Optimize the performance of existing stormwater assets (PREP 2.2.5); Develop a methodology and standard for assessing climate resiliency for stormwater management (PREP 1.2.4); Develop a stormwater and climate change communications strategy (PREP 5.1.3).



STEP 3. BUILDING DATA COLLECTION

Basin teams conducted on-site field survey for this analysis between June 15-24, 2022. Basin teams performed the surveys and used a mobile application to collect data and photos (Exhibit 9). Appendix C includes screenshots of the complete survey

In addition, the basin teams took multiple site photos of each structure on the property. They also took photos current drainage features and mitigation and floodproofing measures if evident from street or parking lot views.

The basin teams recorded the following information for each property:

- Primary land use
- Presence of basement
- First floor elevation compared to other structures in repetitive loss area
- Foundation type
- Foundation condition
- Structure condition
- Type of effective mitigation measures
- Notes about drainage patterns around the building, observations, or comments
- Photos

The consultant team gathered additional information from assessor’s data, such as year of construction or remodel, building characteristics, and confirmation of whether or not there is a basement.

Basin teams also gathered data, when possible, through conversations with property owners and/or residents. These conversations provided detail on the extent of flooding, potential causes of flooding, and recollections from past flood events, which help to better understand flooding issues for these areas.

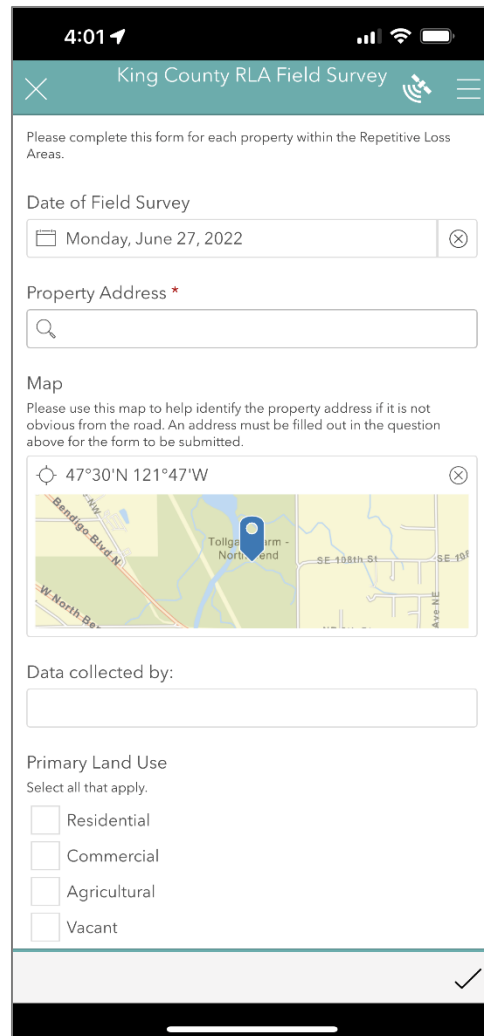


Exhibit 9. Mobile Field Survey.



STEP 4. REVIEW ALTERNATIVE MITIGATION APPROACHES

Mitigation is essential to reducing flood risk and repetitive flood losses. There are many ways to protect property, from improvements that can be implemented by individual property owners to capital projects that affect large areas.

The King County Flood Control District invests in several types of flood mitigation projects throughout King County. Since 2008, the District has elevated 66 homes and acquired 215 flood-prone and at-risk properties totaling 600 acres.



The County's investment in the home buyout and elevation program has cost \$66 million. The District also performs studies and manages and funds capital projects such as revetment repairs, levee maintenance and setbacks, dredging, and other flood risk reduction projects. These projects have had a beneficial effect on reducing flood risk and flood damage throughout the County.

King County has studied, evaluated, and invested in each basin. Individual basin investments and studies are described in the basin descriptions in Step 5.

Types of Mitigation

The CRS Coordinator's Manual (2017) breaks down flood mitigation into six types:

- Preventive activities
- Property protection activities
- Natural resource protection activities
- Emergency services
- Structural projects
- Public information activities

Preventative Activities

Preventative activities keep flood problems from getting worse. King County regulates development through its building code, zoning requirements, critical areas ordinance, stormwater management regulations, and floodplain management ordinance. In King County, floodplain regulations are enforced by the Department of Local Services, Permitting Division.

The success of preventative actions often depends on the quality of data that identifies the problem, such as flood mapping that identifies the boundaries of the regulatory floodplain. Over 30 percent of claims paid to repetitive loss properties are for properties outside of the 100-year floodplain. The King County Hazard Mitigation Plan identifies the following actions for updating flood maps:

1. Update Flood Insurance Rate Maps to utilize better flood risk data, including the South Fork Skykomish River and streams with Zone A maps. Also identify a strategy and timeline for updating other streams/rivers that need updated flood risk data.
2. Create climate-influenced flood risk maps that can be used for planning purposes.



3. Create sea level rise flood risk maps for various sea level rise scenarios to be used for planning and regulatory purposes.
4. Continue updating channel migration zone maps.
5. Release dam failure maps where appropriate and provide technical assistance to high hazard dam owners to complete updated inundation maps.
6. Complete levee failure maps and release them to the public where appropriate.

Property Protection Activities

Property protection activities are usually undertaken by property owners on a building-by-building or parcel basis. FEMA has published numerous manuals to help property owners determine appropriate property protection measures:

- FEMA 259, Engineering Principles and Practices of Retrofitting Floodprone Residential Structures
- FEMA 312, Homeowner’s Guide to Retrofitting: Six Ways to Protect Your House from Flooding
- FEMA 551, Selecting Appropriate Mitigation Measures for Floodprone Structures
- FEMA 348, Protecting Building Utilities from Flood Damage
- FEMA 511, Reducing Damage from Localized Flooding
- FEMA 102, Floodproofing Non-Residential Structures
- FEMA 84, Answers to Questions about the NFIP
- FEMA 54, Elevated Residential Structures Book
- FEMA 268, Protecting Floodplain Resources: A Guidebook for Communities
- FEMA 347, Above the Flood: Elevating Your Floodprone House
- FEMA 85, Protecting Manufactured Homes from Floods and Other Hazards

The primary methods of property protection considered for repetitive loss areas include:

Land Acquisition and Structure Demolition

One of the most effective approaches to preventing further flood damage to a building is acquisition of the land and demolition of the structure. The property would then serve as open space or recreation area in perpetuity. Property owners retain the right to select this as a mitigation method and acquisitions are voluntary when possible. They may sell their property to King County or an agency dedicated to the preservation and management of local open space. Acquisition is a relatively expensive mitigation measure, but it provides the greatest benefit in that lives and property are protected from flood damage.

King County’s program for land acquisition has been very successful, with the purchase of 215 flood-prone properties since 2008 and several more in progress. The King County Hazard Mitigation Plan identifies the following actions for home acquisitions:

1. Continue proactively purchasing flood prone properties for the purpose of flood risk reduction.
2. Accelerate coastal floodplain acquisitions.
3. Create and maintain a prioritized acquisition list so that properties can be purchased whenever the opportunity arises.



4. Consider other tools to purchase land over time or future development rights, such as a program where a property owner receives an upfront payment with an agreement that the County will fully purchase the property if it's flooded or the owner seeks to sell.
5. Purchase and remove infrastructure as part of neighborhood-level acquisitions.

Home Elevation

When the floor of a home is below the 100-year flood elevation, physically elevating the structure is often recommended as it is one of the most effective means to prevent flood damage. Financial assistance may be available for elevation. Since 2008, King County Flood Control District has provided financial assistance to 66 homeowners to elevate their homes. The County also requires all substantially damaged or improved residential buildings to come into compliance with current regulations, which often includes home elevation. A substantial improvement is any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the “start of construction” of the improvement.

Relocation

Sometimes property owners can relocate the building to another property or a location on the property outside of the 100-year floodplain.

Floodproofing

Floodproofing consists of completely sealing around the exterior of the building so that water cannot enter the building. Dry floodproofing is not a good option for areas where floodwater is deep or flows quickly. The hydrostatic pressure and/or hydrodynamic force can structurally damage the building by causing the walls to collapse or causing the entire structure to float. However, in areas that have minimal velocity and low depth, dry floodproofing can be a good option.

The NFIP allows floodproofing for non-residential structures and for residential retrofits that are not classified as a substantial improvement. Homeowners can implement floodproofing methods on their property to provide some protection. For example, properties that do not have adequate protection of their low opening (window or basement door) can effectively raise the low opening height with a window well or a flood gate. The ultimate height of the low opening depends on several factors, such as: the level of flood protection desired, the appearance, and cost. The flood protection elevation could be set one-foot higher than the existing low opening elevation, or it could be set to match the elevation of the lowest opening into a home that cannot be raised. This might be the elevation of the threshold of a door, for example.

Wet Floodproofing

Wet floodproofing consists of modifying uninhabited portions of a home, such as a crawl space, garage, or unfinished basement with flood-damage resistant materials, to allow floodwaters to enter the structure without causing damage. Wet floodproofing requires portions of the building to be cleared of valuable items and mechanical utilities. A key component of wet floodproofing is providing openings large enough for the water to flow through the structure such that the elevation of the water in the structure is equal to the elevation of the water outside of the structure. This equilibrium of floodwater prevents hydrostatic pressure from damaging structural walls.



Elevate Damage-Prone Components

Critical items, such as furnace or air conditioning units, should be elevated to avoid flood damage. These items may be located outside of the structure or within the structure in areas that are wet-floodproofed, such as a crawl space.

Drainage Maintenance

In some cases, there are activities that the property owner can do on-site such as directing shallow floodwater away from a flood-prone structure. Shallow flooding can often be kept away from a structure if some simple improvements are made to the yard. Sometimes structures are built at the bottom of a hill or in a natural drainage way or storage area, so that water naturally flows toward them.

Temporary Barriers

Several types of temporary barriers are available to address typical flooding problems. They work to direct drainage away from structures with the same principles as permanent barriers such as floodwalls or levees, but can be removed, stored, and reused in subsequent flood events.

Natural Resource Protection Activities

Natural resource protection activities preserve or restore natural areas or the natural functions of floodplain and watershed areas. They are implemented by a variety of agencies, primarily parks, recreation, or conservation agencies or organizations. In addition to the at-risk properties purchased by the King County Flood Control District, many other repetitive loss area properties have been purchased by the County or other agencies, such as Seattle Public Utilities, to provide or restore floodplain habitat and improve floodplain function. Many of these projects are considered either acquisition or capital projects with multiple benefits.

Emergency Services

Emergency services are measures taken before and during an emergency to minimize its impact. These measures are usually the responsibility of city or county emergency management staff and the owners or operators of major or critical facilities. These measures include flood warning notifications and response activities.

Structural Projects

Structural projects keep floodwaters away from an area with a levee, reservoir, or other flood control measure. King County Flood Control District generally leads structural projects within the floodplain. These projects are planned for and identified within each basin's Capital Investment Strategy and other planning documents. They include levee repairs and setbacks, elevating roads, and other capital projects.

Public Information Activities

Public information activities advise property owners, potential property owners, and visitors about hazards and ways to protect people and property from them, as well as the natural and beneficial functions of local floodplains. This activity also includes educating property owners about flood insurance. Every year King County send a floodplain newsletter to all properties within the floodplain, as



well as a separate outreach letter to all properties within the repetitive loss areas. The King County Hazard Mitigation Plan identifies the following public information activities that should be conducted on an annual basis:

1. Flood brochure – sent to every property owner in the floodplain.
2. Repetitive loss letter – sent to properties with known repeated losses.
3. Realtor, insurance agent, and other stakeholder outreach – workshops, meetings, or other outreach to professionals who need flood risk information.
4. News media outreach – coordinated effort to share stories about flood risk with the news media.
5. Annual event – separate or coordinated event every year that focuses on flood risk.

Funding

There are several sources of funding to support implementation of mitigation activities. Many mitigation measures can be implemented by the property owner without requiring financial support. However, the more effective mitigation actions, such as home elevations, often require financial support for the homeowner to implement. King County is able to assist homeowners in identifying funding sources, as well as offering their own grant programs and funding sources. These funding sources available to property owners include:

- Local funding from King County Flood Control District for home elevations and acquisitions.
- FEMA Hazard Mitigation Assistance program, which includes the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) program, Severe Repetitive Loss (SRL) program, and Building Resilient Infrastructure and Capacity (BRIC) program. These grants require support from King County to apply.
- Increased Cost of Compliance (ICC) coverage which is part of the flood insurance program. The program provides funding to offset the costs of bringing a substantially damaged home into compliance with floodplain regulations.
- Small Business Administration (SBA) loans for disaster recovery provides low-interest loan to help property owners repair structures after a flood.

Capital projects implemented by King County are also eligible for financial support. Grant programs, such as Floodplains by Design and the Flood Control Assistance Account Program, as well as the FEMA grant programs listed above, provide funding to implement large structural projects that reduce flood risk. The Army Corps of Engineers provides financial support for some levee design and construction projects.

Mitigation Plan

While inspecting properties in the repetitive loss areas, field crews also evaluated possible mitigation measures for each property. These mitigation measures are listed in the findings in Step 5. The possible mitigation measures evaluated by the field crews were focused on actions that could be taken for individual properties, such as acquisition, elevation, drainage improvements, and building modifications such as adding additional vents or elevating HVAC systems.



The mitigation review also included a review of current Capital Investment Strategies and other planning documents for each basin. Information about the capital projects proposed in repetitive loss areas is provided in the findings in Step 5.



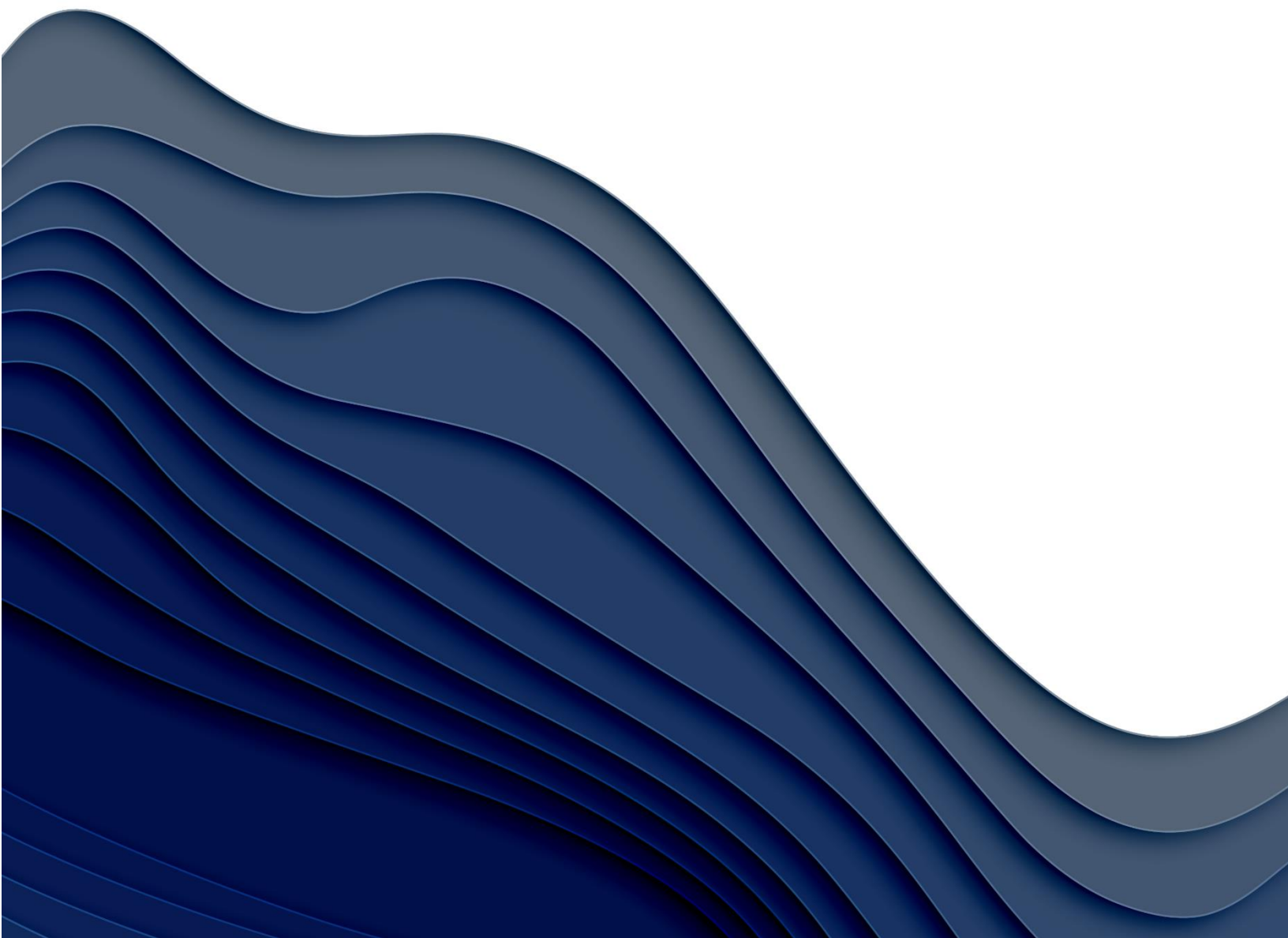
STEP 5. DOCUMENT THE FINDINGS

Part 3 of this analysis documents the findings of inspections and research into repetitive loss properties and repetitive loss areas. The repetitive loss areas are grouped into basins. Each basin section includes a description and map of the basin and proposed capital projects. Each repetitive loss area section includes a description of the flooding problem, identification of proposed and possible mitigation, resident comments, map, photo of past flood events, photos of example properties, and a description of the properties within the repetitive loss area.

In accordance with the Privacy Act of 1974, addresses, claims, insurance data, repetitive loss classification, and other protected information will not be shared with the general public.



PART 3
Repetitive Loss
Property Analysis



BASIN 1 – CEDAR RIVER

The Cedar River Basin has 5 repetitive loss areas, 6 unmitigated properties, 14 mitigated properties, and 65 total properties.

The Cedar River is one of five major rivers in King County and is the largest tributary to Lake Washington (Exhibit 10). The basin has distinctly different upper and lower areas. The 122-square mile upper basin lies within Seattle’s Cedar River Watershed. The upper basin is unpopulated, forested, mountainous land, exclusively owned by the City of Seattle and protected from land development. The 66-square-mile lower basin includes a broad array of natural resources and a spectrum of land uses ranging from the Renton urban center near the mouth of the river, to suburban areas, to the rural and forest zones abutting the Seattle Watershed. It is within the lower basin where conflicts between the river and development arise, and where five repetitive loss areas are located. Flooding in the Cedar River Basin is generally stage flooding associated with atmospheric rivers that bring warm moist air and cause heavy rainfall and rapid mountain snow melt. For example, in January 2009, the west slopes of the Cascade Mountains received from 3-5 inches of warm rain in a 24-hour period, leading to major flooding state-wide and including the Cedar River.

Since 1992, after severe flooding occurred along the river, the County has supported a watershed planning process focused on reducing the life-threatening flood flows, improving and protecting fish habitat, and protecting water quality.

The Cedar River Capital Investment Strategy (CIS) was a corridor-wide planning effort that evaluated flood and erosion risks and identified a range of potential capital project solutions for the areas where risks are highest. To date, ten of the 22 projects in the CIS are underway or completed.

Current projects in the basin include:

Herzman to Camp Freeman Project

The Herzman to Camp Freeman Project will provide flood and erosion risk reduction along a stretch of the Cedar River about four miles east of the City of Renton. The need for the project was identified in the Cedar River Capital Investment Strategy, completed in 2017, which identified flood and erosion risks and potential solutions throughout the lower Cedar River valley. Major flooding in February 2020 changed the trajectory of the river in the reach, and the project was modified to address new risks at the downstream end of the project area.

Jan Road Levee Setback Project

This project undertakes improvements to Jan Road to minimize flood risk. The project includes raising Jan Road to improve access during flood events; setting back or removing portions of the Jan Road Levee in order to reduce potential damage to the downstream Cedar River Trail Levee, which protects portions of both the Cedar River Trail and the Maple Valley Highway; and acquiring at-risk homes. The project is designed to ensure that equivalent or better flood risk reduction remains for the houses remaining behind the levees.

Maplewood Landslide and Flood Risk Reduction Feasibility Study

This project analyzes flood and landslide hazards and potential associated risk in the Maplewood neighborhood. It includes an analysis of existing levees to see if levee-modifications could reduce flood



risks. If the landslide hazard assessment indicates the potential to increase flood risks, an additional feasibility study will be conducted to evaluate options to mitigate landslide hazards.

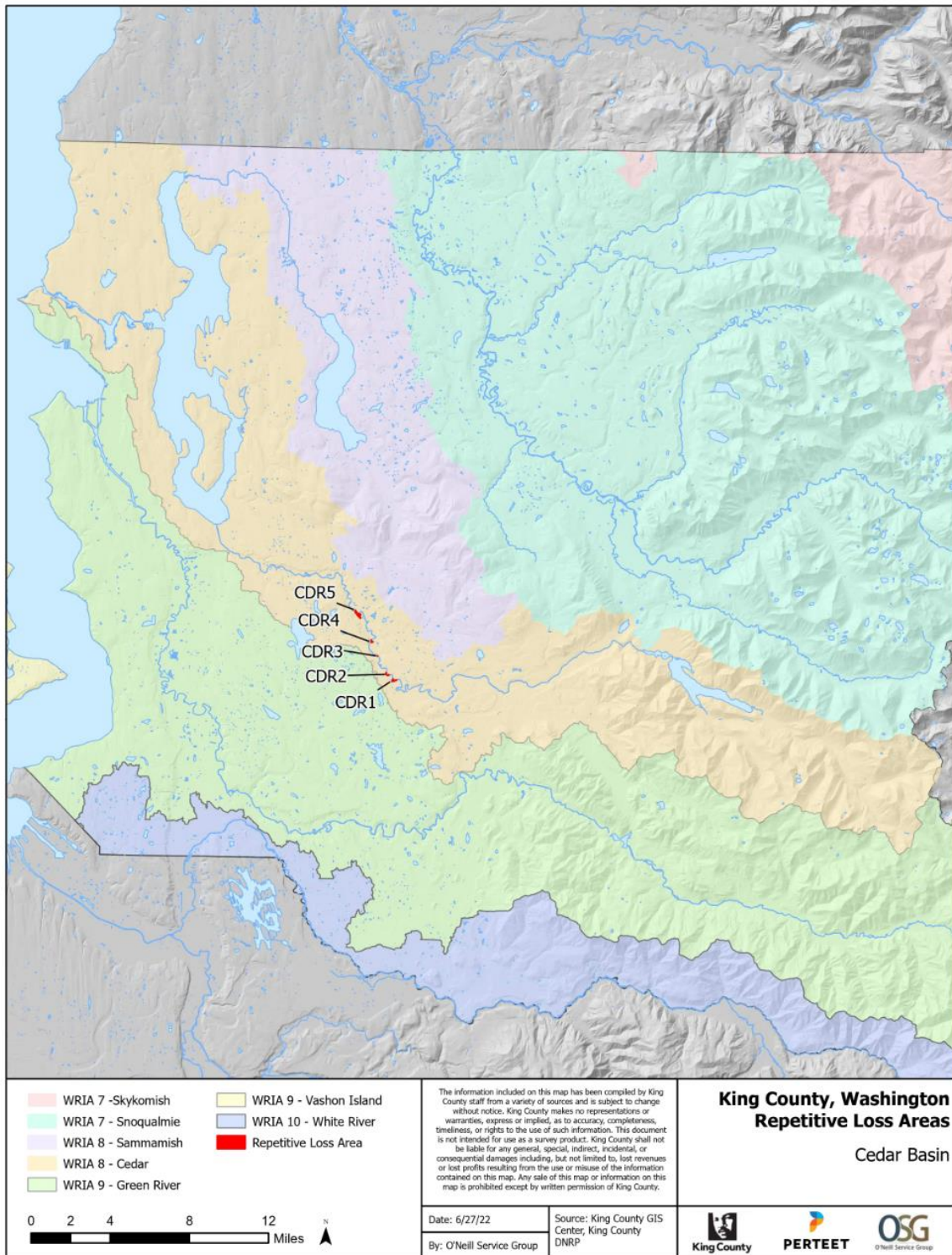


Exhibit 10. Cedar River Basin.



Repetitive Loss Area 1: Orchard Grove (CDR 1)

Orchard Grove is a residential neighborhood located on the right bank of the Cedar River and is partially located within the 100-year floodplain and floodway. The neighborhood was platted in the 1930s and many of the homes were constructed in the 1930s and 1940s. The area experiences overbank flooding due to a U-shaped bend in the river and lower ground elevations than the opposite bank. The high left bank forces the floodwaters into the lower elevation portion of the Orchard Grove neighborhood, flooding yards and houses. During flooding, the neighborhood is isolated from overtopped roads.

The Cedar RCIS identifies possible solutions, including: raise low-lying section of road; construct side channel to convey flows away from right bank residential area; and acquire up to 11 high risk homes from willing sellers. The estimated cost is \$1.9 Million to \$10.4 Million (2017).

Residents reported that there was damage to the riprap during the last flood, that erosion has continued to occur, and that poor management of the watershed contributes to flooding.

Exhibit 11. Repetitive Loss Area Summary (CDR 1).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Orchard Grove	3	2	2	21	12	26



Exhibit 12. Repetitive Loss Area Detailed Analysis (CDR 1).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
			2005	Garage	Average
			2008	Crawl space	Average
			1932	Crawl space	Average
			1937	Slab on grade	Average
			1937	Slab on grade	Average
			1934	Crawl space	Average
			1933	Unknown	Average
			1937	Unknown	Average
			1962	Crawl space	Good
			1935	Crawl space	Good
			1941	Crawl space	Average
			1939	Crawl space	Average
			1933	Crawl space	Average
			1931	Crawl space	Average
			1986	Unknown	Average
			1936	Crawl space	Average
			2003	Slab on grade	Average
			1932	Crawl space	Average
			1957	Crawl space	Average
			1992	Crawl space	Good
			1939	Basement	Average
			1934	Basement	Average
			1966	Slab on grade	Good
			2017	Crawl space	Good

Addresses, claims, and insurance information is omitted from the external version.



Exhibit 13. Repetitive Loss Area Field Survey Data (CDR 1).

Address	First Floor Elevation ¹	Possible Mitigation Options				
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint. Other
	A		X		X	
	A	X	X			
	A		X		X	
	A		X		X	
	A		X		X	
	H		X		X	
	A		X		X	
	L		X		X	
	H	X	X			
	H				X	
Addresses are omitted from the external version.	L		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	H		X		X	
	A		X		X	

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



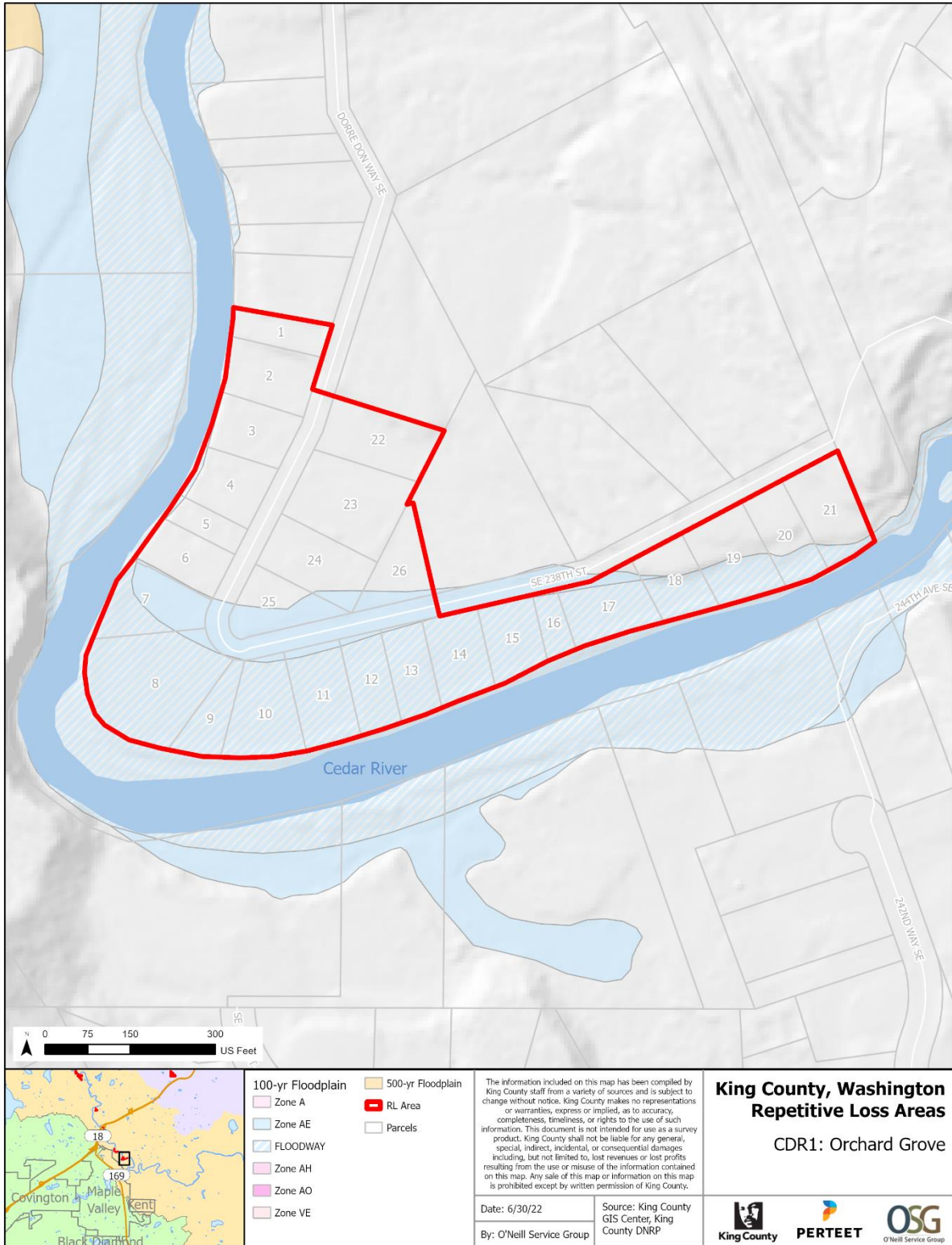


Exhibit 14. Orchard Grove (CDR 1).



Flood Photos



Cedar River at Orchard Grove. January 9, 2009.



Cedar River at Orchard Grove. January 9, 2009.



Example Properties



Repetitive Loss Area 2: Lower Dorre Don (CDR 2)

The Lower Dorre Don neighborhood is located just downstream of Orchard Grove, also on the right bank and on the inside of a U-shaped bend in the river. The neighborhood was platted in the 1920s as the “Dorre Don Campsites” and many homes were constructed in that decade. The neighborhood is protected by a levee that directs the river to pass under a railroad bridge (currently the Cedar River Trail). In 1990, the levee breached and flooded residents. Flooding is now associated with groundwater seepage and backwater from floodwaters that overtop a low spot in the levee, also flooding roads and isolating several homes. In February 2020, an avulsion of the mainstem channel just downstream from the trail bridge reduced risks to a number of homes in the reach, but the reach remains one of the most vulnerable along the Cedar River.

The Cedar River CIS identifies possible solutions including: conduct feasibility study to evaluate opportunities to modify right bank levee and revetment system and/or raise Lower Dorre Don Road SE to reduce the frequency and severity of flooding. The estimated cost is \$350,000 (2017). This project is identified as a medium-term action (7-10 years from the 2017 adoption of the CIS).

Residents reported that elevating structures has reduced flood damage.

Exhibit 15. Repetitive Loss Area Summary (CDR 2).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Lower Dorre Don	1	0	0	19	12	20

Exhibit 16. Repetitive Loss Area Detailed Analysis (CDR 2).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
			1929	Crawl space	Average
			1930	Crawl space	Average
			1928	Crawl space	Average
			1927	Crawl space	Average
			1977	Crawl space	Average
			1929	Crawl space	Average
			1928	Crawl space	Average
			1996	Unknown	Average
			1970	Crawl space	Average
			1924	Unknown	Average
			1930	Crawl space	Average
			1930	Crawl space	Average
			1928	Unknown	Average
			2000	Crawl space	Good
			1963	Unknown	Average
			1972	Crawl space	Average
			1930	Crawl space	Average

Addresses, claims, and insurance information is omitted from the external version.



Exhibit 17. Repetitive Loss Area Field Survey Data (CDR 2).

Address	First Floor Elevation ¹	Possible Mitigation Options				
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint. Other
	A		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	H		X		X	
	A		X		X	
	A		X		X	
Addresses are omitted from the external version.	H		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	A		X		X	
	H		X		X	
	Unknown		X		X	
	A		X		X	
	A		X		X	

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



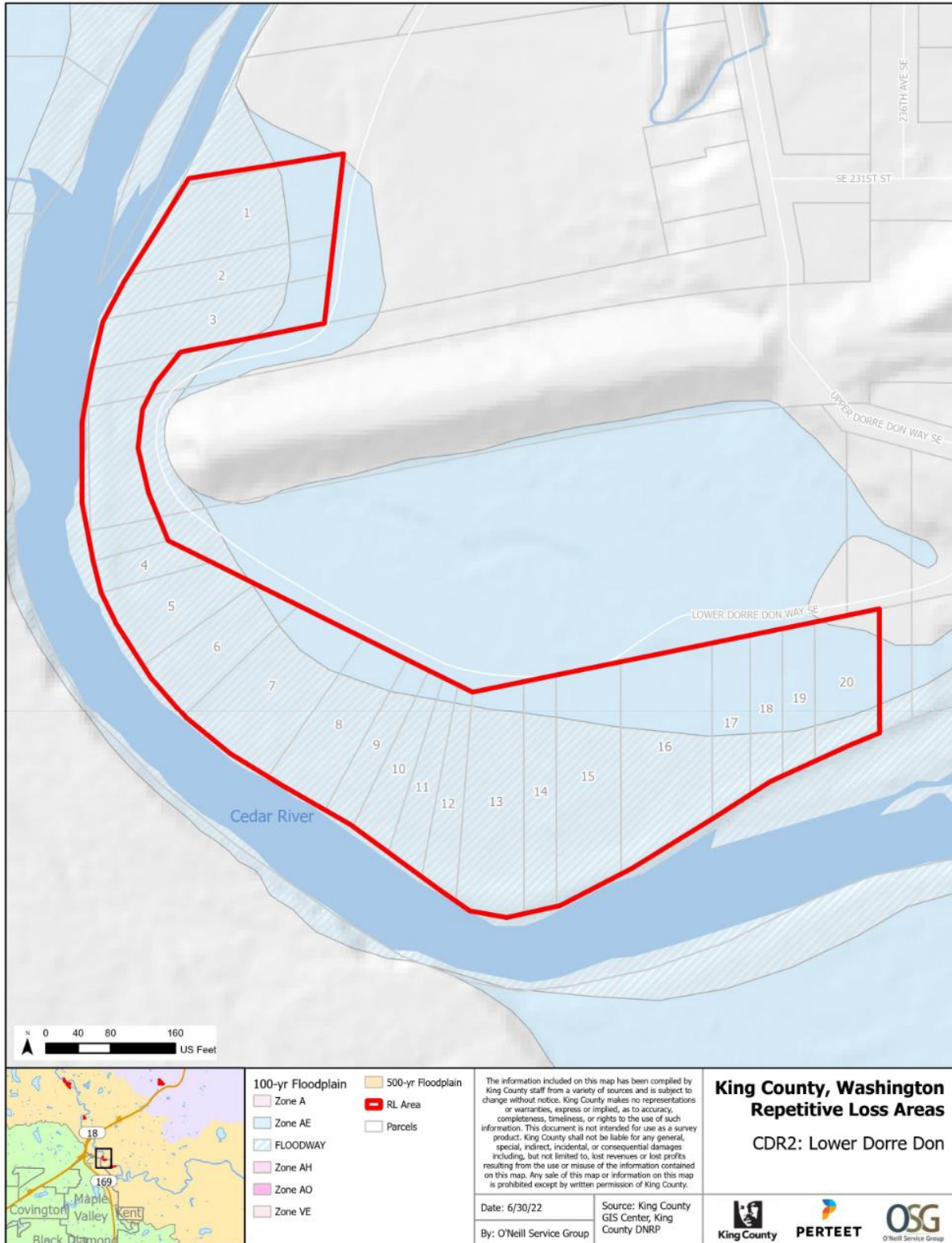


Exhibit 18. Lower Dorre Don (CDR 2).



Flood Photos



Cedar River at Lower Dorre Don. November 24, 1990.



Cedar River at Lower Dorre Don. November 24, 1990.



Example Properties



Repetitive Loss Area 3: SE 218th Street (CDR 3)

SE 218th Street is located between State Route 18 and State Route 169 (Renton-Maple Valley Road). There are four parcels within the channel migration zone of the Cedar River. Three of the parcels lie lower than the opposite bank and are inundated during flood events. Homes on two of these parcels are in both the floodplain and the severe channel migration zone. A third parcel was mitigated through a home buyout in 2015.

Exhibit 19. Repetitive Loss Area Summary (CDR 3).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
SE 218th Street	1	1	1	2	3	4

Exhibit 20. Repetitive Loss Area Detailed Analysis (CDR 3).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1930	Crawl space	Average
				Vacant	Vacant
			1946	Slab on grade	Average
			1911	Slab on grade	Average

Exhibit 21. Repetitive Loss Area Field Survey Data (CDR 3).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	H	X		X			
	L		X		X		
	A		X		X		

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



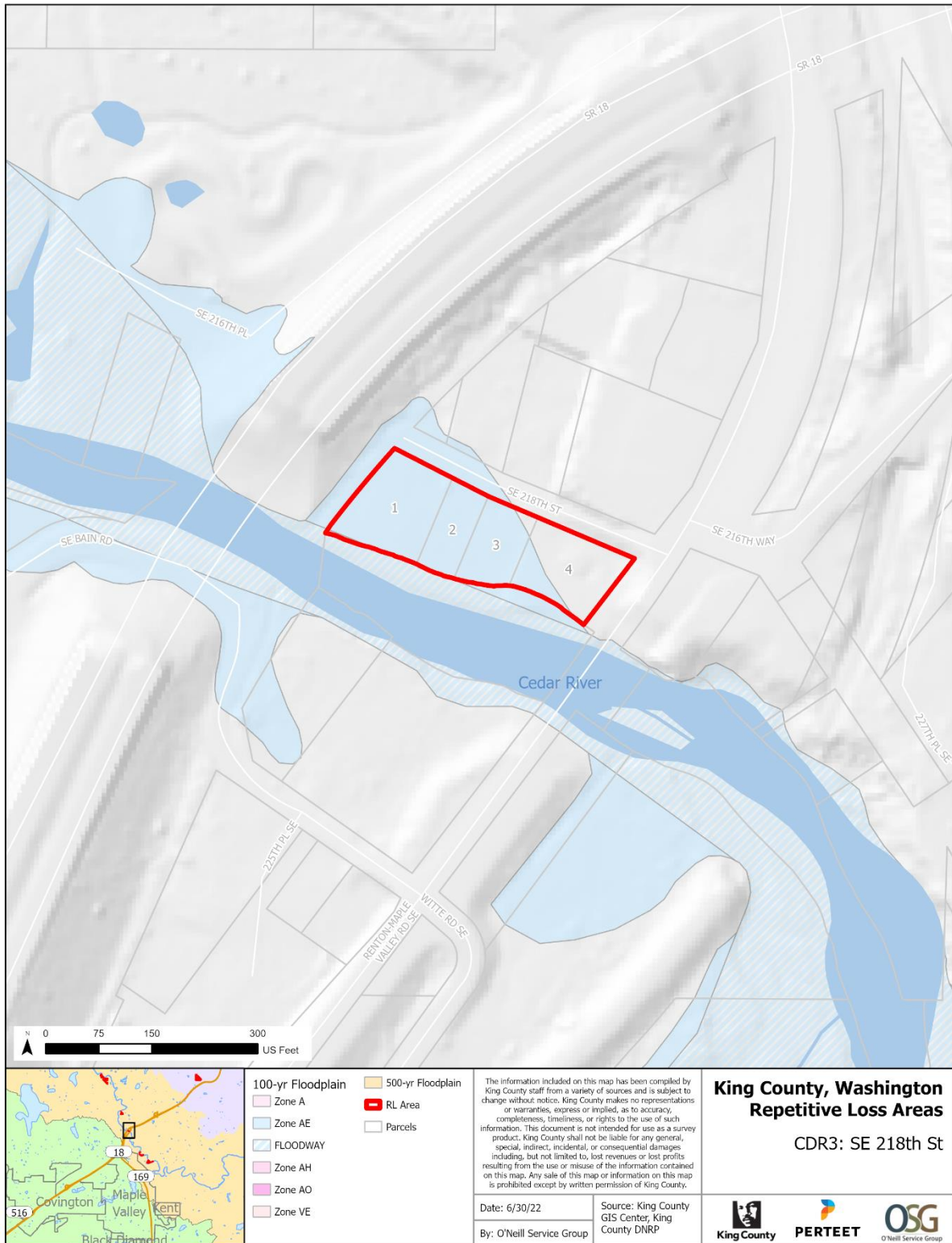


Exhibit 22. SE 218th Street (CDR 3).



Flood Photos



Cedar River at SE 218th Street. January 7, 2009.

Example Properties



Repetitive Loss Area 4: Royal Arch (CDR 4)

The Royal Arch area is located downstream of SR 18. In this vicinity, the river grade begins to flatten, and the floodplain and floodway become more expansive. The properties in this RLA are just upstream of a bridge crossing that restricts the river. The area has been the focus of past mitigation conducted in partnership with the City of Seattle Public Utilities, which purchased numerous parcels along the riverfront with structures that were damaged during the flooding in 2009. None of the properties acquired to date are repetitive loss properties.

Residents reported that better management of the watershed may reduce flooding.

Exhibit 23. Repetitive Loss Area Summary (CDR 4).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Royal Arch	1	0	1	3	2	4

Exhibit 24. Repetitive Loss Area Detailed Analysis (CDR 4).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1959	Basement	Average
			1958	Slab on grade	Average
				Vacant	Vacant
			1984	Slab on grade	Average

Exhibit 25. Repetitive Loss Area Field Survey Data (CDR 4).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Acquire/ Demolish	Possible Mitigation Options			
				Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	Unknown		X				
	A	X	X				
	A	X	X				

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



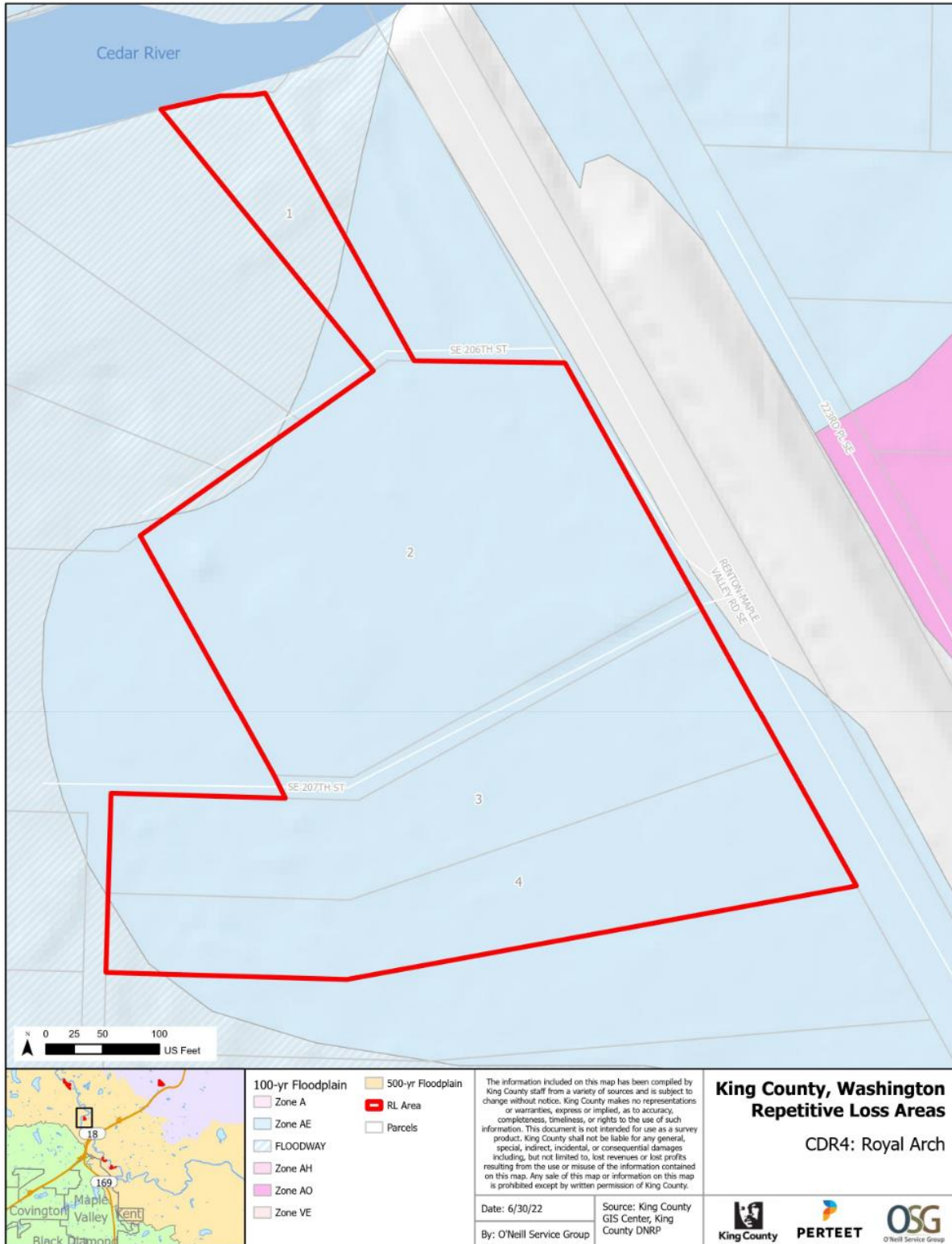


Exhibit 26. Royal Arch (CDR 4).



Flood Photos



Cedar River at Royal Arch. January 7, 2009.

Example Properties



Repetitive Loss Area 5: Byers (CDR 5)

The Byers Road neighborhood is located on the left bank of the river. The neighborhood is extensively inundated during as little as a 20-year flood and the sole access road is frequently inundated and unsafe for passage. Residents regularly require emergency evacuation.

The Cedar River CIS identifies the neighborhood along Byers Road as one of the most significant flood and erosion risk areas on the Cedar River. The CIS recommends conducting a feasibility study to evaluate the risks and possible solutions in greater detail. Opportunities likely to be considered include construction of an emergency egress route, acquisition of up to seven homes in the path of fast and deep flows, and structural improvements to more safely convey flows through the reach.

This project is identified as a medium-term action (7-10 years from the 2017 adoption of the CIS).

Exhibit 27. Repetitive Loss Area Summary (CDR 5).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Byers	2	1	5	8	3	11

Exhibit 28. Repetitive Loss Area Detailed Analysis (CDR 5).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.				Vacant	Vacant
			1968	Crawl space	Poor
			1954	Crawl space	Average
			1957	Basement	Good
			1994	Crawl space	Average
			1927	Unknown	Average

Exhibit 29. Repetitive Loss Area Field Survey Data (CDR 5).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	Unknown		X				
	A		X				
	A		X		X		
	A		X		X		
	A		X		X		

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



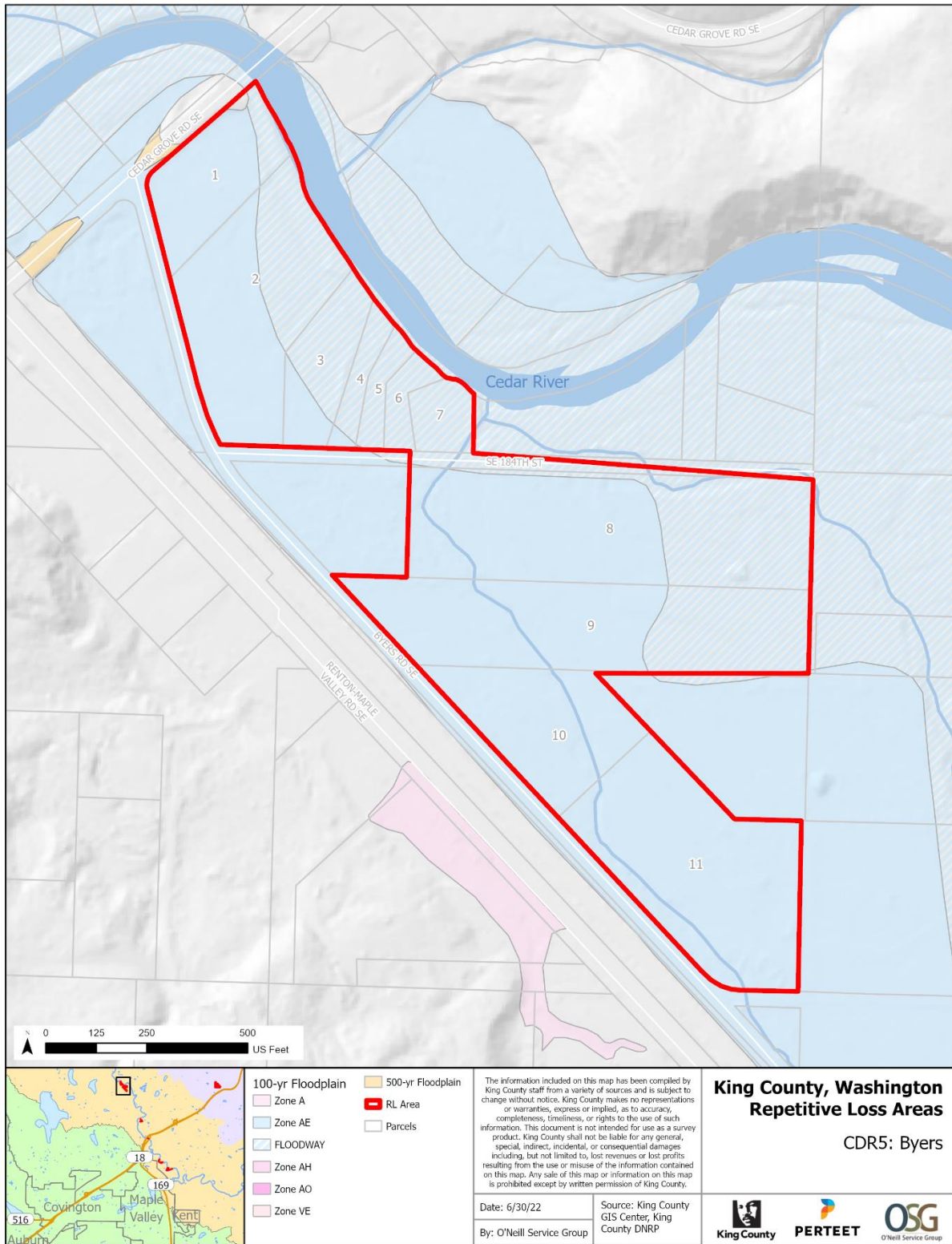


Exhibit 30. Byers (CDR 5).



Flood Photos



Cedar River at Byers Road. January 7, 2009.

Example Properties



BASIN 2 – SAMMAMISH RIVER BASIN

Within the Sammamish River Basin, there are three repetitive loss areas, three unmitigated repetitive loss properties, and one mitigated property. All repetitive loss properties in this basin are individual repetitive loss areas.

The Sammamish River flows 14 miles from Lake Sammamish to its mouth in Lake Washington. Major tributaries include Bear, Little Bear, North, and Swamp Creeks. The entire river is part of a flood control project completed by the US Army Corps of Engineers in 1965 that channelized, dredged, and straightened the previously meandering channel network. King County is the local sponsor and is responsible for long-term maintenance.

The Sammamish River Basin also includes a network of creeks that feed into Lake Sammamish, including Issaquah Creek. Two of the three repetitive loss properties are in the upper part of the watershed, above Lake Sammamish, and are associated with these creeks. The third property is downstream of Lake Sammamish.

None of the repetitive loss properties are within the floodplain, and all properties have unique and individual flood issues that are not shared by neighboring properties. In accordance with the Privacy Act of 1974, the individual properties will not be shared with the general public.

Current projects in the Sammamish River Basin include:

Sammamish River Capital Investment Strategy

This project develops a capital investment strategy for the entire length of the Sammamish River from Lake Sammamish to Lake Washington.

Willowmoor Floodplain Restoration Project

This project reconfigures the outlet from Lake Sammamish to the Sammamish River to maintain or reduce current level of flood risk in the downstream river channel and along the lake shore. The project will be designed in a manner that reduces flooding impacts and improves conditions for fish listed in the Endangered Species Act and other wildlife in the transition zone between the lake and the river.



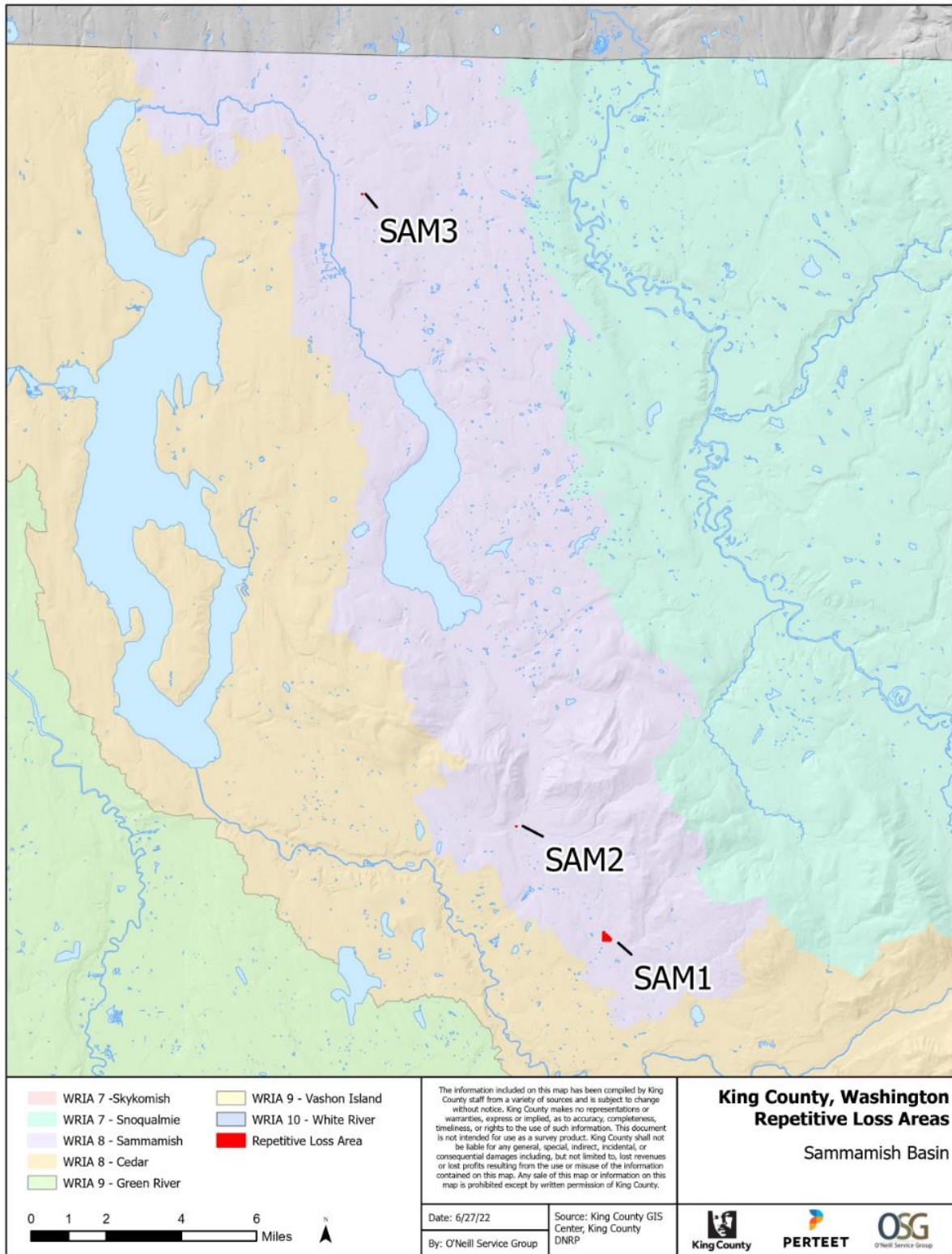


Exhibit 31. Sammamish Basin.



Repetitive Loss Area 1: Issaquah-Hobart Road (SAM 1)

In accordance with the Privacy Act of 1974, information about individual repetitive loss properties will not be shared with the general public.

This property is located along Holder Creek and is outside of the 100-year floodplain. The house has experienced basement flooding several times.

Residents reported that the basement flooded last in February 2020, when the creek overtopped the shallow bank behind the house

Exhibit 32. Repetitive Loss Area Summary (SAM 1).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Issaquah-Hobart Road	1	0	0	0	1	1

Exhibit 33. Repetitive Loss Area Detailed Analysis (SAM 1).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1960	Basement	Average

Exhibit 34. Repetitive Loss Area Field Survey Data (SAM 1).

Address	First Floor Elevation ¹	Possible Mitigation Options					
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.		A	X		X		

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



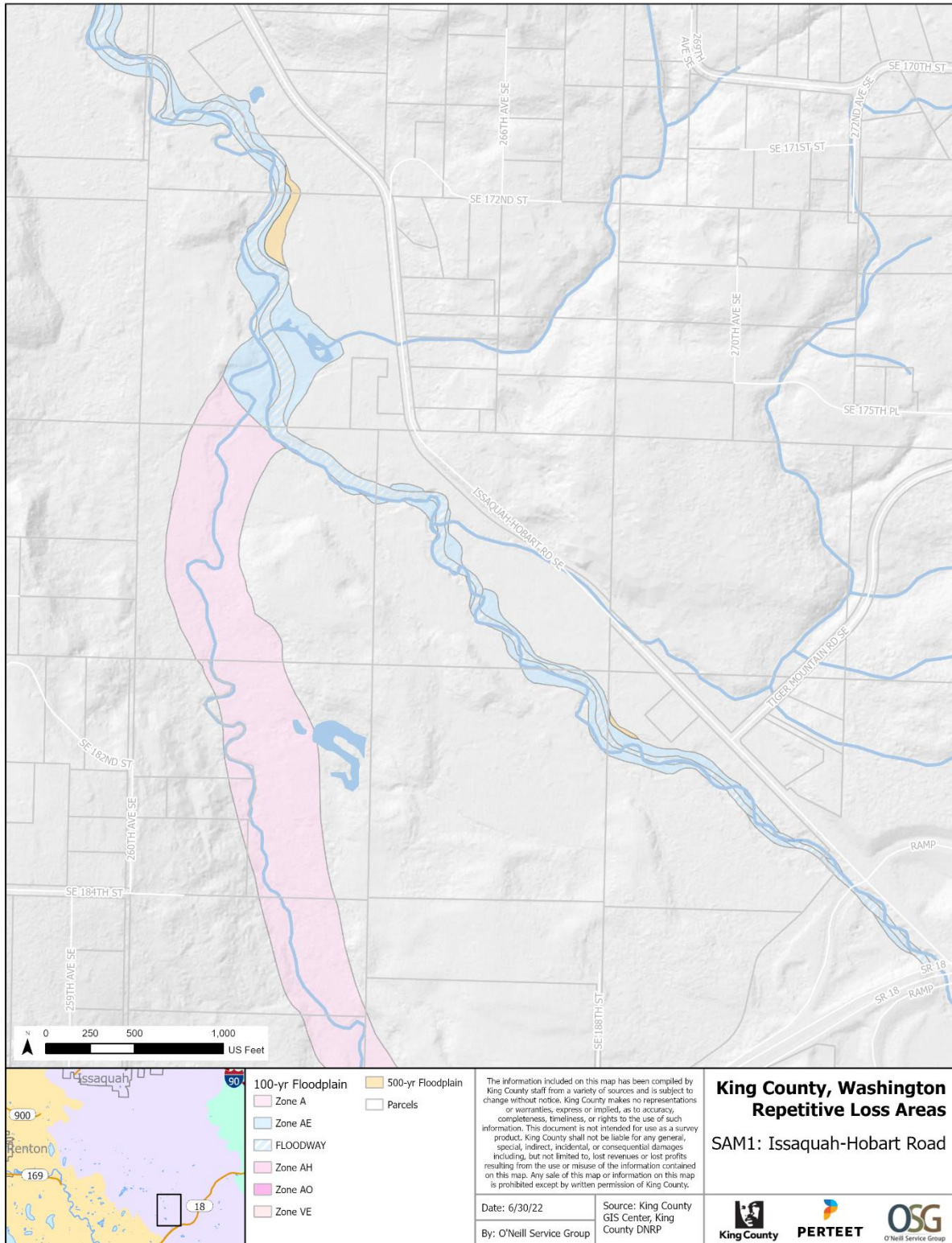


Exhibit 35. Issaquah-Hobart Road (SAM 1).



Repetitive Loss Area 2: May Valley (SAM 2)

In accordance with the Privacy Act of 1974, information about individual repetitive loss properties will not be shared with the general public.

This residential property is located along Issaquah Creek and is outside of the 100-year floodplain. The house experienced flooding in 1990 and 1996.

Exhibit 36. Repetitive Loss Area Summary (SAM 2).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
May Valley	1	0	0	0	1	1

Exhibit 37. Repetitive Loss Area Detailed Analysis (SAM 2).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1983	Crawl space	Good

Exhibit 38. Repetitive Loss Area Field Survey Data (SAM 2).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.		Unknown		X		X	

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



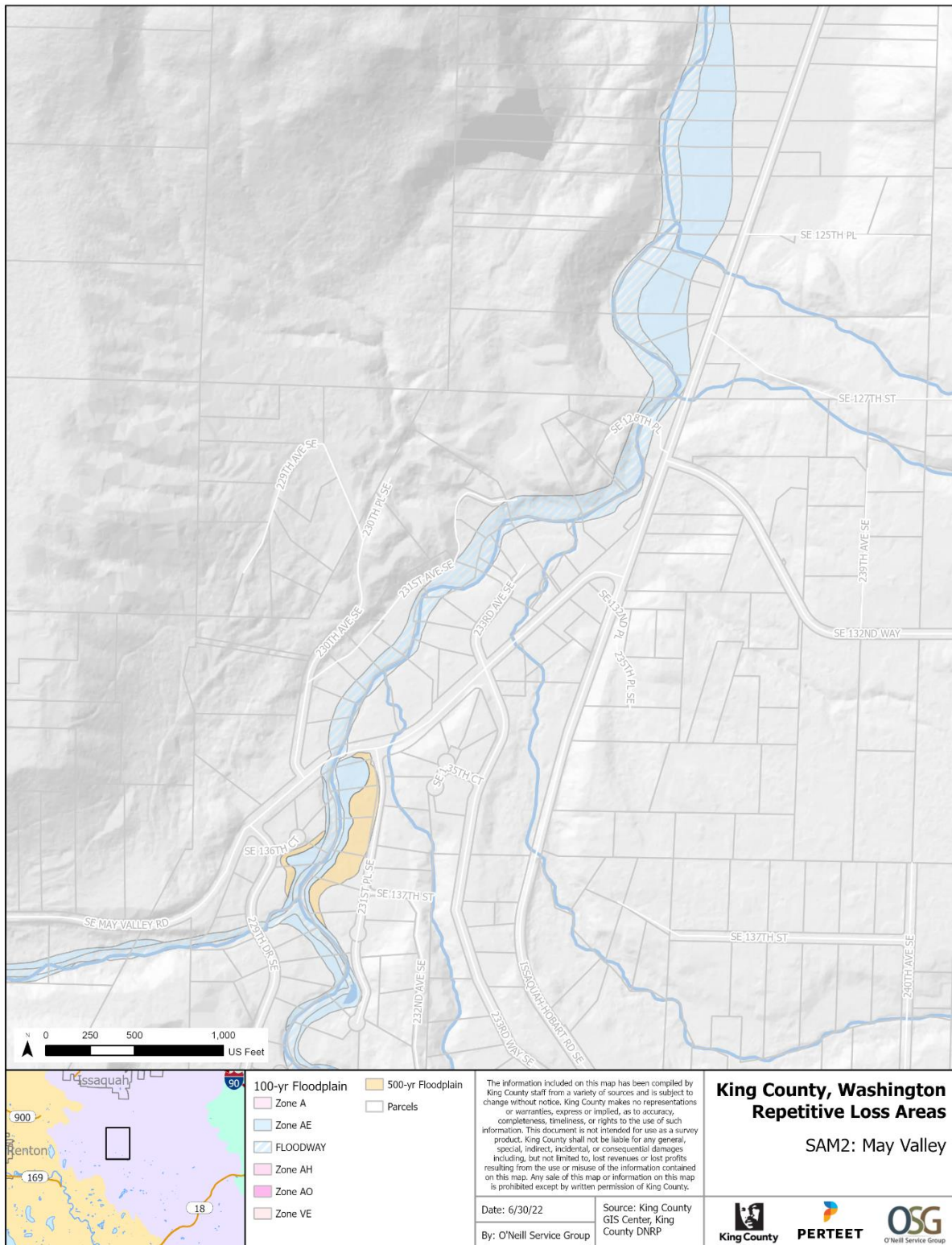


Exhibit 39. May Valley (SAM 2).



Repetitive Loss Area 3: Redmond (SAM 3)

In accordance with the Privacy Act of 1974, information about individual repetitive loss properties will not be shared with the general public.

This residential property is located near Redmond and is not near a watercourse or floodplain. The house sits in a depression at the bottom of a hill. There is a catch basin in the road, but it does not help with runoff because the garage and house sit very low. Other houses in the area are sloped to have water run off into the street or stormwater areas. The owners filed flood insurance claims in 2007 and 2010, but there have likely been additional damaging flood events that led to the purchase of flood insurance.

Exhibit 40. Repetitive Loss Area Summary (SAM 3).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Redmond	1	0	0	0	1	1

Exhibit 41. Repetitive Loss Area Detailed Analysis (SAM 3).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1988	Slab on grade	Good

Exhibit 42. Repetitive Loss Area Field Survey Data (SAM 3).

Address	First Floor Elevation ¹	Possible Mitigation Options					
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.		L					X

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



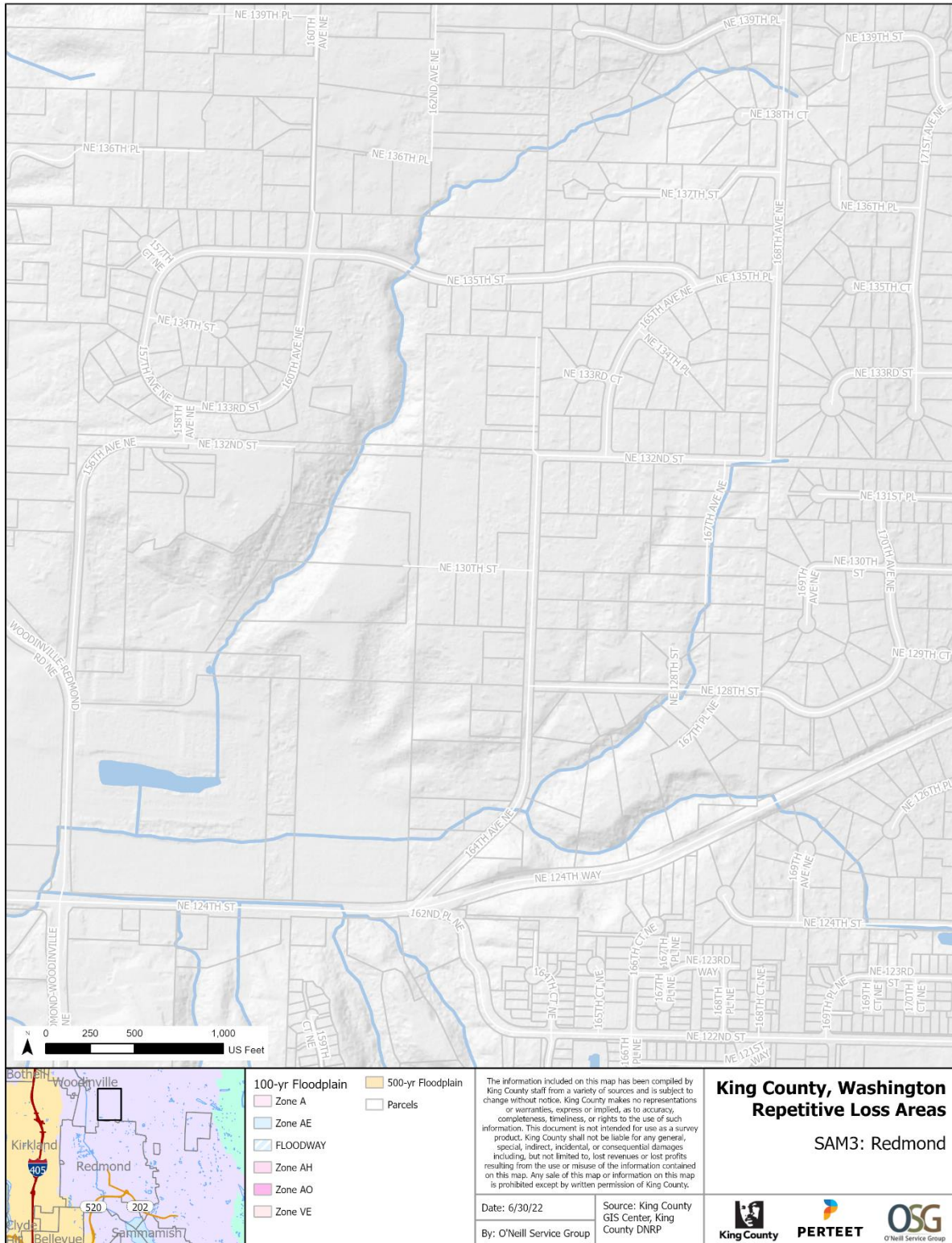


Exhibit 43. Redmond (SAM 3).



BASIN 3 – SOUTH FORK SKYKOMISH RIVER BASIN

The South Fork Skykomish River Basin includes Beckler River and Miller River. The South Fork Skykomish River joins the North Fork Skykomish River just downstream of King County, near Index in Snohomish County. Formed at the confluence of the Tye and Foss Rivers about 13 river miles upstream of the King and Snohomish County line, the South Fork Skykomish River is a relatively unpolluted and free-flowing river, with no significant dams in the watershed. It includes several waterfalls and feeds the Snohomish River which empties into Puget Sound at Port Gardner in Everett. The State of Washington has designated many portions of the South Fork Skykomish as scenic.

Homes and other structures at many locations along the South Fork Skykomish River have suffered damage from deep and fast-moving water resulting from floods. The largest flood on record in Gold Bar (Snohomish County) occurred in November 1990, when South Fork Skykomish River flows reached 102,000 cubic feet per second. This flood also inundated the Town of Skykomish in King County. During significant flood events, homes in the Town of Skykomish have been struck by flood-borne debris moving at high speeds.

The South Fork Skykomish River Basin has 4 repetitive loss areas, 6 unmitigated properties, 8 mitigated properties, and 40 total properties.

Current projects in the Skykomish Basin include:

South Fork Skykomish Repetitive Loss Mitigation

The repetitive loss program funds elevation or buyout of individual structures in the South Fork Skykomish Basin to eliminate the risk of flooding or erosion damage during future flood events.

Timberlane Village Revetment Repair

This project repairs a in Timberlane Village on the South Fork Skykomish River. The revetment is now in poor condition and if left unmodified, the large rocks could fall unexpectedly creating a hazard for people walking along the river and/or cause aquatic degradation.



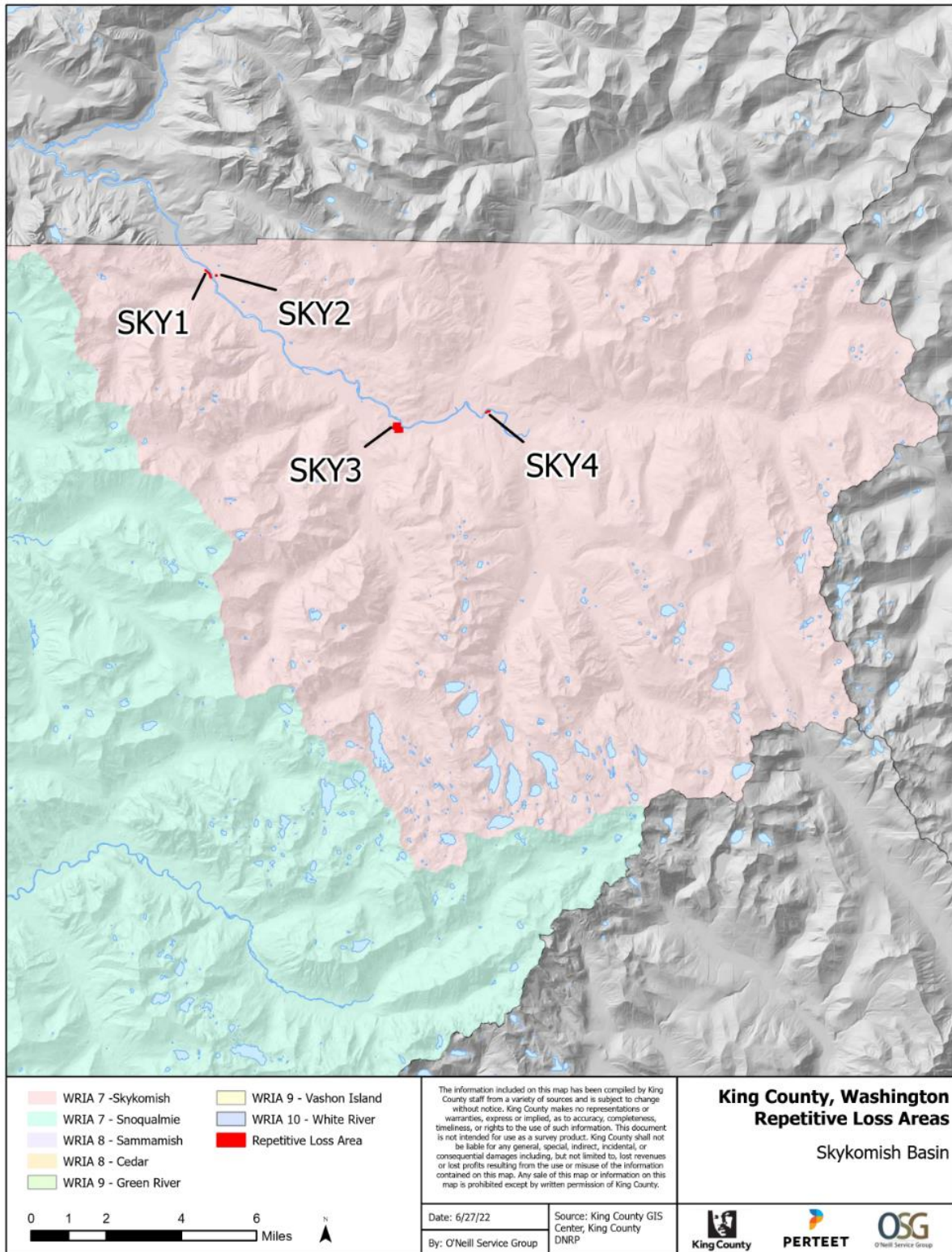


Exhibit 44. Skykomish River Basin.



Repetitive Loss Area 1: Skylandia (SKY 1)

Skylandia is a residential neighborhood located on the left bank of the South Fork Skykomish River. Many of the homes were constructed in the 1960s and 1970s and most of the homes are vacation cabins. The properties in the repetitive loss area are along the riverfront and in the floodway, and experience flooding when the river overtops its banks.

Residents reported that elevating structures has reduced flood damage.

Exhibit 45. Repetitive Loss Area Summary (SKY 1).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Skylandia	3	1	5	6	4	15

Exhibit 46. Repetitive Loss Area Detailed Analysis (SKY 1).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1972	Slab on grade	Average
			1962	Piers	Average
			2000	Slab on grade	Good
			1972	Piers	Average
			1994	Piers	Good
			1976	Crawl space	Average
			1972	Crawl space	Average
			1971	Piers	Good
			1981	Crawl space	Good

Exhibit 47. Repetitive Loss Area Field Survey Data (SKY 1).

Address	First Floor Elevation ¹	Possible Mitigation Options				
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint. Other
Addresses are omitted from the external version.	A				X	X
	A	X				
	A				X	X
	A	X		X		X
	A				X	X
	A	X		X		X
	A				X	
	A				X	
	L	X			X	

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



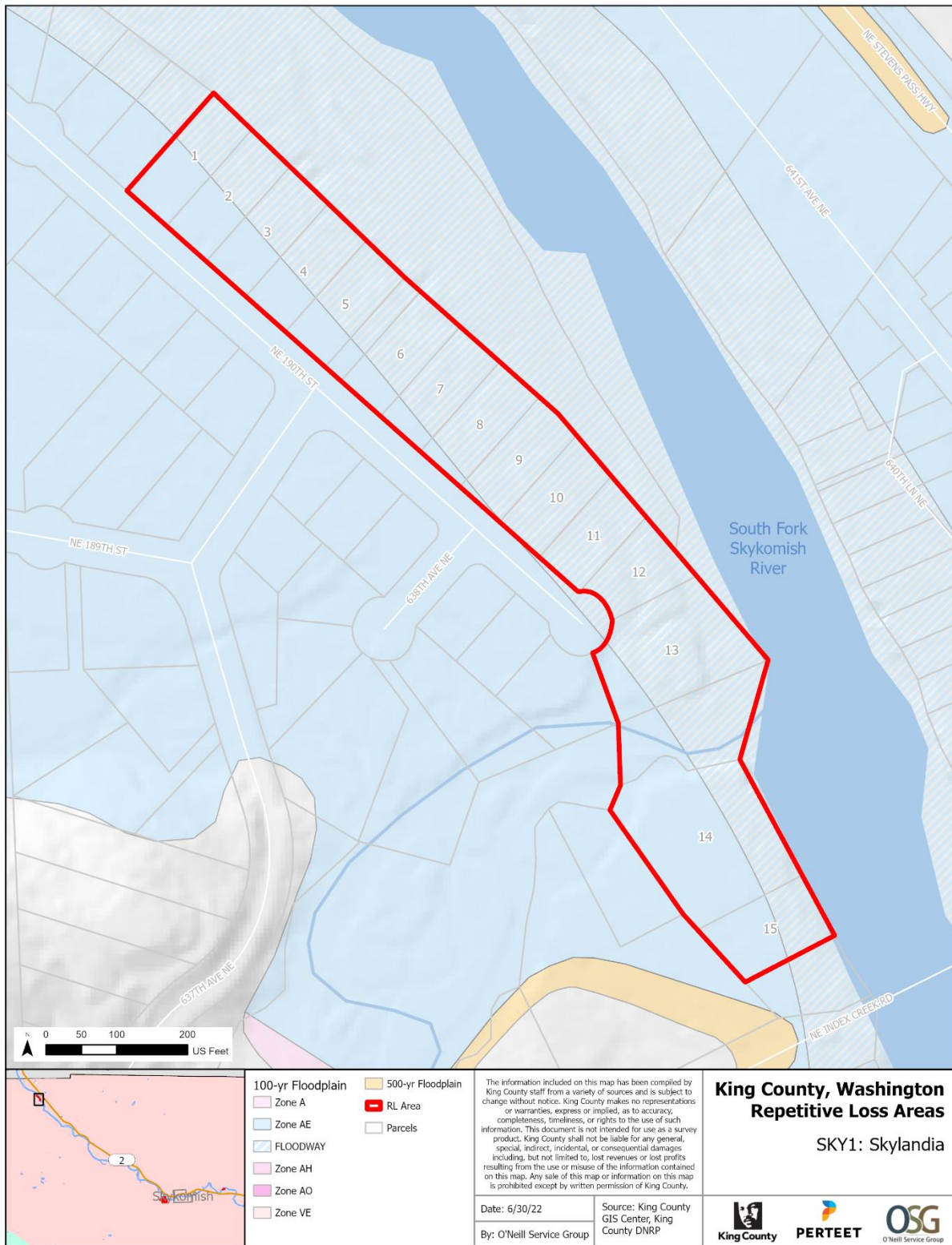


Exhibit 48. Skylandia (SKY 1).



Example Properties



Repetitive Loss Area 2: Index Creek (SKY 2)

In accordance with the Privacy Act of 1974, information about individual repetitive loss properties will not be shared with the general public.

This property is located in a low spot along the South Fork Skykomish River and is exposed to flooding when the river overtops the banks.

Exhibit 49. Repetitive Loss Area Summary (SKY 2).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Index Creek	1	0	0	0	1	1

Exhibit 50. Repetitive Loss Area Detailed Analysis (SKY 2).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			Unknown	Slab on grade	Good

Exhibit 51. Repetitive Loss Area Field Survey Data (SKY 2).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options					
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other	
Addresses are omitted from the external version.		A	X		X		X	

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



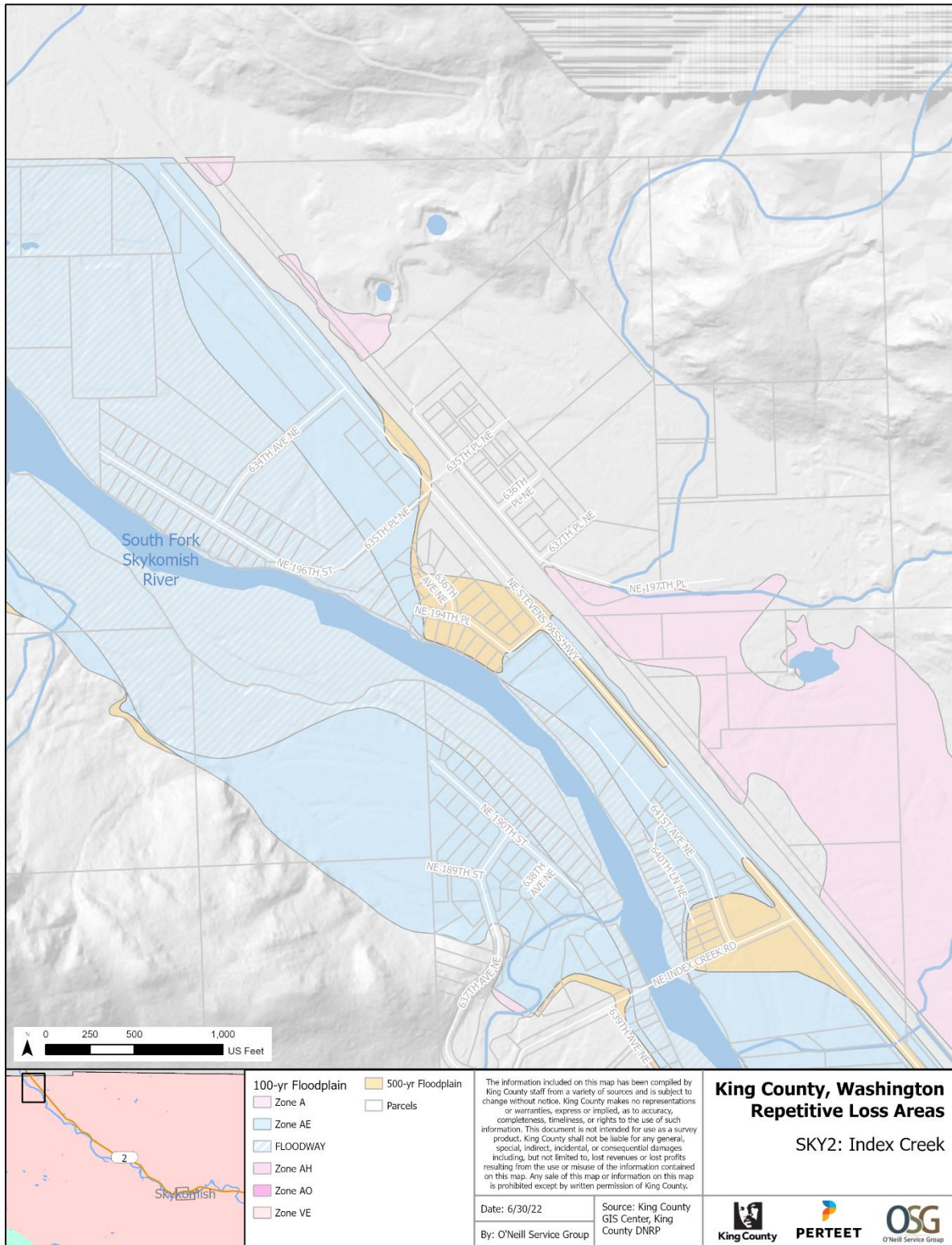


Exhibit 52. Index Creek (SKY 2).



Repetitive Loss Area 3: Old Cascade Highway (SKY 3)

The neighborhood along Old Cascade Highway is mostly outside of the effective 100-year floodplain, but proposed floodplain boundaries include the area. Even though the area is separated from the river by railroad tracks, the area experiences flooding due to backwater collecting behind the railroad tracks from Maloney Creek, an unnamed tributary, and runoff from the hillside. The backwater inundates the properties, especially those that are situated on lower grade.

King County Road Services is currently preparing to start a project that will replace culverts and clean out ditches alongside the Old Cascade Highway to reduce the risk of flooding and road damage. Two culverts are in this repetitive loss area. The project is funded FEMA as a result of major flooding in 2011 that rerouted the East Fork Miller River and washed out a section of roadway.

Residents reported that a stream crossing through the neighborhood has been a problem. Additionally, the culvert crossing the BNSF railroad tracks does not have a backflow preventer and when the river is high it back flows into the neighborhood.

Exhibit 53. Repetitive Loss Area Summary (SKY 3).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Old Cascade Highway	1	1	4	11	4	15

Exhibit 54. Repetitive Loss Area Detailed Analysis (SKY 3).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1992	Crawl space	Good
			1924	Slab on grade	Poor
			1923	Crawl space	Poor
			1924	Slab on grade	Average
			1924	Crawl space	Good
			1945	Crawl space	Good
			1927	Slab on grade	Good
			1924	Slab on grade	Poor
			1927	Slab on grade	Average



Exhibit 55. Repetitive Loss Area Field Survey Data (SKY 3).

Address	First Floor Elevation ¹	Possible Mitigation Options					Other
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	
Addresses are omitted from the external version.	H	X		X		X	
	A	X					
	L	X		X		X	
	H					X	
	L	X					
	H					X	
	A	X		X		X	
	A	X		X		X	
	A	X		X			
	A	X		X			

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



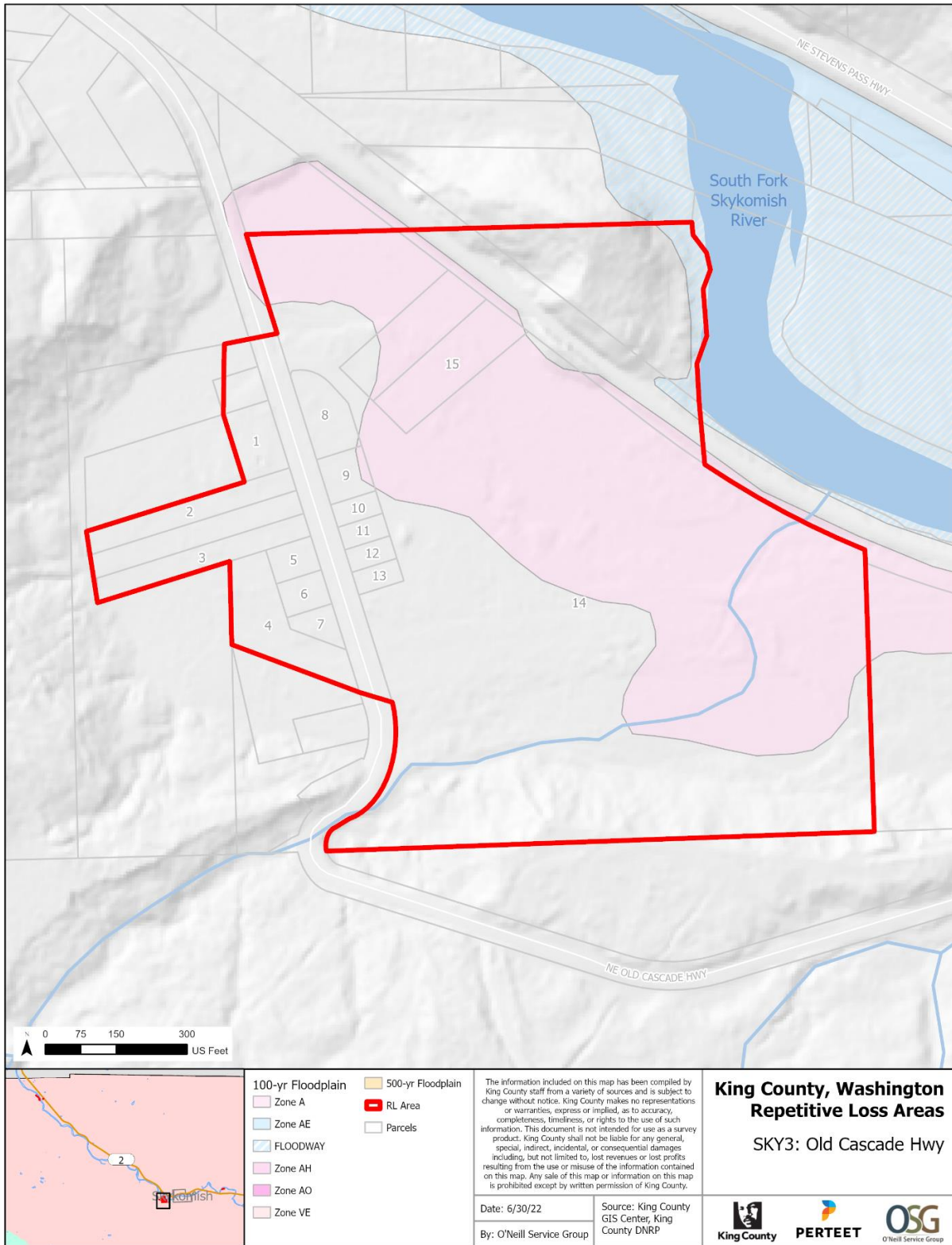


Exhibit 56. Old Cascade Highway (SKY 3).



Example Properties



Repetitive Loss Area 4: Timberlane Village (SKY 4)

Timberlane Village is a residential neighborhood located on the left bank of the South Fork Skykomish River and is entirely located within the 100-year floodplain. Approximately half of each parcel is located in the floodway. The neighborhood was platted in the 1930s and many of the homes in the repetitive loss area were constructed between 1930 and 1979. The area is on a bend in the river and experiences overbank flooding. The higher right bank forces the floodwaters into the lower elevation portion of the Timberlane Village neighborhood, flooding yards and houses.

Exhibit 57. Repetitive Loss Area Summary (SKY 4).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Timberlane Village	1	1	2	7	3	9

Exhibit 58. Repetitive Loss Area Detailed Analysis (SKY 4).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1979	Crawl space	Good
			1969	Slab on grade	Good
			1930	Slab on grade	Poor
			1936	Slab on grade	Good
			1936	Slab on grade	Average
			2018	Piers	Good
			1978	Piers	Average

Exhibit 59. Repetitive Loss Area Field Survey Data (SKY 4).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	A	X		X			
	A						
	L	X		X			
	A	X		X			
	H	X		X	X	X	
	A	X		X			
	H	X		X			

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



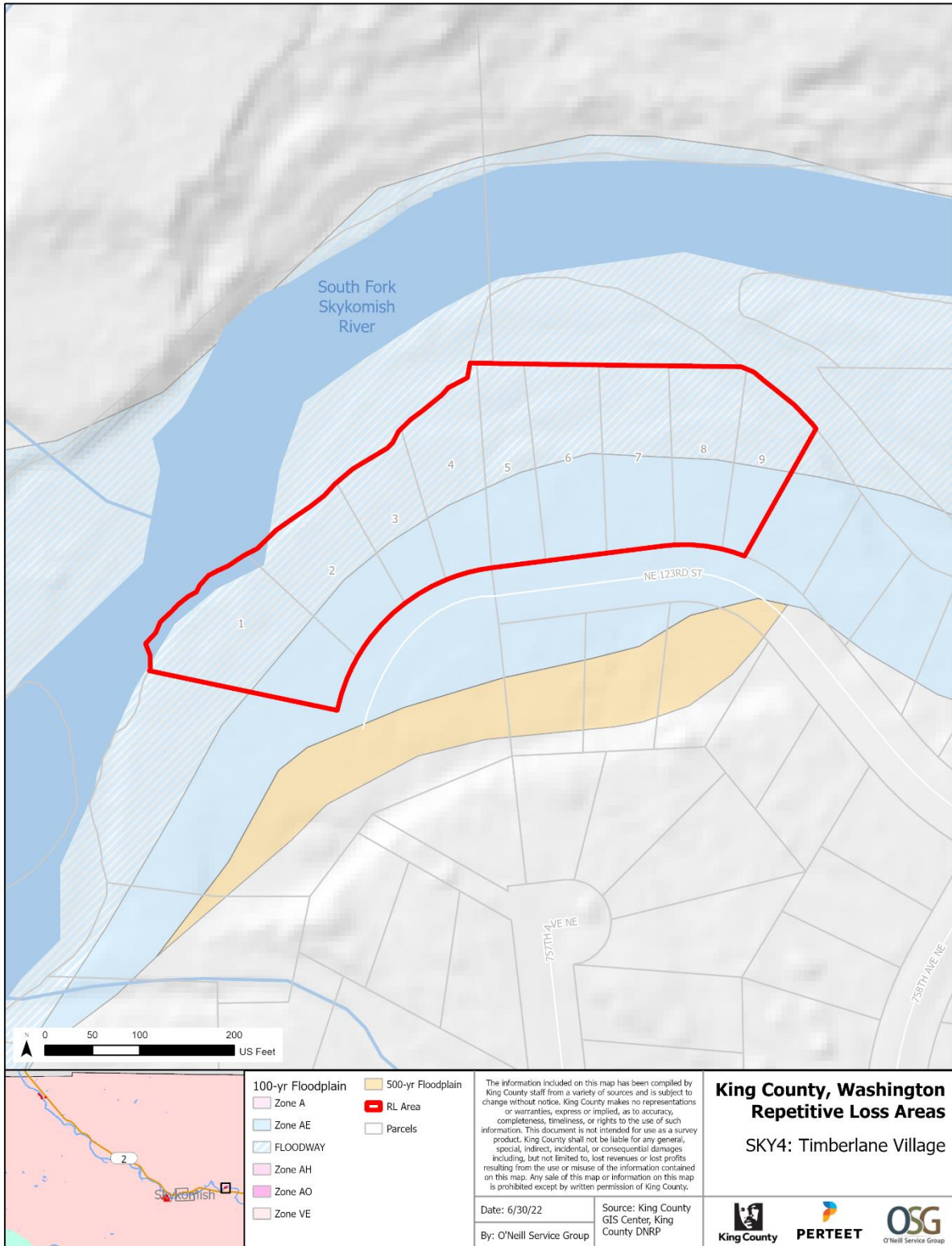


Exhibit 60. Timberlane Village (SKY 4).



Example Properties



BASIN 4 – SNOQUALMIE RIVER BASIN

The Snoqualmie River Basin has the majority of the County’s repetitive loss properties. The basin has 22 repetitive loss areas, 65 unmitigated properties, 77 mitigated properties, and 451 total properties.

Upper Snoqualmie River

The Snoqualmie River’s three forks (North Fork, Middle Fork, and South Fork) begin in the high peaks of the Cascades, follow steep watercourses through the mountains and the City of North Bend, and combine to form the mainstem Snoqualmie River at the confluence near the foot of Mount Si and City of Snoqualmie. The river flows through the City of Snoqualmie and over Snoqualmie Falls. The City of Snoqualmie is one of the most flood prone cities in the United States.

Land uses along the Snoqualmie River in North Bend and Snoqualmie primarily consist of residential and commercial uses. Rural residential and forestry dominate the upper basin. Flows along the forks are unregulated, with no major reservoirs in the system. Several hydroelectric facilities divert flows, including a dam operated by Puget Sound Energy immediately above Snoqualmie Falls. All of the hydroelectric facilities in this sub-basin lack sufficient storage volumes to control downstream flooding.

The highest flow recorded on the Snoqualmie River from the upper basin was 78,800 cubic feet per second in November 1990 at the Snoqualmie River near Snoqualmie gage (USGS 12144500). Major flooding occurred in 1996, 1999, 2003, 2006, 2008, and 2009, in some cases damaging levees and necessitating repairs.

Lower Snoqualmie River

The Lower Snoqualmie River basin begins at Snoqualmie Falls and generally drains north toward Snohomish County. The river meanders in wide loops through a largely agricultural valley floodplain, passing through the unincorporated community of Fall City and the cities of Carnation and Duvall. Aside from these three residential and commercial centers, most of the lower Snoqualmie valley supports rural residential, agricultural, and recreational land uses.

The Snoqualmie River is prone to flooding and typically has annual multiple flood events that inundate local farmland and close low-lying roads. Flooding causes significant property, economic, and social losses to residents, businesses, and farms. Impacts include injuries to citizens, health hazards, economic and property damages, lost revenue, and increased demand on public safety and infrastructure-related services.

Tolt River

The Tolt River is a major tributary that enters the Snoqualmie River from the east, near the City of Carnation. Its headwaters are at the crest of the Cascades. Land use in the Tolt River valley is primarily residential with lower density development in the upstream valley and higher density development downstream. The upper reaches of the Tolt River basin are mostly within the Forest Production District, where timber harvesting has occurred on an ongoing basis since the early 1900s. The City of Seattle operates a water supply and hydroelectric power dam on the South Fork Tolt River, which was completed in 1963.



Most of the Tolt River basin is in unincorporated King County. The City of Carnation is located along the north bank of the river. Flood and erosion hazards affect unincorporated areas and incorporated areas. Levees line both banks from about River Mile 2 to the mouth. The State Route 203 Bridge crosses the Tolt River at River Mile 0.55 and the Snoqualmie Valley Trail Bridge, formerly a railroad bridge, crosses the Tolt River at River Mile 1.1.

Major floods on the Tolt River have occurred in 1990, 1995, and 1996, in some cases damaging levees and necessitating repairs.

Investments in the Snoqualmie River basin are guided by a Capital Investment Strategy (CIS). There are currently strategies identified for the Middle Fork Snoqualmie River, South Fork Snoqualmie River, and the Tolt River.

Current projects in the Snoqualmie River Basin include:

Residential Flood Mitigation – Property Acquisition

Mitigation of properties in this basin that are at risk from severe channel migration hazards are considered for acquisition as part of the Residential Flood Mitigation – Property Acquisition project identified in the Middle Fork Snoqualmie River CIS when approached by individual landowners.

Circle River Ranch (South Fork Snoqualmie)

This project evaluates actions to reduce long term risks from channel migration in the Circle River Ranch neighborhood on the South Fork Snoqualmie River north of the City of North Bend. The project is scheduled for completion in 2024.

Reinig Road Revetment Repair

This project, completed in 2021, implemented short-term risk reduction measures and permanent repairs of damages to three sections of the Reinig Road Revetment along Reinig Road located between River Mile 41.75 and River Mile 41.84 on the Snoqualmie River.

SR 203 Bridge Improvements Feasibility Study

This feasibility study evaluates the opportunities, costs, and benefits of providing increased flood water flow through the SR 203 Bridge and road as you approach the bridge. The study will look at modifications to the existing bridge and/or the addition of culverts or additional bridges north of the existing bridge to reduce flooding on SR 203.

Tolt River Level of Service Analysis

This project conducts a detailed technical analysis to optimize the levels of protection provided by new levee systems in the lower two miles of the Tolt River in order to maximize public safety. The project will also include technical analysis that will investigate project sequencing and the resulting flood effects, both downstream and upstream, that might result.

Tolt River Sediment Management Feasibility Study

This project conducted a sediment management feasibility study in order to determine if sediment removal is a feasible and effective flood risk reduction tool for the lower approximately two miles of the Tolt River. The study also reviewed and updated previous analyses of sediment production in the upper Tolt River basin and sedimentation rates in the lower two miles of the Tolt River.



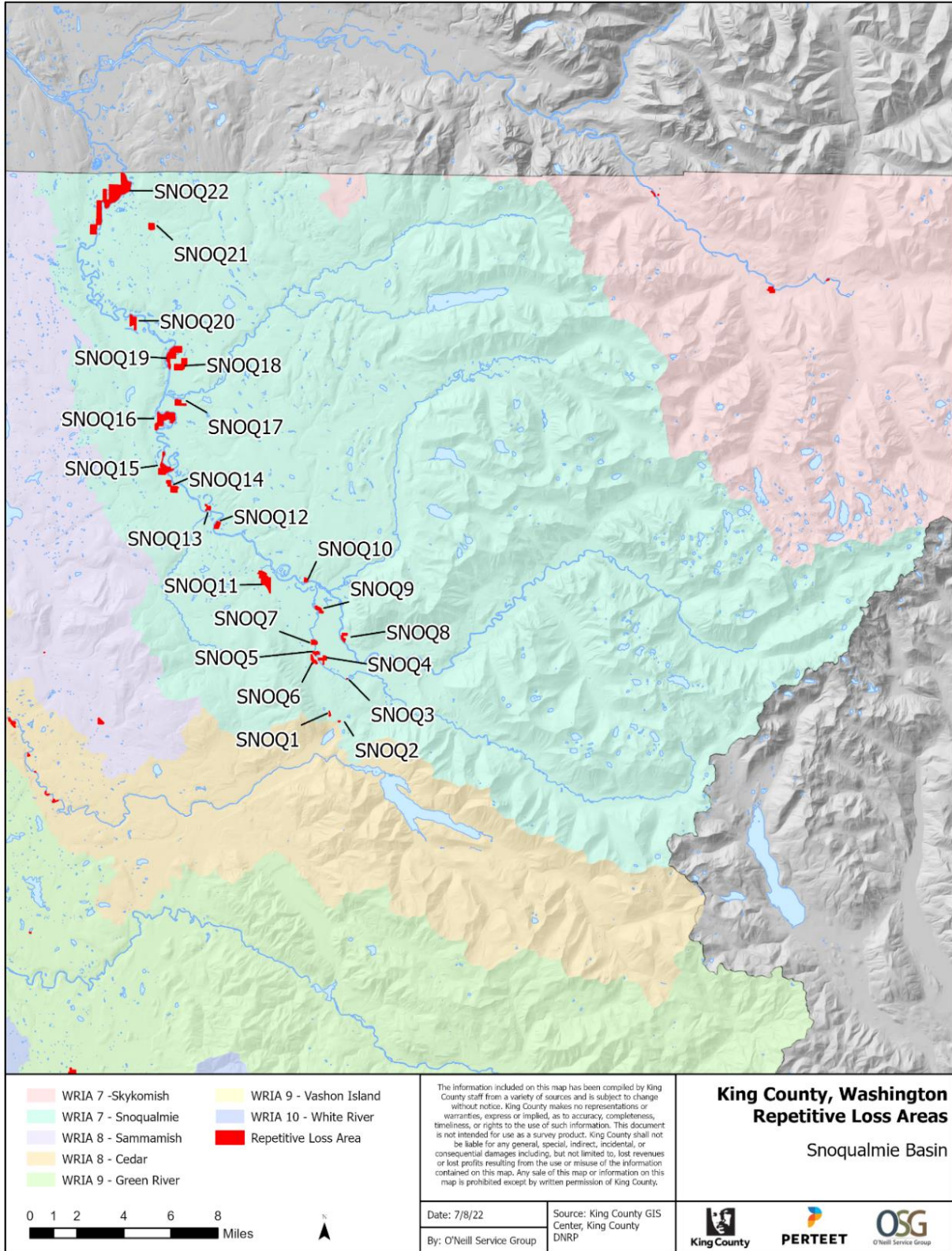


Exhibit 61. Snoqualmie River Basin.



Repetitive Loss Areas 1 and 2: Wilderness Rim (SNOQ 1) and 177th Street SE (SNOQ 2)

The Wilderness Rim neighborhood and adjacent properties on 177th Street SE are located outside of the 100-year floodplain. These areas experience damaging flooding due to groundwater and runoff collecting in depressions. At Wilderness Rim, the flooding is associated with a stormwater pond maintained by King County that is sited in one of the lowest spots in the development. The County completed a capital improvement project on the pond to remediate the flooding and acquired four frequently flooded properties (three repetitive loss properties). Other properties have been elevated to reduce the risk of flood damage. At 177th Street SE, the properties are located at the base of a hill and within a depression where runoff and groundwater naturally collects.

Exhibit 62. Repetitive Loss Area Summary (SNOQ 1 and 2).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Wilderness Rim	1	3	4	13	6	18
177th Street SE	1	0	0	2		3

Exhibit 63. Repetitive Loss Area Detailed Analysis (SNOQ 1 and 2).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
			2004	Unknown	Average
			1980	Unknown	Average
			1979	Slab on grade	Average
			1993	Slab on grade	Average
			1978	Slab on grade	Average
			1980	Unknown	Average
			1979	Slab on grade	Average
				Vacant	Vacant
				Vacant	Vacant
				Vacant	Vacant
			1999	Slab on grade	Average
			1977	Slab on grade	Average
			1979	Slab on grade	Average
			1978	Slab on grade	Average
			1970	Slab on grade	Average
			1979	Slab on grade	Average
			1979	Crawl space	Average
			1977	Piers	Average
			1979	Crawl space	Average
			2000	Crawl space	Good

Addresses, claims, and insurance information is omitted from the external version.



Exhibit 64. Repetitive Loss Area Field Survey Data (SNOQ 1).

Address	First Floor Elevation ¹	Possible Mitigation Options					
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
	A			X		X	
	A			X			
	A			X		X	
	A			X		X	
	A			X			
	A			X		X	
	A			X		X	
	A			X		X	
	A			X		X	
	A			X		X	
	A			X		X	
	A			X			
	A			X		X	
	A			X		X	
	A			X			
	A			X			
	A			X			
	A			X			

Addresses are omitted from the external version.

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



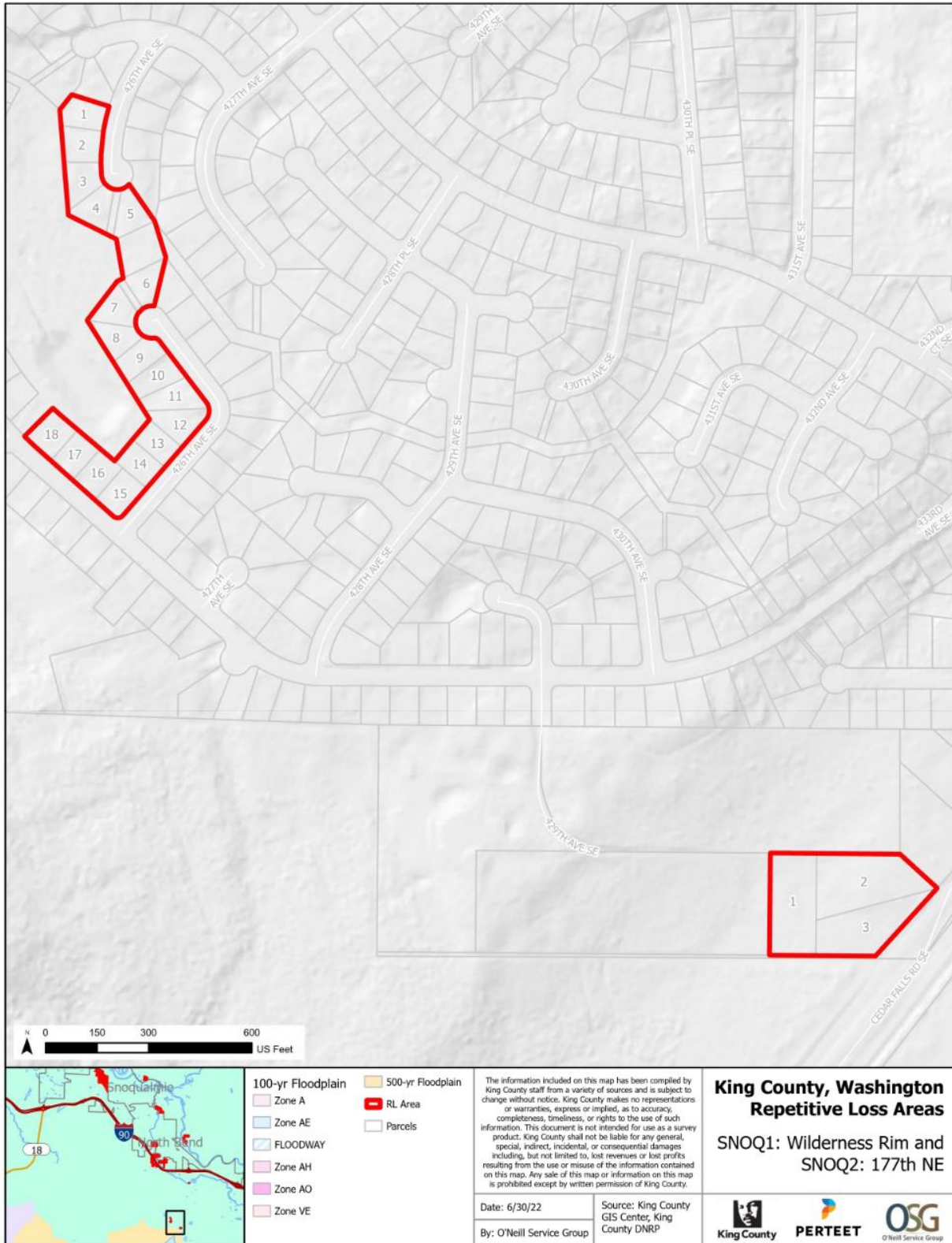


Exhibit 65. Wilderness Rim and 177th Street SE (SNOQ 1 and 2).



Example Properties



Repetitive Loss Area 3: 147th Place SE (SNOQ 3)

This repetitive loss area is located on the right bank of the Middle Fork Snoqualmie River, just upstream of the 436th Avenue bridge. The structures are located in a depression that experiences overland flooding.

Exhibit 66. Repetitive Loss Area Summary (SNOQ 3).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
147th Place SE	1	0	1	1	1	3

Exhibit 67. Repetitive Loss Area Detailed Analysis (SNOQ 3).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.				Vacant	Vacant
			1930	Garage	Average
			1967		Average

Exhibit 68. Repetitive Loss Area Field Survey Data (SNOQ 3).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	Unknown	X					
	Unknown	X					

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



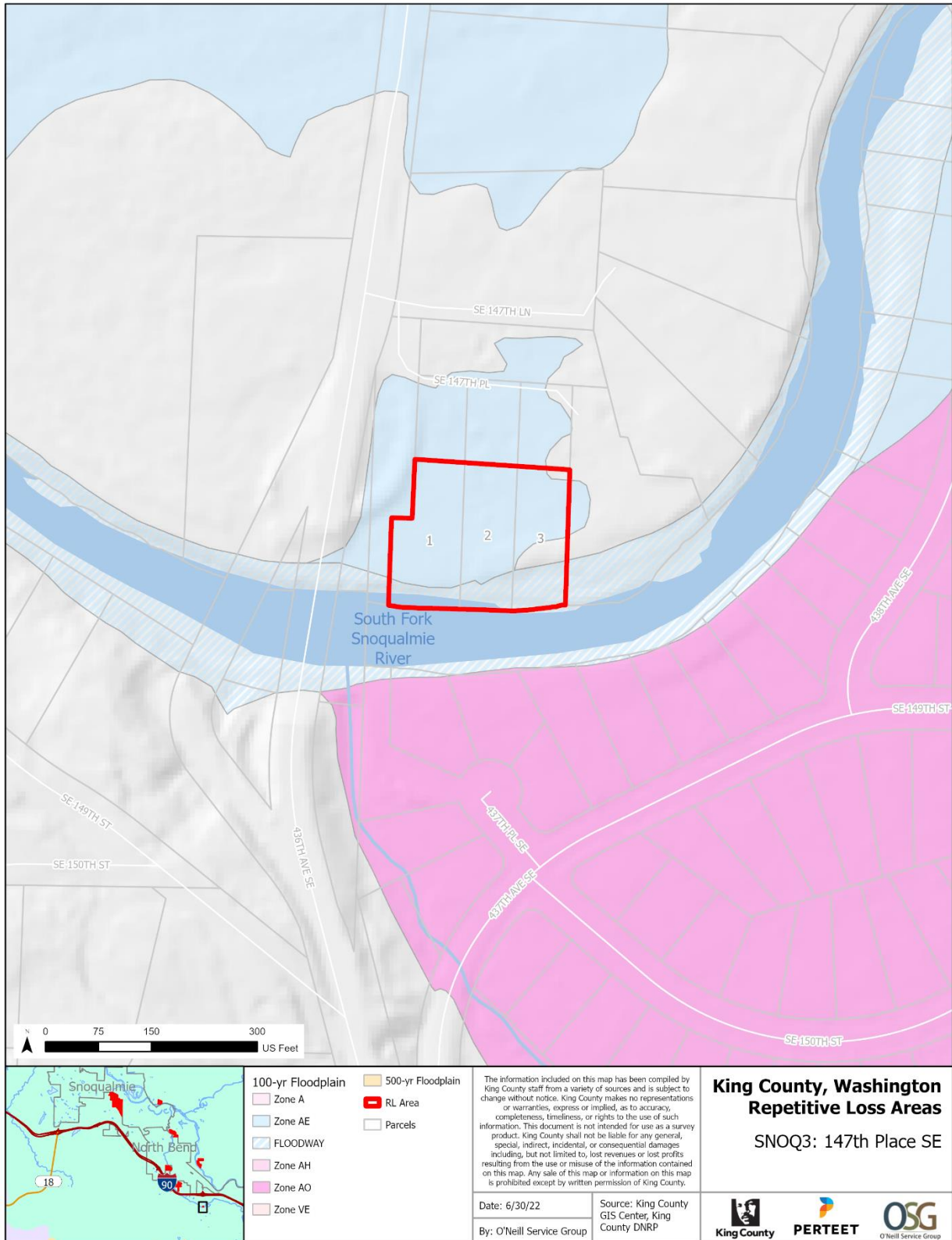


Exhibit 69. 147th Place SE (SNOQ 3).



Example Properties



Repetitive Loss Area 4: 136th Street SE (SNOQ 4)

This repetitive loss area includes part of the Brookside Acres neighborhood and adjacent areas. Most of the homes in this area were constructed in the 1950s and 1960s. The repetitive loss area is within the 100-year floodplain of the South Fork Snoqualmie River. Even though this area is protected by a levee, it experiences flooding when the river is very high. Improvements to the levee in this location are to be considered as part of the Si View Levee Improvements Project identified in the South Fork Snoqualmie River CIS.

Residents reported that the flood maps in the neighborhood are inaccurate and exaggerated, and that management of sediment needs to improve.

Exhibit 70. Repetitive Loss Area Summary (SNOQ 4).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
136th Street SE	1	0	0	23	1	24

Exhibit 71. Repetitive Loss Area Detailed Analysis (SNOQ 4).

Address	# Claims	NFIP Insurance	Year Constructed/ Mitigated	Foundation Type	Condition
			1965	Crawl space	Average
			1958	Slab on grade	Average
			1977	Slab on grade	Average
			1991	Crawl space	Average
			1953	Unknown	Good
			2001	Crawl space	Good
			1956	Crawl space	Average
			1955	Crawl space	Average
			1956	Slab on grade	Average
			1965	Crawl space	Average
			1970	Slab on grade	Average
			1992	Unknown	Unknown
			1959	Slab on grade	Average
			1987	Crawl space	Good
			1957	Slab on grade	Average
			1962	Crawl space	Average
			1960	Slab on grade	Average
			1977	Crawl space	Average
			1957	Slab on grade	Average
			1953	Garage	Average
			1964	Slab on grade	Average
			1958	Slab on grade	Average
			1980	Crawl space	Average
			1961	Slab on grade	Average

Addresses, claims, and insurance information is omitted from the external version.



Exhibit 72. Repetitive Loss Area Field Survey Data (SNOQ 4).

Address	First Floor Elevation ¹	Possible Mitigation Options				
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint. Other
	A	X		X		X
	A	X		X		X
	A	X		X		X
	A	X		X		X
	A	X		X		X
	A	X		X		X
	?	X	X	X		X
	?		X			X
	?		X			
	A	X		X		X
	?	X		X		X
	H	X		X		X
	?	X		X		X
	A	X		X		X
	A	X		X		X
	A	X		X		X
	A	X		X		X
	A	X		X		X
	A	X		X		X
	A	X		X		X
	A	X		X		X
	A	X		X		X
	A	X		X		X

Addresses are omitted from the external version.

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



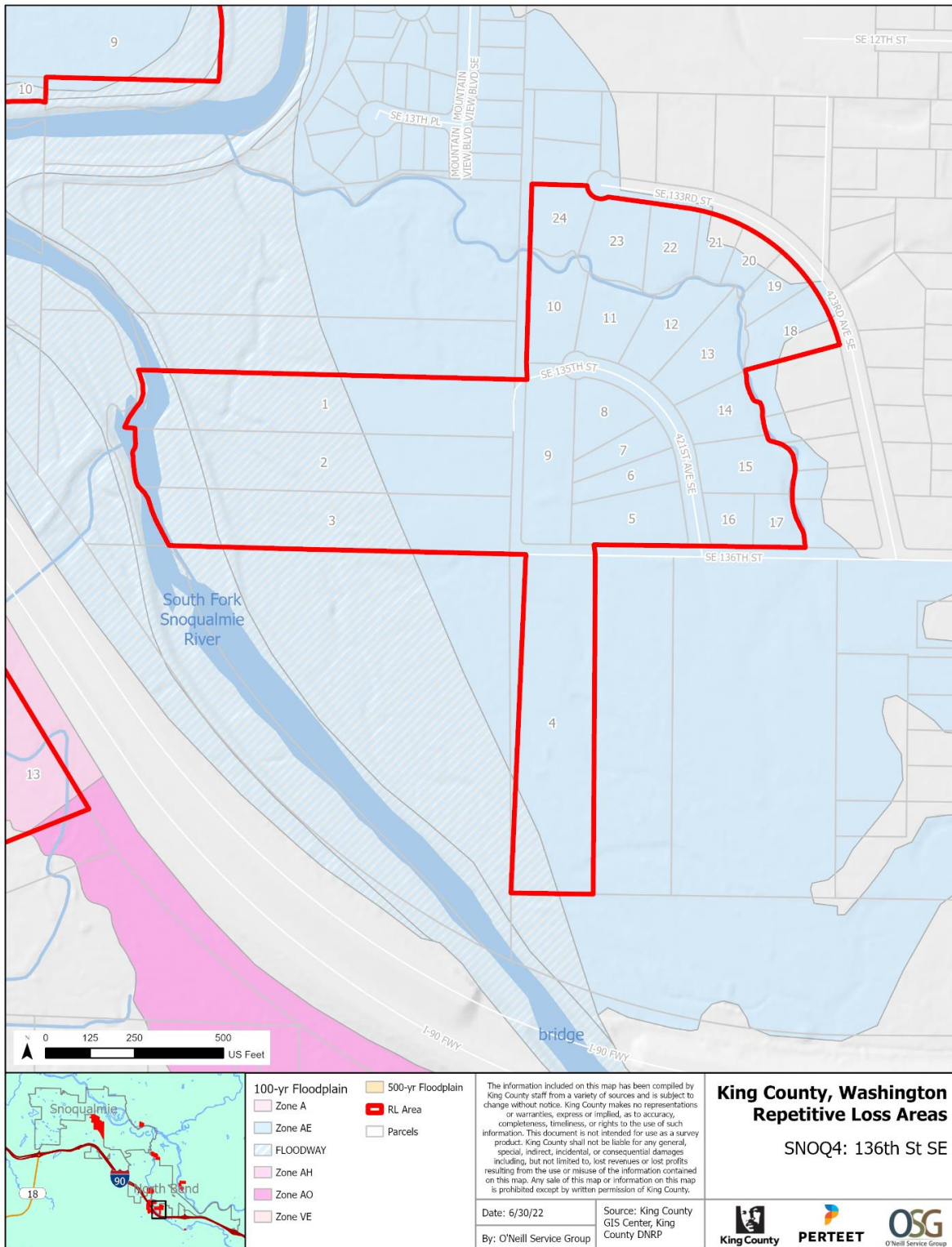


Exhibit 73. 136th Street SE (SNOQ 4).



Flood Photos



Snoqualmie River at 136th Street SE. January 9, 2009.

Example Properties



Repetitive Loss Area 5: 131st Street SE (SNOQ 5)

SE 131st Street is on the inside of a horseshoe shaped bend on the left bank of the South Fork Snoqualmie River. All of the structures within the repetitive loss area are within the 100-year floodplain and were constructed in the 1990s. Within this reach, the river is constrained by levees on both banks. The levee on the right bank is higher, and the river overtops the levee on the left bank during high flows which flood this neighborhood.

Improvements to the levee in this location are to be considered as part of the Reif Road Levee Improvements Project identified in the South Fork Snoqualmie River CIS.

Residents reported that flooding has been worse since the river stopped being dredged and since more land has been developed in the area, and that blocked storm drains may be contributing to flooding.

Exhibit 74. Repetitive Loss Area Summary (SNOQ 5).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
131st Street SE	1	0	0	9	2	10

Exhibit 75. Repetitive Loss Area Detailed Analysis (SNOQ 5).

Address	# Claims	NFIP Insurance	Year Constructed/ Mitigated	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1988	Crawl space	Average
			1994	Crawl space	Average
			1994	Crawl space	Average
			1993	Crawl space	Average
			1993	Crawl space	Average
			1994	Crawl space	Average
			1992	Unknown	Average
			1993	Crawl space	Average
			1989	Crawl space	Average
			1990	Crawl space	Average



Exhibit 76. Repetitive Loss Area Field Survey Data (SNOQ 5).

Address	First Floor Elevation ¹	Possible Mitigation Options					Other
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	
	L		X			X	
	H	X	X			X	
	A	X	X			X	
	H		X	X		X	
Addresses are omitted from the external version.	A	X	X			X	
	L	X	X			X	
	A	X	X			X	
	L	X	X			X	
	L	X	X			X	
	A	X	X			X	
	A	X	X			X	

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



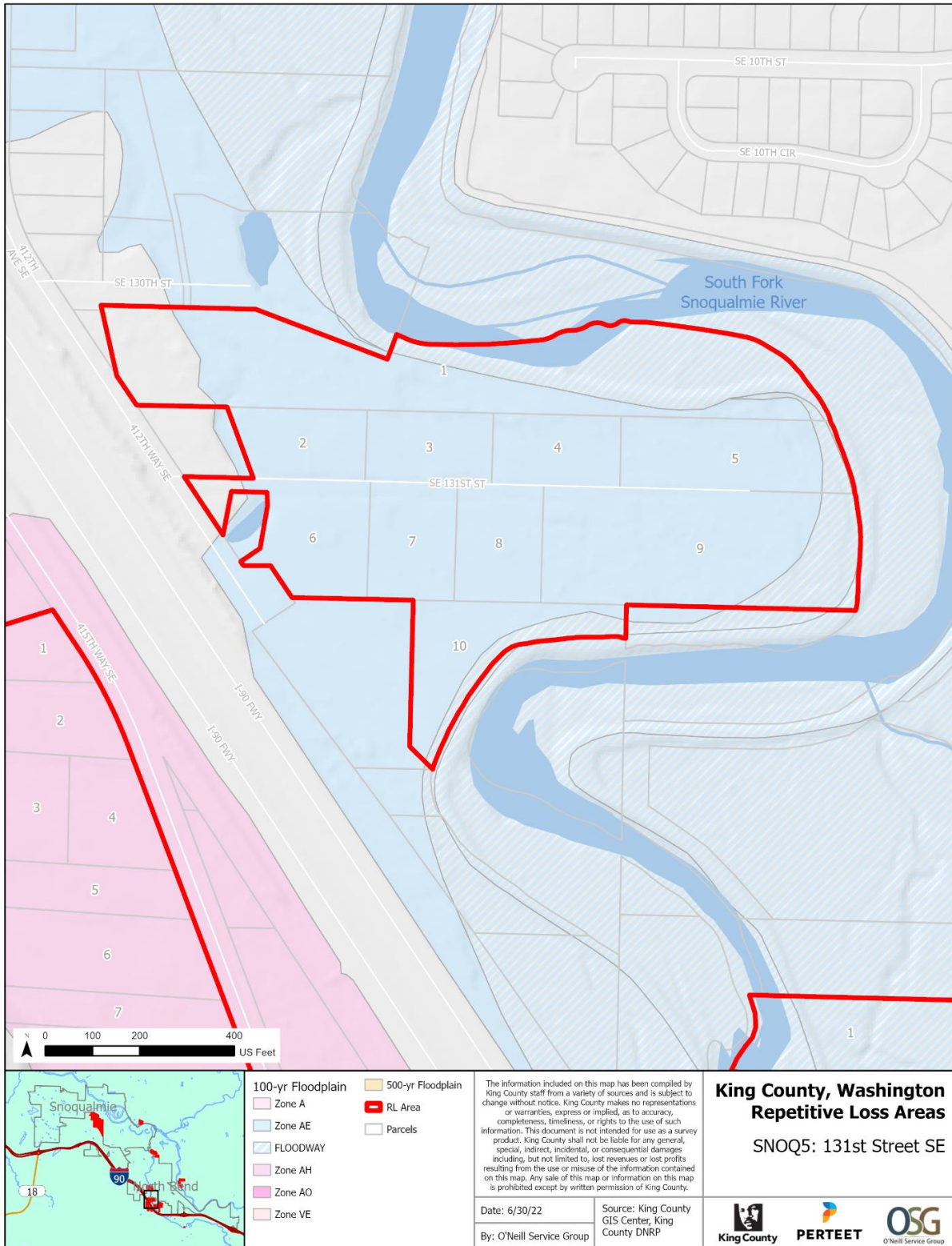


Exhibit 77. 131st Street SE (SNOQ 5).



Flood Photos



Snoqualmie River at 131st Street SE. November 8, 2006.



Snoqualmie River at 131st Street SE. January 7, 2009.



Example Properties



Repetitive Loss Area 6: Clough Creek (SNOQ 6)

Clough Creek is a tributary to the South Fork Snoqualmie River and flows under I-90 through a culvert. The creek is the primary flood source in this neighborhood. High water in the South Fork Snoqualmie creates backwater and prevents drainage. The creek ponds behind I-90 and floods the properties in this repetitive loss area. Improvements to this outfall/confluence location are to be considered as part of the Reif Road Levee Improvements Project identified in the South Fork Snoqualmie River CIS.

Residents reported:

- The severity of flooding has reduced since the retention system was installed, but that flooding still occurs
- A check valve is not operating correctly and stays open all the time
- The trash rack is frequently clogged with debris and does not get cleaned regularly
- Excessive building, clear cutting, and paving in the area has increased flooding

Exhibit 78. Repetitive Loss Area Summary (SNOQ 6).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Clough Creek	2	2	0	9	4	13

Exhibit 79. Repetitive Loss Area Detailed Analysis (SNOQ 6).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1937	Crawl space	Poor
			1938	Basement	Average
			1979	Crawl space	Average
			1982	Combo ¹	Average
			1962	Piers	Average
			1942	Crawl space	Average
			1953	Crawl space	Average
			1963	Piers	Average
			1959	Garage	Average
			1951	Crawl space	Average
			1932	Crawl space	Average
			1972	Basement	Good
			1994	Crawl Space	Average

¹Crawl space in front, slab on grade addition in the back



Exhibit 80. Repetitive Loss Area Field Survey Data (SNOQ 6).

Address	First Floor Elevation ¹	Possible Mitigation Options				
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.
	A	X				
	A	X				
	H					
	H					
	H					
Addresses are omitted from the external version.	A	X				
	A	X				
	L	X	X			
	A		X			
	L	X				
	A					
	A	X				

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



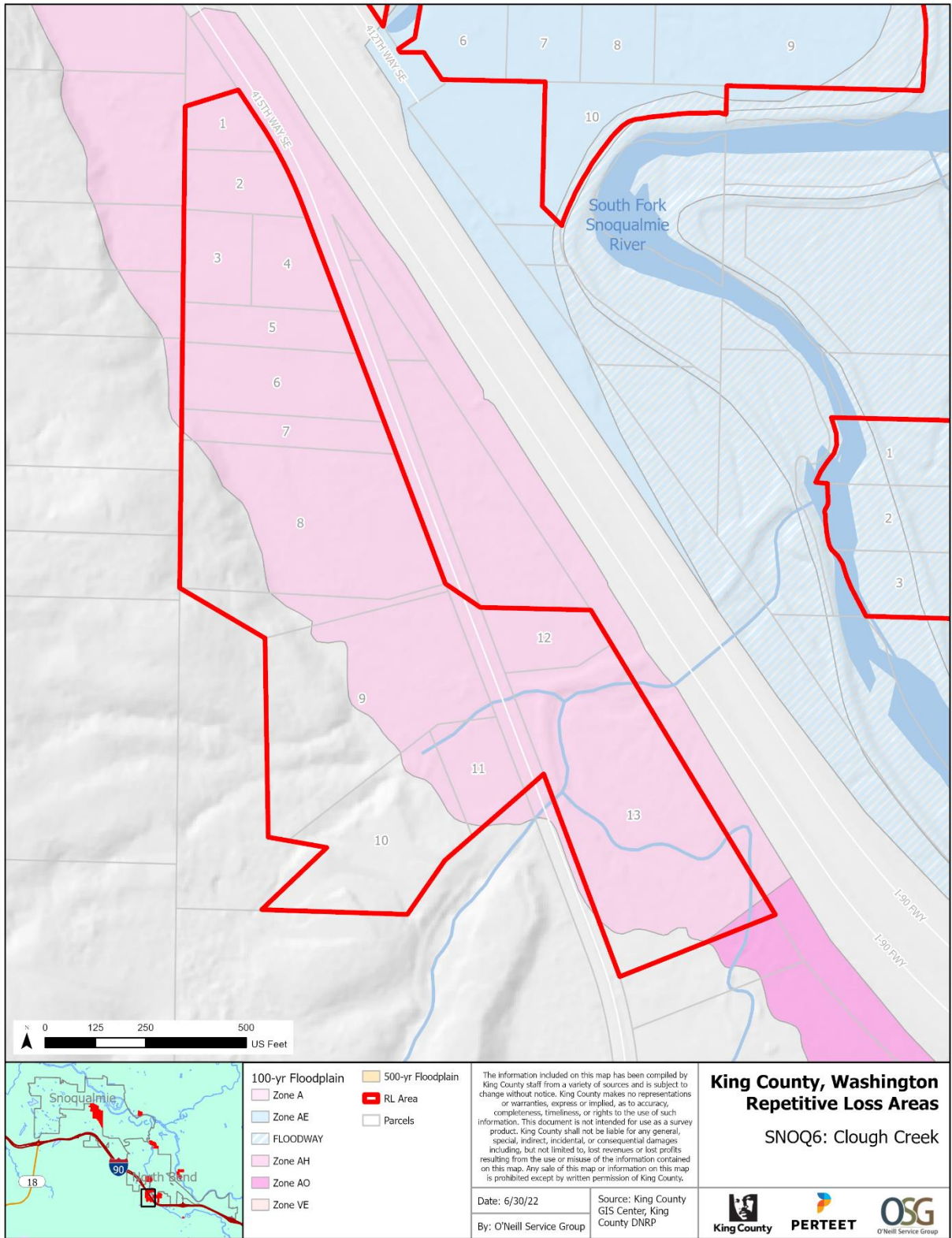


Exhibit 81. Clough Creek (SNOQ 6).



Flood Photos



Snoqualmie River at Clough Creek. January 7, 2009.



Snoqualmie River at Clough Creek. January 7, 2009.



Example Properties



Repetitive Loss Area 7: 413th Avenue SE (SNOQ 7)

This repetitive loss area includes Shamrock Park, Berry Estates, and adjacent parcels and is located on the left bank of the South Fork Snoqualmie River. Most of the residences were constructed in the 1970s and 1980s. Although the area is protected by a levee, the right bank levee is higher which causes this area to flood. Because of the frequency and severity of flooding in this area, the County has focused on mitigating these properties and has mitigated 11 repetitive loss properties and 7 properties not designated as repetitive losses, for a total of 18 mitigated properties of the 45 total in the neighborhood.

Improvements to the levee in this location are to be considered as part of the Reif Road Levee Improvements Project identified in the South Fork Snoqualmie River CIS.

Residents reported that the Highway 202 bridge in North Bend needs to be widened to increase capacity, that flooding has increased since the river stopped being dredged, and that adjacent development may be increasing flooding.

Exhibit 82. Repetitive Loss Area Summary (SNOQ 7).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
413th Avenue SE	4	11	2	29	22	45



Exhibit 83. Repetitive Loss Area Detailed Analysis (SNOQ 7).

Address	# Claims	NFIP Insurance	Year		
			Constructed	Foundation Type	Condition
			1977	Crawl space	Average
			1974	Slab on grade	Average
			1983	Crawl space	Average
			1983	Slab on grade	Average
			1997	Crawl space	Average
			1977	Crawl space	Average
			1977	Crawl space	Average
			1977	Crawl space	Good
			1984	Crawl space	Average
			1969	Crawl space	Average
			1989	Crawl space	Good
				Vacant	Vacant
			1906	Crawl space	Average
			1977	Crawl space	Good
			1977	Crawl space	Average
			1912	Crawl space	Average
			1906	Crawl space	Average
			1970	Crawl space	Average
			1971	Crawl space	Average
			1977	Crawl space	Average
			1947	Crawl space	Average
			1964	Unknown	Good
			1929	Crawl space	Average
			1987	Crawl space	Average
			1987	Crawl space	Average
			1983	Crawl space	Average
			1977	Crawl space	Average
			1984	Crawl space	Average
			1977	Crawl space	Average
			1984	Crawl space	Average
			1977	Crawl space	Average
			1977	Crawl space	Average
			1983	Crawl space	Average
			1971	Crawl space	Average
			1977	Crawl space	Average
			1977	Crawl space	Average
			1974	Crawl space	Average
			1983	Crawl space	Average
			1986	Crawl space	Average
			1983	Crawl space	Average
			1984	Unknown	Average
			1984	Crawl space	Average
			1983	Combo ¹	Average
			1983	Slab on grade	Average
			1984	Crawl space	Average

Addresses, claims, and insurance information is omitted from the external version.

¹ Partially crawl space with slab on grade converted garage



Exhibit 84. Repetitive Loss Area Field Survey Data (SNOQ 7).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
	A	X					
	L		X				
	A	X	X				
	L		X				
	A	X					
	H						
	H						
	H						
	H						
	H						
	H	X					
	H						
	H						
	A	X	X				
	A	X					
	H						
	A	X					
	H						
	A	X					
	A		X				
	A			X			
	H	X	X				
	A	X	X				
	A	X					
	A	X					
	A	X					
	A	X					
	A						
	H						
	A	X					
	A						
	A						
	A						
	H						
	A	X					
	A	X					
	A	X					
	L						
	A	X					
	A						
	A		X				
	A	X					

Addresses are omitted from the external version.

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



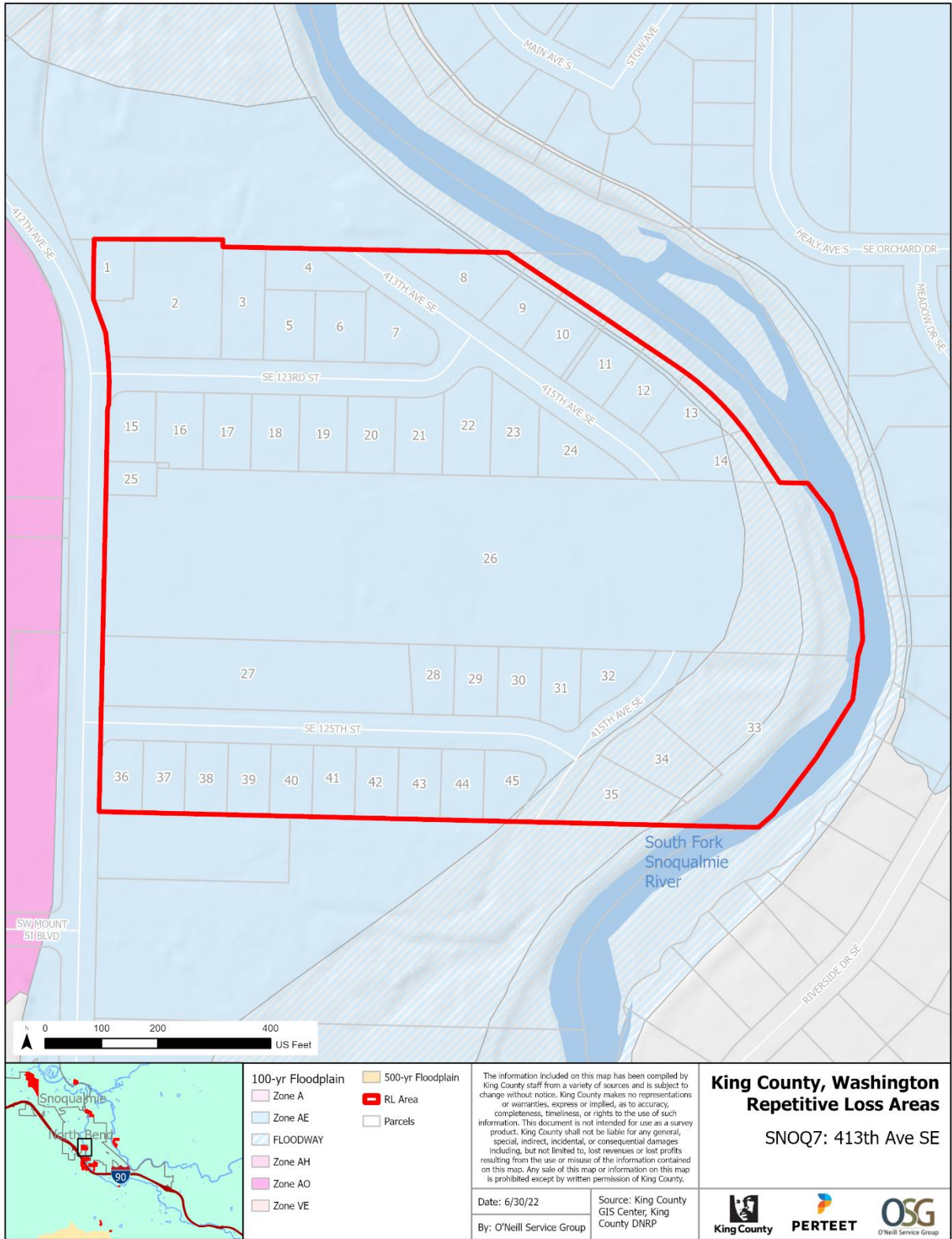


Exhibit 85. 413th Avenue SE (SNOQ 7).



Flood Photos



Snoqualmie River at 413th Avenue SE (Shamrock Park). January 7, 2009.



Snoqualmie River at 413th Avenue SE (Berry Estates). January 7, 2009.





Snoqualmie River at 413th Avenue SE (Shamrock Park). November 23, 1986.

Example Properties



Repetitive Loss Area 8: Mount Si (SNOQ 8)

The Mount Si repetitive loss area is along the right bank of the Middle Fork Snoqualmie River. All of the residences within the repetitive loss area are within the 100-year floodplain and several are within the floodway. In this area, the river’s grade begins to flatten and the floodplain becomes expansive, spreading over a wide area and causing overbank flooding.

Exhibit 86. Repetitive Loss Area Summary (SNOQ 8).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Mount Si	1	0	4	17	2	22

Exhibit 87. Repetitive Loss Area Detailed Analysis (SNOQ 8).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
			1949	Unknown	Average
			1948	Crawl space	Average
			1995	Crawl space	Average
			1995	Crawl space	Average
			1974	Crawl space	Average
			2001	Crawl space	Average
			1990	Unknown	Good
			1996	Unknown	Good
			2012	Crawl space	Average
			2009	Crawl space	Average
			2015	Crawl space	Average
			1995	Garage	Good
			1970	Crawl space	Average
			1951	Crawl space	Poor
			1950	Crawl space	Average
			1945	Crawl space	Average
			1966	Garage	Average

Addresses, claims, and insurance information is omitted from the external version.



Exhibit 88. Repetitive Loss Area Field Survey Data (SNO 8).

Address	First Floor Elevation ¹	Possible Mitigation Options				
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.
	L	X	X			
	A	X	X			
	A	X	X			
	A	X	X			
	A	X	X			
	A	X	X			
	?		X			
Addresses are omitted from the external version.	A	X	X			
	A	X	X			
	A	X	X			
	A	X	X	X		
	H		X			
	H	X	X			
	L		X			
	A	X	X			
	L	X	X			
	A	X	X	X		

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



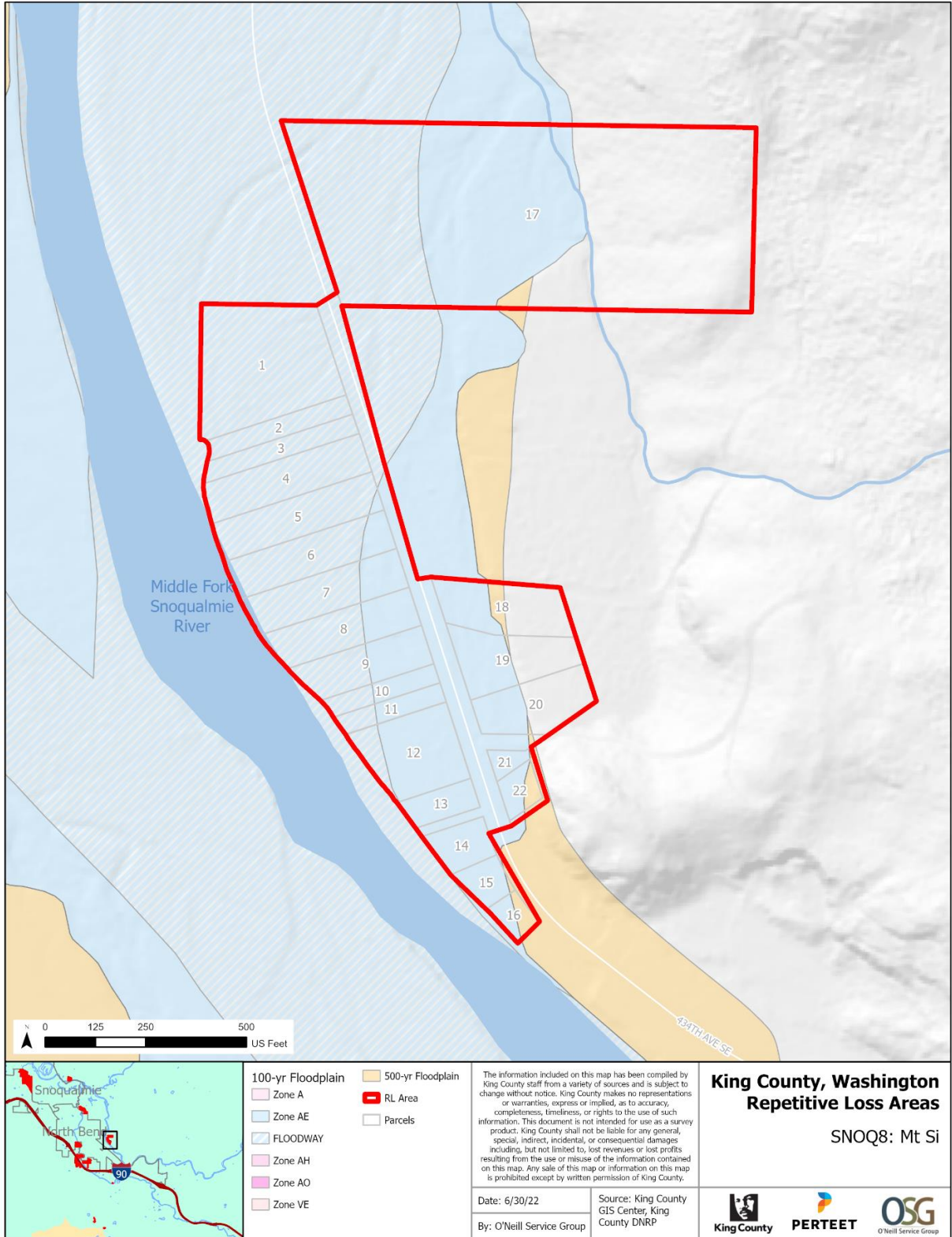


Exhibit 89. Mount Si (SNOQ 8).



Example Properties



Repetitive Loss Area 9: Circle River Ranch (SNOQ 9)

Circle River Ranch is located on the right bank of the South Fork Snoqualmie River, about a mile upstream of the confluence. Most of the repetitive loss area is within the 100-year floodplain. The area experiences overbank flooding and is at risk from erosion and flooding.

The County is currently implementing a risk reduction project in this area, including repair of damage to the upstream end of the existing revetment in the neighborhood through construction of a partially buried setback revetment and acquisition of at-risk homes from willing sellers. Several parcels in the southwest corner were excluded from the repetitive loss area because they were acquired by the County.

Residents reported that flooding seems to be less severe since the work was completed at the Snoqualmie Falls.

Exhibit 90. Repetitive Loss Area Summary (SNOQ 9).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Circle River Ranch	2	0	6	24	6	32

Exhibit 91. Repetitive Loss Area Detailed Analysis (SNOQ 9).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
			1967	Unknown	Average
			1995	Crawl space	Average
			2000	Crawl space	Average
			1986	Crawl space	Average
			1962	Crawl space	Average
			1982	Unknown	Unknown
			1989	Crawl space	Average
			1967	Crawl space	Average
			1970	Piers	Good
			1963	Crawl space	Average
			1988	Crawl space	Average
			1993	Crawl space	Average
			1989	Crawl space	Average
			1993	Crawl space	Average
			2019	Crawl space	Average
			1966	Crawl space	Average
			2006	Crawl space	Average
			1999	Crawl space	Average
			2004	Crawl space	Average
			2000	Crawl space	Average
			1996	Crawl space	Average
			1999	Crawl space	Average
			1993	Crawl space	Average

Addresses, claims, and insurance information is omitted from the external version.



Exhibit 92. Repetitive Loss Area Field Survey Data (SNOQ 9).

Address	First Floor Elevation ¹	Possible Mitigation Options					
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
	A						
	A	X		X			
	A	X					
	A	X					
	A		X	X			
	?		X				
	A	X		X			
	A	X	X				
	H						
	H	X	X				
	A	X					
	A	X	X				
	L	X					
	H	X	X				
	A	X		X			
	L	X	X				
	A	X	X				
	A	X					
	A	X					
	A	X		X			
	A	X					
	L	X					
	A	X					

Addresses are omitted from the external version.

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



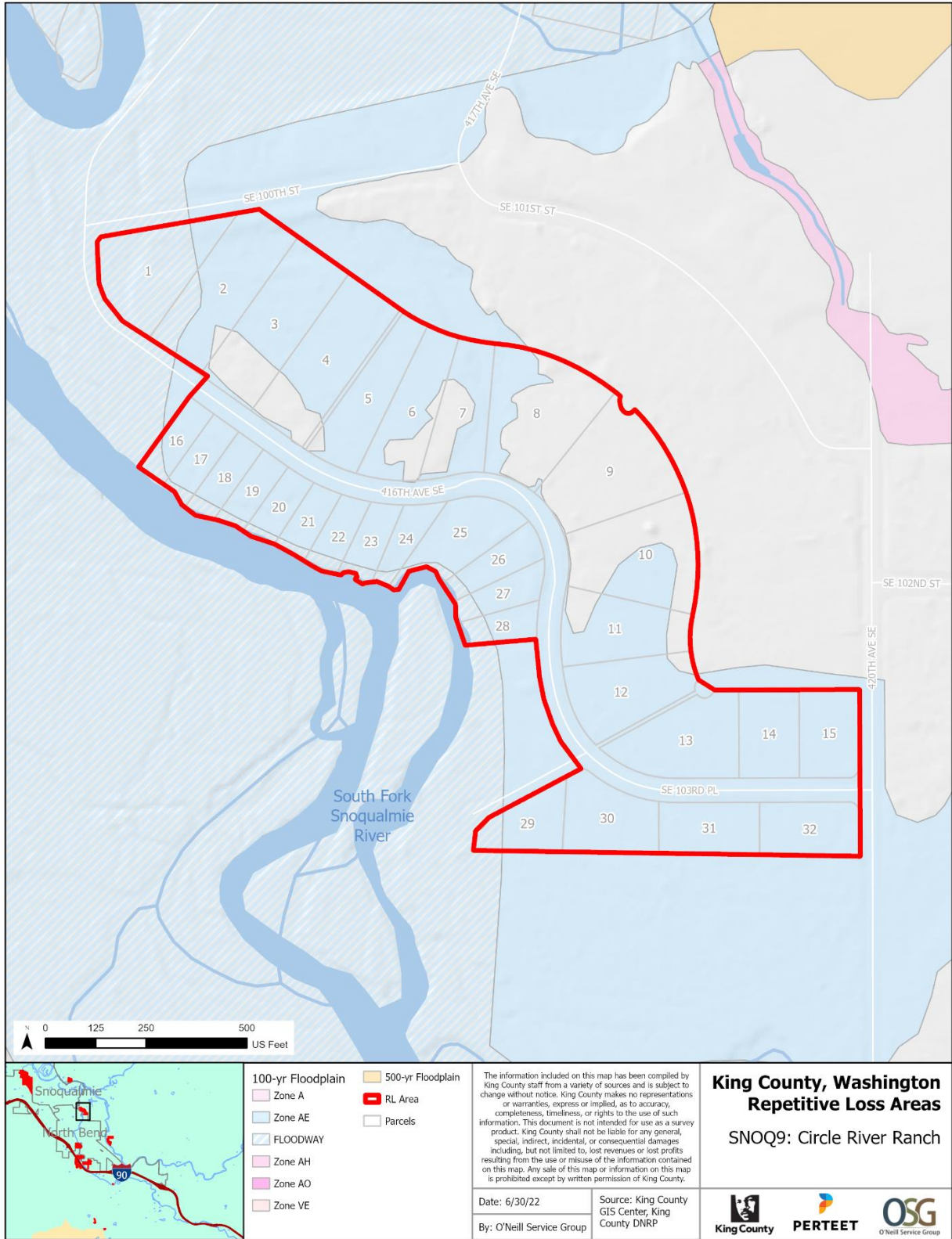


Exhibit 93. Circle River Ranch (SNOQ 9).



Flood Photos



South Fork Snoqualmie River at Circle River Ranch. January 9, 2009.

Example Properties



Repetitive Loss Area 10: Reinig Road (SNOQ 10)

This repetitive loss area is located on the right bank of the Snoqualmie River, just downstream of the confluence of the three forks. The area experiences flooding when the river overflows the banks.

Exhibit 94. Repetitive Loss Area Summary (SNOQ 10).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Reinig Road	1	0	1	3	1	5

Exhibit 95. Repetitive Loss Area Detailed Analysis (SNOQ 10).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1963	Unknown	Unknown
			1966	Basement	Average
			1970	Crawl space	Poor
				Vacant	Vacant
				Vacant	Vacant

Exhibit 96. Repetitive Loss Area Field Survey Data (SNOQ 10).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Acquire/ Demolish	Possible Mitigation Options			
				Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	L	X	X				
	H	X		X			

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



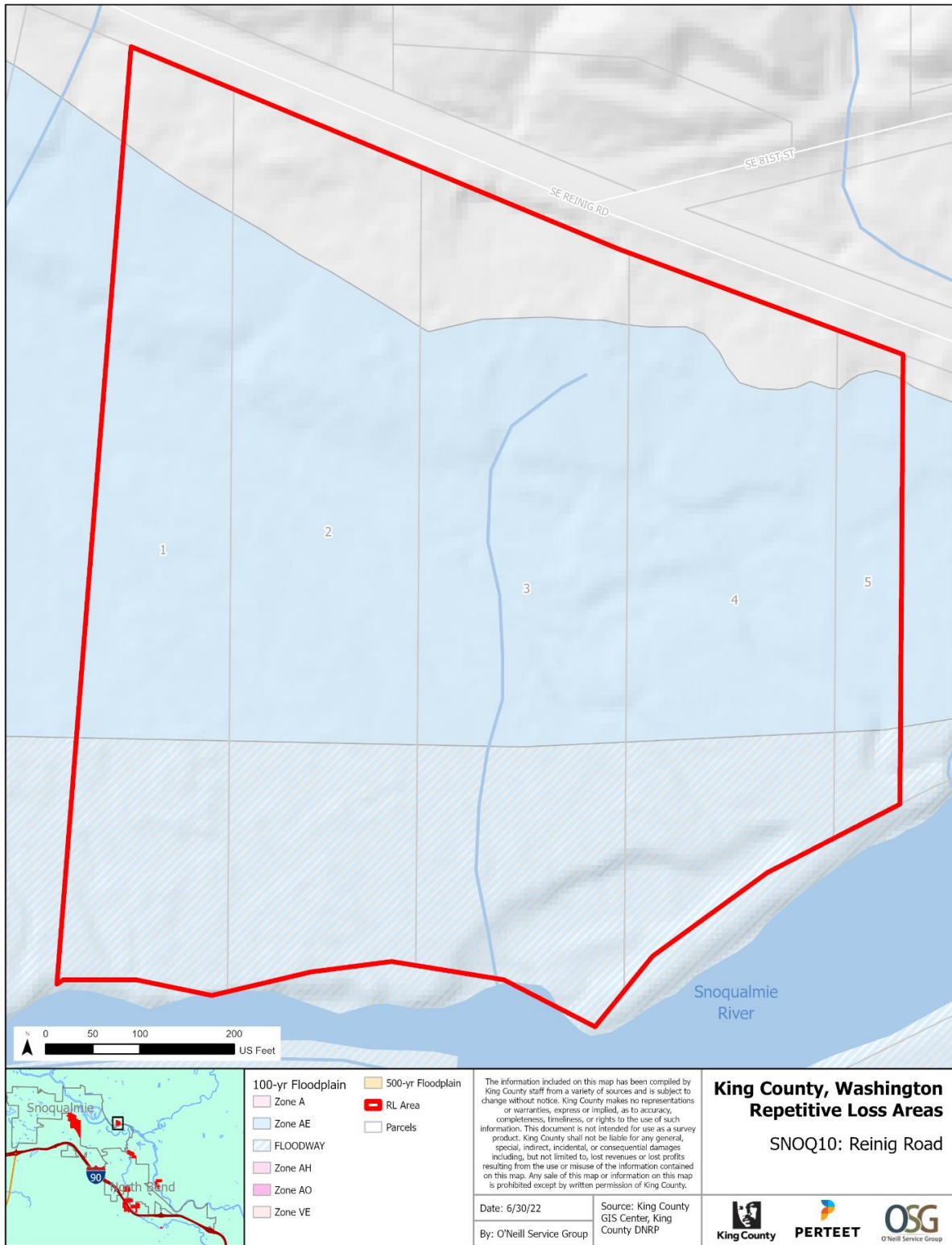


Exhibit 97. Reinig Road (SNOQ 10).



Example Properties



Repetitive Loss Area 11: Kimball Creek (SNOQ 11)

With almost 30% of the County’s repetitive loss properties in this neighborhood, Kimball Creek has been a mitigation focus area for King County. Many of the homes in the neighborhood were constructed in the 1910s and 1920s. The area experiences flooding from several sources, including the Snoqualmie River to the east, Kimball Creek and Coal Creek which flow through the neighborhood, and several drainages with runoff that flows from the adjacent hillside.

In this area alone, 24 repetitive loss properties and 13 at risk properties have been mitigated, either through acquisition and demolition or by elevation, for a total of 37 mitigated properties.

Residents reported that:

- Flooding has increased since the construction of the Snoqualmie Ridge and the casino
- Flooding has become worse as more construction occurs on the ridge
- Raising the roadbeds would provide an evacuation route during flooding
- A drainage ditch flows in reverse during moderate to major flooding on the Snoqualmie River, bringing floodwater into the neighborhood. The landowners partially attribute this to capacity at the Snoqualmie Falls.

Exhibit 98. Repetitive Loss Area Summary (SNOQ 11).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Kimball Creek	16	24	11	96	70	144



Exhibit 99. Repetitive Loss Area Detailed Analysis (SNOQ 11).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
			1918	Basement	Average
			1917	Crawl space	Average
			1917	Slab on grade	Average
			1917	Crawl space	Poor
			1917	Crawl space	Average
			1939	Crawl space	Average
			2009	Garage	Good
			1935	Crawl space	Average
			1936	Crawl space	Average
			1931	Crawl space	Average
			1943	Crawl space	Average
			1917	Crawl space	Average
			1917	Crawl space	Average
				Vacant	Vacant
			1943	Crawl space	Average
				Vacant	Vacant
			1965	Garage	Average
			1922	Piers	Average
			1924	Piers	Average
			1942	Piers	Average
			1930	Piers	Average
				Vacant	Vacant
			1937	Garage	Average
			1958	Garage	Good
			1950	Garage	Average
			1920	Crawl space	Average
				Vacant	Vacant
			1917	Garage	Fair
			1917	Piers	Average
			1917	Garage	Average
			1939	Crawl space	Poor
			1995	Garage	Average
			1935	Garage	Average
			1947	Crawl space	Average
			1917	Garage	Good
			1917	Garage	Good
			1917	Garage	Average
				Vacant	Vacant
				Vacant	Vacant
			1917	Garage	Average
			1925	Piers	Average
			1924	Unknown	Average
			1915	Crawl space	Good
			1930	Crawl space	Average
			1922	Crawl space	Average
			1924	Piers	Average
			1948	Crawl space	Average

Addresses, claims, and insurance information is omitted from the external version.



2022 REPETITIVE LOSS AREA ANALYSIS – EXTERNAL VERSION

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
			1977	Basement	Average
			1934	Garage	Average
			1917	Garage	Average
			1954	Slab on grade	Average
			1951	Garage	Good
			1917	Crawl space	Average
			1917	Garage	Average
			1917	Crawl space	Average
			1917	Crawl space	Average
			1917	Crawl space	Average
			1917	Crawl space	Average
			1917	Crawl space	Average
			1917	Crawl space	Average
			1917	Slab on grade	Average
			1917	Slab on grade	Average
			1984	Unknown	Average
			1967	Crawl space	Average
			1986	Garage	Average
			1919	Crawl space	Average
			1967	Crawl space	Average
			1939	Basement	Average
			1959	Slab on grade	Average
			1935	Crawl space	Average
			1969	Unknown	Average
			1977	Unknown	Average
			1964	Basement	Average
			1941	Unknown	Average
			1910	Garage	Average
			1944	Garage	Average
			1961	Crawl space	Average
			1957	Slab on grade	Average
			1927	Crawl space	Average
			1939	Crawl space	Average
			1934	Crawl space	Average
			1931	Crawl space	Average
			1996	Garage	Average
			1943	Crawl space	Average
			1947	Crawl space	Average
			1936	Slab on grade	Average
			1944	Basement	Average
			1948	Crawl space	Average
			1928	Piers	Average
			1973	Crawl space	Average
			1996	Split level	Average
			1920	Crawl space	Average
			1990	Unknown	Average
			1917	Slab on grade	Average
			1917	Unknown	Average

Addresses, claims, and insurance information is omitted from the external version.



2022 REPETITIVE LOSS AREA ANALYSIS – EXTERNAL VERSION

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
			1940	Slab on grade	Average
			1940	Crawl space	Average
			1917	Slab on grade	Average
			1917	Crawl space	Average
			1917	Crawl space	Average
			1917	Slab on grade	Average
			1922	Slab on grade	Average
			2004	Garage	Average
			1917	Garage	Average
			1917	Crawl space	Average
			1917	Crawl space	Average
			1917	Garage	Average
			1917	Crawl space	Average
			1917	Crawl space	Average
			1917	Garage	Average
			1904	Crawl space	Average
			1904	Crawl space	Average
			1917	Crawl space	Average
			1917	Crawl space	Average
			1917	Crawl space	Average
			1917	Garage	Average
			1905	Crawl space	Average
			1922	Crawl space	Average
			1917	Garage	Average
			1918	Crawl space	Average
			1922	Piers	Average
			1949	Crawl space	Average
			1926	Crawl space	Average
			1942	Unknown	Average
			1917	Slab on grade	Average
			1917	Unknown	Average
			1917	Crawl space	Average
			1926	Crawl space	Average
			1917	Piers	Average
			1943	Crawl space	Average
				Vacant	Vacant
			1938	Unknown	Average
			1934	Crawl space	Average
			2004	Crawl space	Good

Addresses, claims, and insurance information is omitted from the external version.



Exhibit 100. Repetitive Loss Area Field Survey Data (SNOQ 11).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options					
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other	
	A	X	X					
	A	X	X					
	A	X	X					
	A	X	X					
	A	X	X					
	H							
	L	X	X					
	A							
	A	X	X					
	A	X	X					
	A	X	X					
	A	X	X					
	A	X	X					
	H							
	H							
	H							
	H							
	H							
	A							
	H							
	A							
	H							
	H	X	X					
	H							
	H							
	A							
	H					X		
	H							
	H	X	X					
	H							
	H							
	H							
	A							
	A							
	A							
	A							
	A	X	X					
	A	X	X					
	A	X				X		
	H							
	A							
	H							
	H							
	H		X					

Addresses are omitted from the external version.



2022 REPETITIVE LOSS AREA ANALYSIS – EXTERNAL VERSION

Address	First Floor Elevation ¹	Possible Mitigation Options					Other
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	
	L	X	X				
	H						
	A	X	X				
	A						
	A	X	X				
	A	X	X				
	A						
	A	X	X				
	A	X	X				
	A	X	X				
	L	X	X				
	A	X	X				
	A	X	X				
	A						
	H						
	H						
	A	X	X				
	A	X	X				
	A	X	X				
	L	X	X				
	A	X	X				
	A						
	A	X	X				
	A						
	H						
	H						
	A	X	X				
	H						
	A	X	X				
	A	X	X				
	L	X	X				
	A	X	X				
	H						
	A	X	X				
	H	X	X				
	A						
	A	X	X				
	L	X	X				
	H						
	A	X	X				
	H	X	X				
	A	X	X				
	A	X	X				
	A	X	X				
	A	X	X				
	L	X	X				

Addresses are omitted from the external version.



Address	First Floor Elevation ¹	Possible Mitigation Options					Other
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	
	H						
	A	X	X				
	A	X	X				
	A	X	X				
	A	X	X				
	L	X	X				
	H						
	H						
	A	X	X				
	A	X	X				
	A	X	X				
	A	X	X				
	A	X	X				
	H						
	H	X	X				
	L	X	X				
	A	X	X				
	A	X	X				
	A	X	X				
	A	X	X				
	A	X	X				
	H						
	A	X	X				
	A	X	X				
	H						
	A	X	X				
	H						
	A	X	X				
	H						
	A	X	X				
	A	X	X				
	A	X	X				
	A	X	X				
	L	X	X				
	A	X	X				
	A	X	X				
	A						
	A	X	X				
	A	X	X				
	A	X	X				
	A	X	X				
	A	X	X				
	A	X	X				

Addresses are omitted from the external version.

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



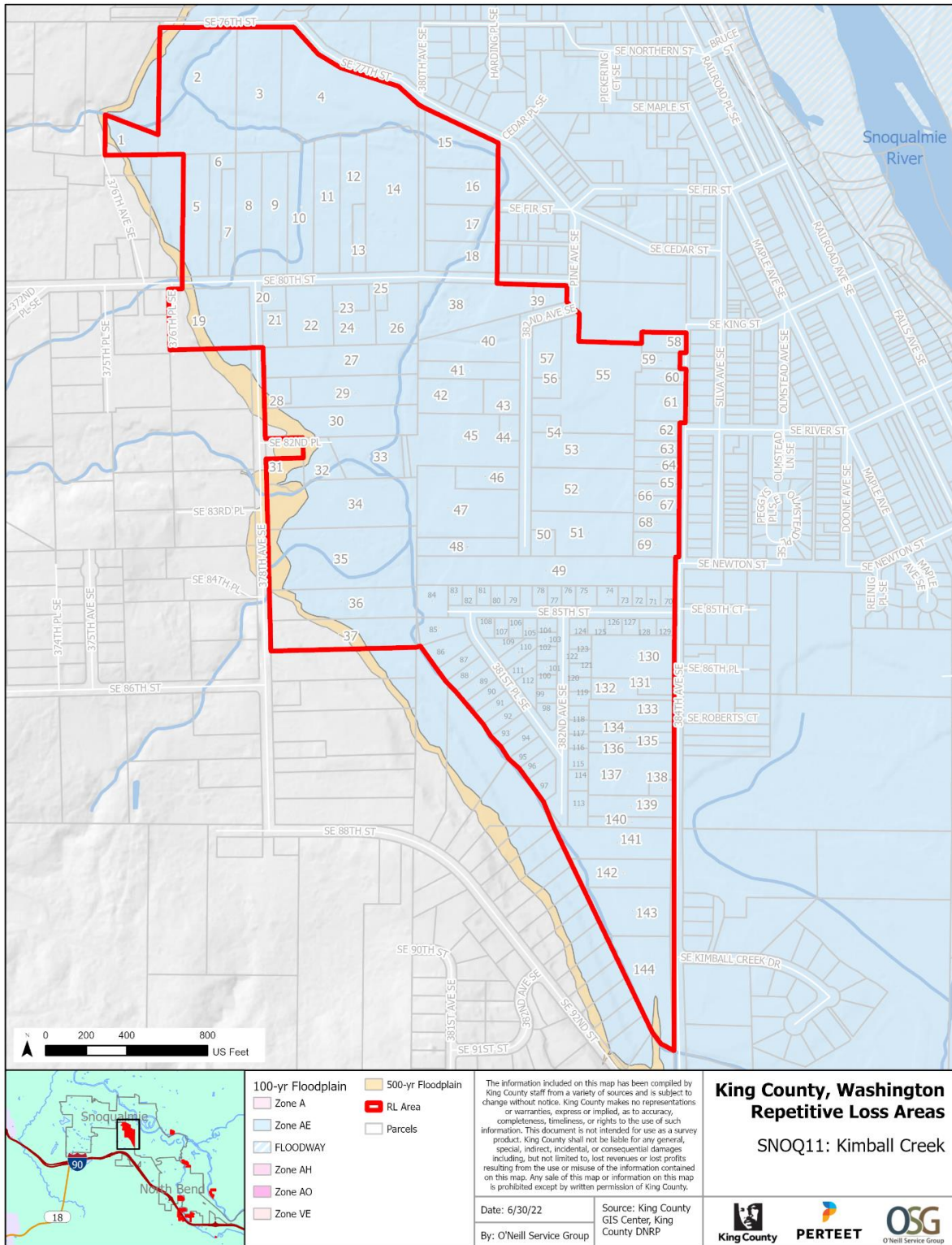


Exhibit 101. Kimball Creek (SNOQ 11).



Flood Photos



Snoqualmie River at Kimball Creek. January 7, 2009.



Snoqualmie River at Kimball Creek. November 6, 2006.



Example Properties



Repetitive Loss Area 12: Snoqualmie Falls (SNOQ 12)

The structure in this area is located on the riverbank and within the floodway. This is the first repetitive loss area downstream of the Snoqualmie Falls and within the area identified as the lower Snoqualmie Basin. The lower basin is characterized with a wide, expansive floodplain and floodway and land uses are primarily agricultural. The structure experiences overland flooding.

Exhibit 102. Repetitive Loss Area Summary (SNOQ 12).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Snoqualmie Falls	1	0	0	0	1	1

Exhibit 103. Repetitive Loss Area Detailed Analysis (SNOQ 12).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1964	Crawl space	Average

Exhibit 104. Repetitive Loss Area Field Survey Data (SNOQ 12).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options			
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint. Other
Addresses are omitted from the external version.		A	X	X		

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



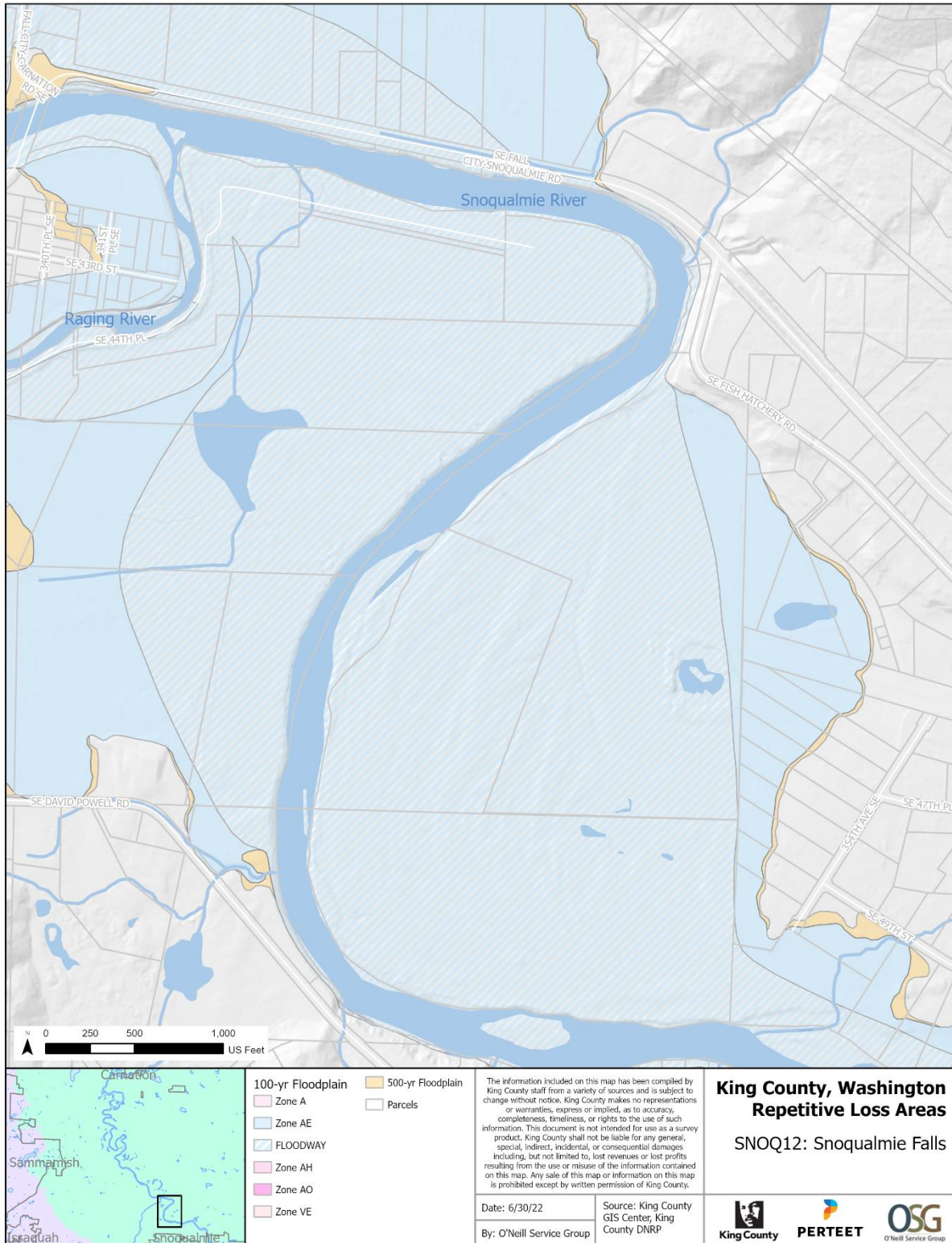


Exhibit 105. Snoqualmie Falls (SNOQ 12).



Repetitive Loss Area 13: Fall City 1 (SNOQ 13)

The Fall City 1 repetitive loss area is located on the right bank of the Snoqualmie River, near the Fall City bridge. This is the first repetitive loss area downstream of the Snoqualmie Falls and within the area identified as the lower Snoqualmie Basin. The lower basin is characterized with a wide, expansive floodplain and floodway and land uses are primarily agricultural. The properties within this repetitive loss area are all located within the floodway.

Exhibit 106. Repetitive Loss Area Summary (SNOQ 13).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Fall City 1	3	0	0	2	3	5

Exhibit 107. Repetitive Loss Area Detailed Analysis (SNOQ 13).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			Unknown	Unknown	Unknown
			1925	Garage	Average
				Vacant	Vacant
			1962	Crawl space	Average
			1966	Slab on grade	Average

Exhibit 108. Repetitive Loss Area Field Survey Data (SNOQ 13).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	A		X				
	A		X				
	A		X		X		
	A	X					

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



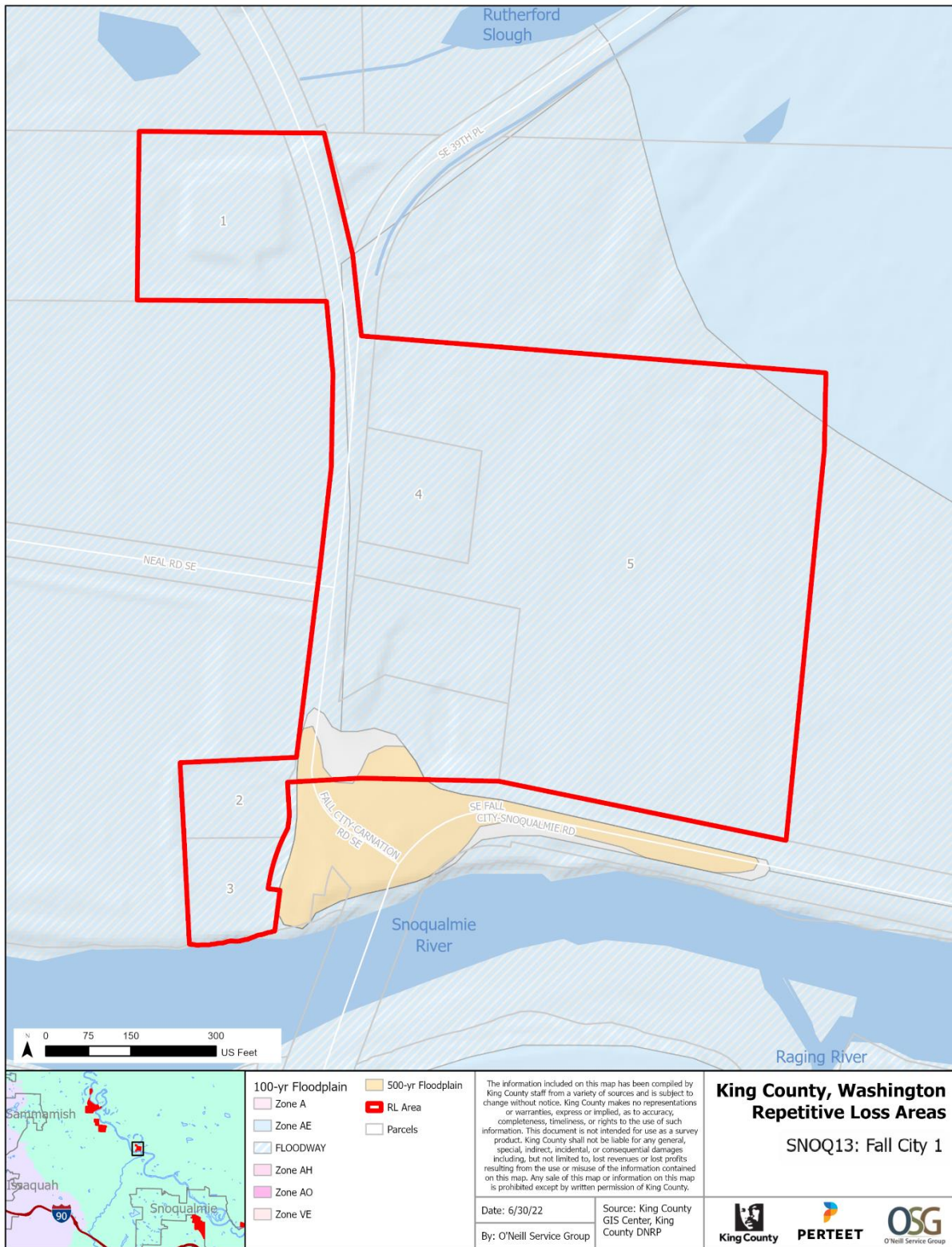


Exhibit 109. Fall City 1 (SNOQ 13).



Flood Photos



Snoqualmie River at Fall City 1. January 5, 2015.



Snoqualmie River at Fall City 1. November 24, 1990.



Example Properties



Repetitive Loss Areas 14, 15, and 16: Fall City 2 (SNOQ 14), Snoqualmie River (SNOQ 15), and Blue Heron (SNOQ 16)

The properties within these repetitive loss areas are agricultural properties located along the left bank and within the floodway of the Snoqualmie River. They experience overbank flooding that inundates the entire area with up to several feet of flood water.

Exhibit 110. Repetitive Loss Area Summary (SNOQ 14, 15, and 16).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Fall City 2	2	0	0	2	2	4
Snoqualmie River	2	2	1	0	3	8
Blue Heron	3	1	1	1	4	6

Exhibit 111. Repetitive Loss Area Detailed Analysis (SNOQ 14, 15, and 16).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
				Vacant	Vacant
			Unknown	Unknown	Unknown
			1928	Piers	Average
			1935	Unknown	Average
			1909	Crawl space	Average
				Vacant	Vacant
			1951	Crawl space	Average
			1943	Crawl space	Poor
			Unknown	Unknown	Unknown
			Unknown	Unknown	Poor
			1969	Garage	Good
			1919	Piers	Average
			1924	Crawl space	Poor
			2000	Crawl space	Average

Addresses, claims, and insurance information is omitted from the external version.



Exhibit 112. Repetitive Loss Area Field Survey Data (SNOQ 14, 15, and 16).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
	A	X					
	A	X					
	A	X	X				
	H			X			
	A	X					
	A				X		
Addresses are omitted from the external version.	A		X				
	A	X					
	A	X					
	A	X					
	H			X			
	H			X			
	H			X			
	H			X			

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



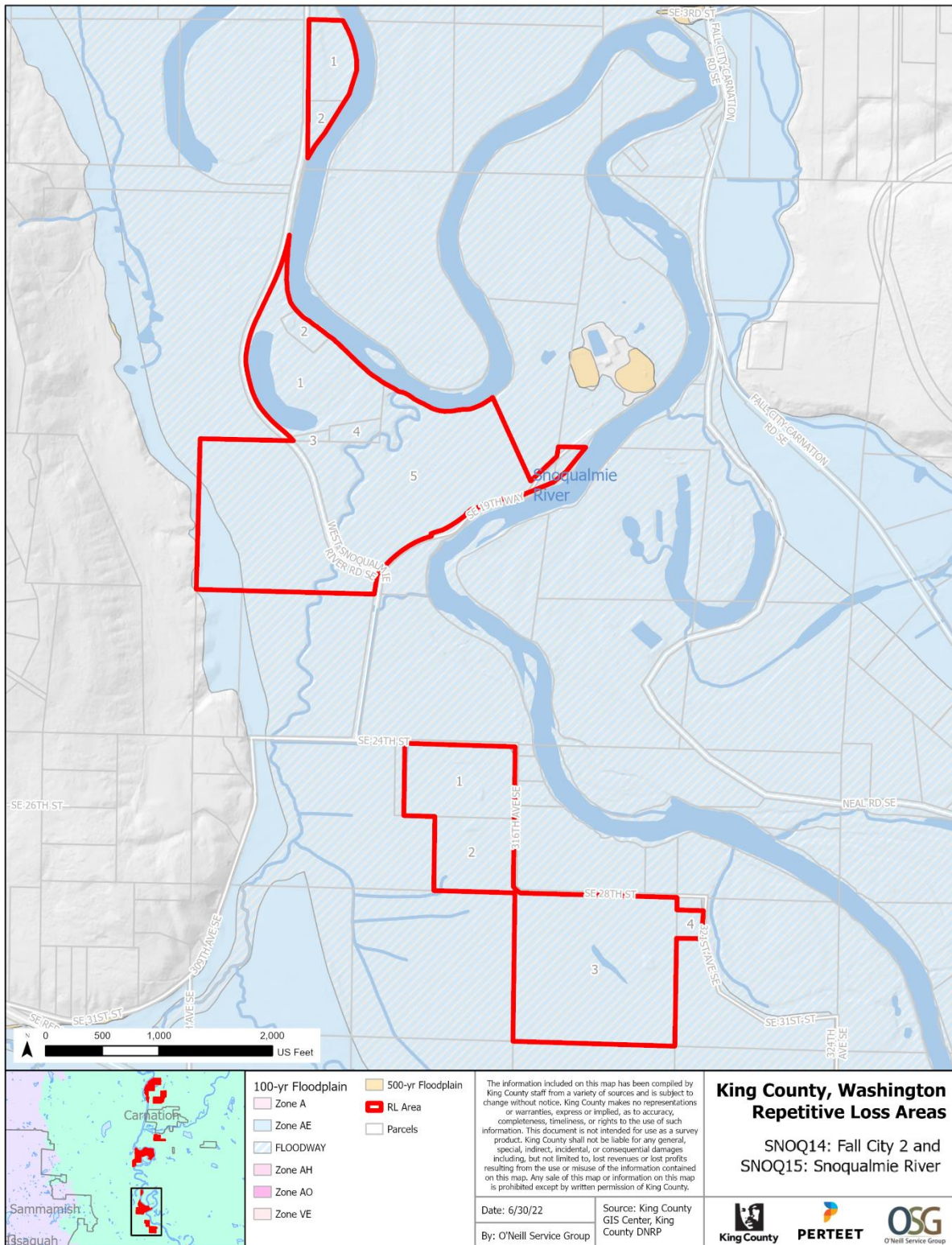


Exhibit 113. Fall City 2 and Snoqualmie River (SNOQ 14 and 15).



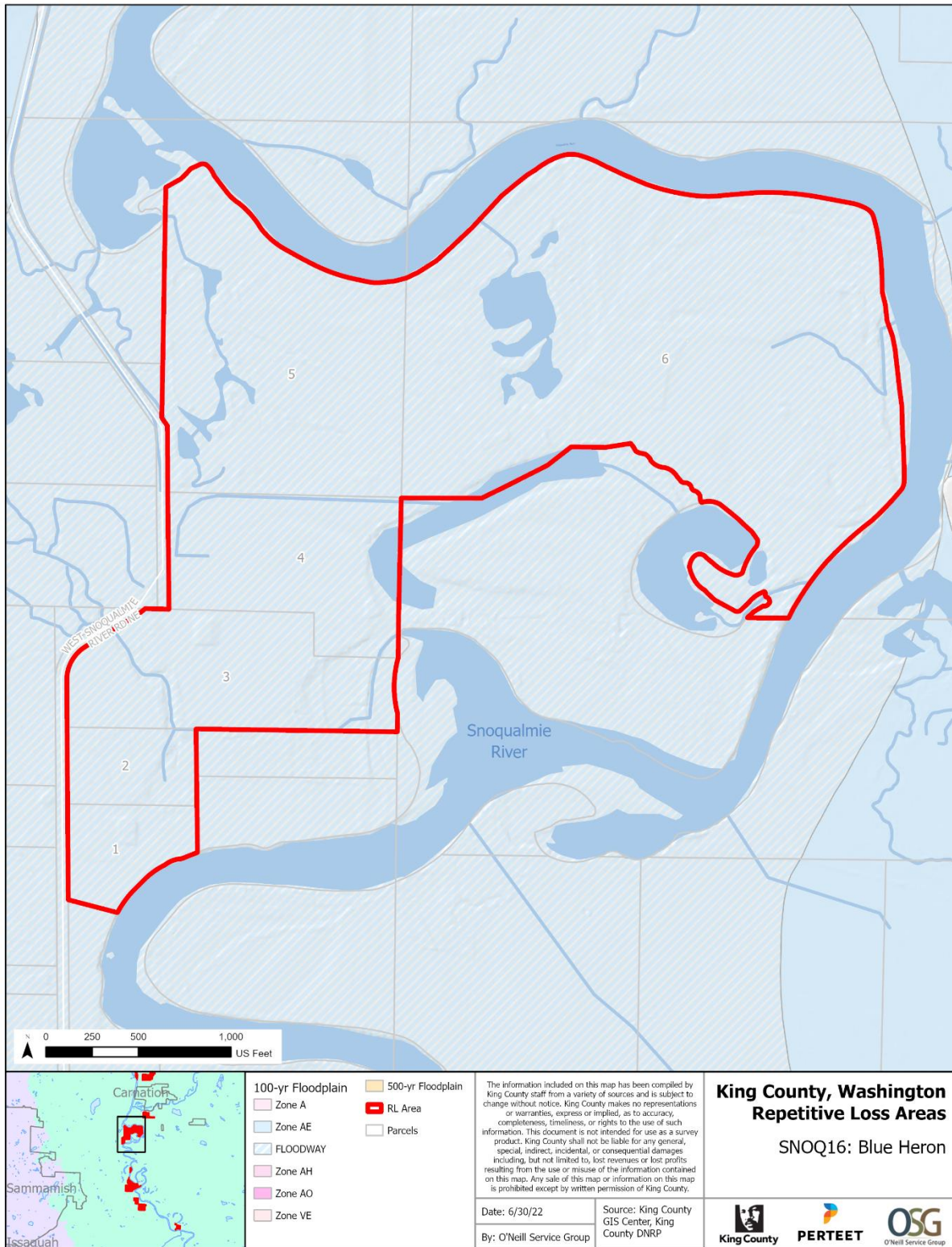


Exhibit 114. Blue Heron (SNOQ 16).



Flood Photos



Snoqualmie River at Fall City 2. January 7, 2009.



Snoqualmie River at Fall City 2. January 7, 2009.





Snoqualmie River at Snoqualmie River. January 5, 2015.



Snoqualmie River at Snoqualmie River. February 8, 1996.





Snoqualmie River at Blue Heron. January 5, 2015.



Snoqualmie River at Blue Heron. November 23, 1986.



Example Properties



Repetitive Loss Area 17: Fall City Carnation Road (SNOQ 17)

This repetitive loss area is the only area along the Tolt River, but the flooding is primarily associated with the Snoqualmie River. When the Snoqualmie River is high, this area experiences backwater flooding from the creeks and river flowing into the Snoqualmie River, as well as overland flooding from the Snoqualmie.

Exhibit 115. Repetitive Loss Area Summary (SNOQ 17).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Fall City Carnation Road	1	1	0	3	3	5

Exhibit 116. Repetitive Loss Area Detailed Analysis (SNOQ 17).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1948	Crawl space	Average
			1920	Basement	Average
			1961	Crawl space	Average
			1948	Crawl space	Average
			1915	Crawl space	Average

Exhibit 117. Repetitive Loss Area Field Survey Data (SNOQ 17).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	A	X	X				
	H						
	A	X	X				
	A	X	X				
	A	X	X				

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



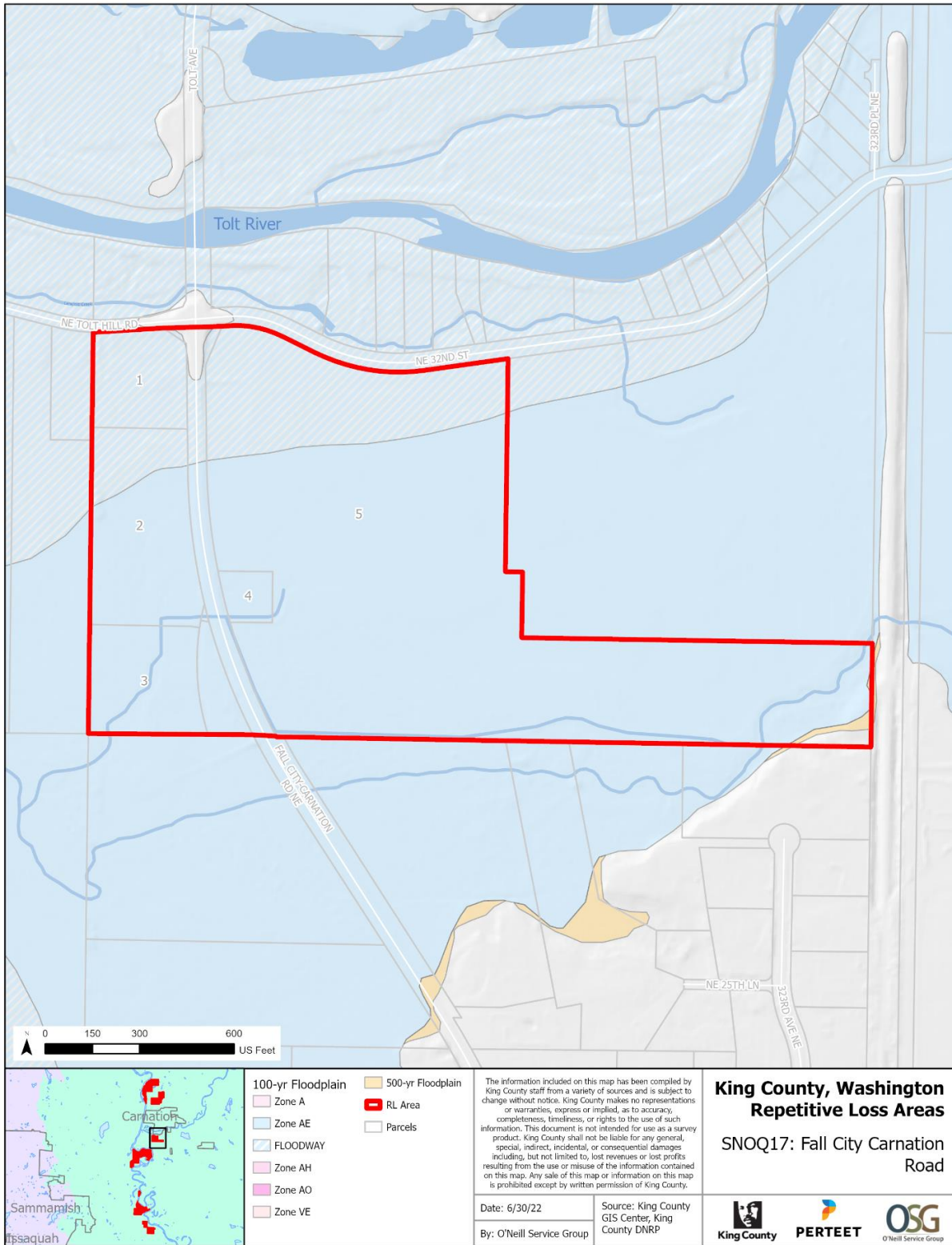


Exhibit 118. Fall City Carnation Road (SNOQ 17).



Flood Photos



Snoqualmie River at Fall City Carnation Road. November 6, 2006.

Example Properties



Repetitive Loss Area 18: North of Carnation (SNOQ 18)

This suburban neighborhood, within an Urban Growth Area north of the City of Carnation, is at the edge of the floodplain along the Snoqualmie River. This area is primarily within the 100-year floodplain, with some properties in the floodway. The neighborhood is a mixture of older and newer homes. The area experiences overland flooding. Several properties in this area have already been mitigated.

Exhibit 119. Repetitive Loss Area Summary (SNOQ 18).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
North of Carnation	8	2	10	51	19	71

Exhibit 120. Repetitive Loss Area Detailed Analysis (SNOQ 18).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
			1960	Crawl space	Average
			1923	Basement	Average
			1958	Slab on grade	Average
			1920	Crawl space	Average
			1997	Crawl space	Average
			2000	Crawl space	Average
			1997	Crawl space	Average
			1925	Crawl space	Average
			1920	Piers	Average
			1997	Crawl space	Average
				Vacant	Vacant
			1998	Crawl space	Average
			1998	Crawl space	Average
			1998	Crawl space	Average
			1998	Crawl space	Average
			1998	Crawl space	Average
			1915	Piers	Average
			1961	Crawl space	Average
			1914	Piers	Poor
			1958	Slab on grade	Average
			1914	Crawl space	Average
			2000	Slab on grade	Average
			2000	Slab on grade	Average
			1986	Slab on grade	Average
			1965	Crawl space	Poor
			1950	Crawl space	Average
			1983	Slab on grade	Average
			1952	Crawl space	Average
			1916	Crawl space	Average
			1992	Crawl space	Average
			1970	Crawl space	Average

Addresses, claims, and insurance information is omitted from the external version.



2022 REPETITIVE LOSS AREA ANALYSIS – EXTERNAL VERSION

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			2008	Crawl space	Average
			2006	Crawl space	Average
			1980	Crawl space	Average
			2006	Crawl space	Good
			1967	Crawl space	Poor
			1912	Unknown	Average
			1920	Crawl space	Average
			1915	Crawl space	Poor
			2006	Crawl space	Average
			1965	Crawl space	Average
			1913	Piers	Good
			1980	Crawl space	Poor
			1912	Crawl space	Average
			1921	Crawl space	Average
			1912	Crawl space	Average
			1967	Crawl space	Average
			1915	Crawl space	Average
			1971	Crawl space	Good
			1913	Crawl space	Average
			1913	Crawl space	Average

Exhibit 121. Repetitive Loss Area Field Survey Data (SNOQ 18).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	A	X					
	H						
	A	X					
	A	X					
	H	X					
	H	X					
	H	X					
	H	X					
	A						
	H						
	H	X					
	A	X					
	A	X					
	A	X					
	A	X					
	A	X					
	H						
	H	X					
	H	X					
	A	X					
A	X						



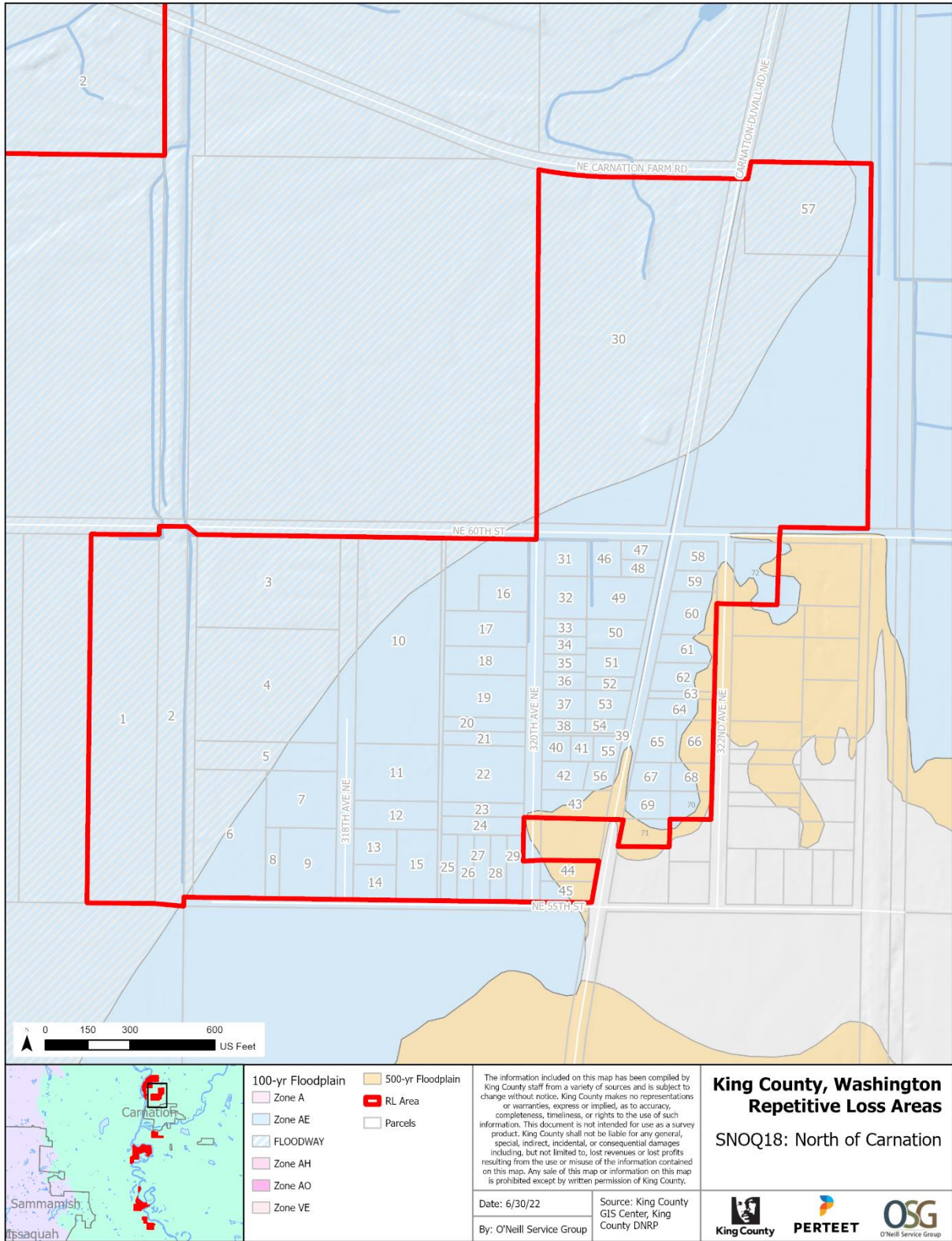


Exhibit 122. North of Carnation (SNOQ 18).



Flood Photos



Snoqualmie River at North of Carnation. November 6, 2006.



Snoqualmie River at North of Carnation. January 8, 1986.



Example Properties



Repetitive Loss Area 19: Carnation Farm (SNOQ 19)

The Carnation Farm area is located on the right bank of the Snoqualmie River and are within the floodway. The properties are agricultural properties with farm homes and they experience overland flooding.

Residents reported that there needs to be better management of the Tolt River (which converges with the Snoqualmie River upstream of this area) and more capacity at the Carnation Farm Road bridge crossing of the Snoqualmie River.

Exhibit 123. Repetitive Loss Area Summary (SNOQ 19).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Carnation Farm	2	0	0	2	2	4

Exhibit 124. Repetitive Loss Area Detailed Analysis (SNOQ 19).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1918	Unknown	Average
			1918	Piers	Average
			1920	Crawl space	Average
				Vacant	Vacant

Exhibit 125. Repetitive Loss Area Field Survey Data (SNOQ 19).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	H	X					
	A	X					
	A	X					

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



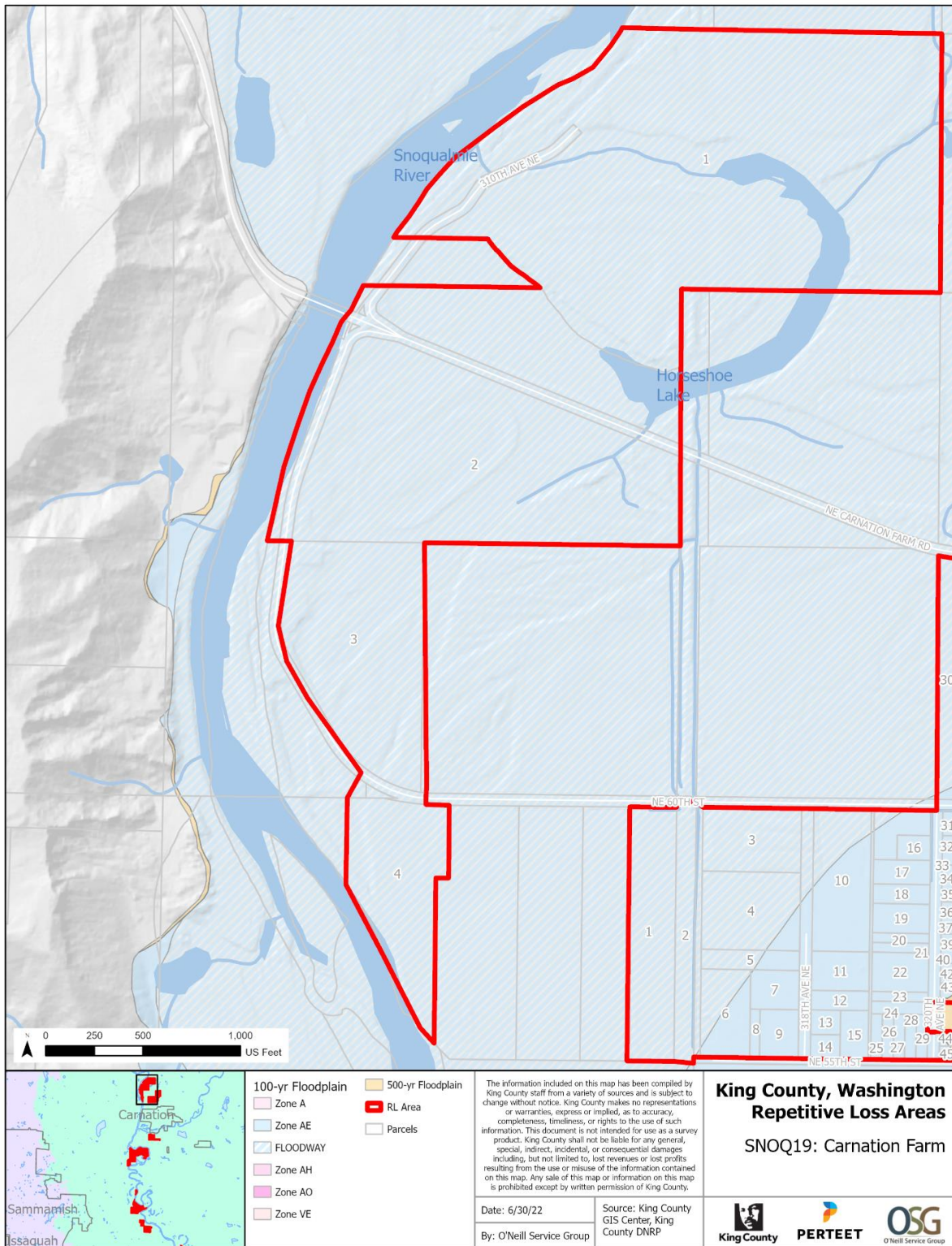


Exhibit 126. Carnation Farm (SNOQ 19).



Flood Photos



Snoqualmie River at Carnation Farm. January 7, 2009.



Snoqualmie River at Carnation Farm. February 8, 1996.



Example Properties



Repetitive Loss Area 20: Carnation Ranch (SNOQ 20)

In accordance with the Privacy Act of 1974, information about individual repetitive loss properties will not be shared with the general public.

The Carnation Ranch property is located on the left bank of the Snoqualmie River within the floodway and experiences overland flooding.

Exhibit 127. Repetitive Loss Area Summary (SNOQ 20).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Carnation Ranch	1	0	0	0	1	1

Exhibit 128. Repetitive Loss Area Detailed Analysis (SNOQ 20).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1972	Crawl space	Average

Exhibit 129. Repetitive Loss Area Field Survey Data (SNOQ 20).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options					
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other	
Addresses are omitted from the external version.		A	X					

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



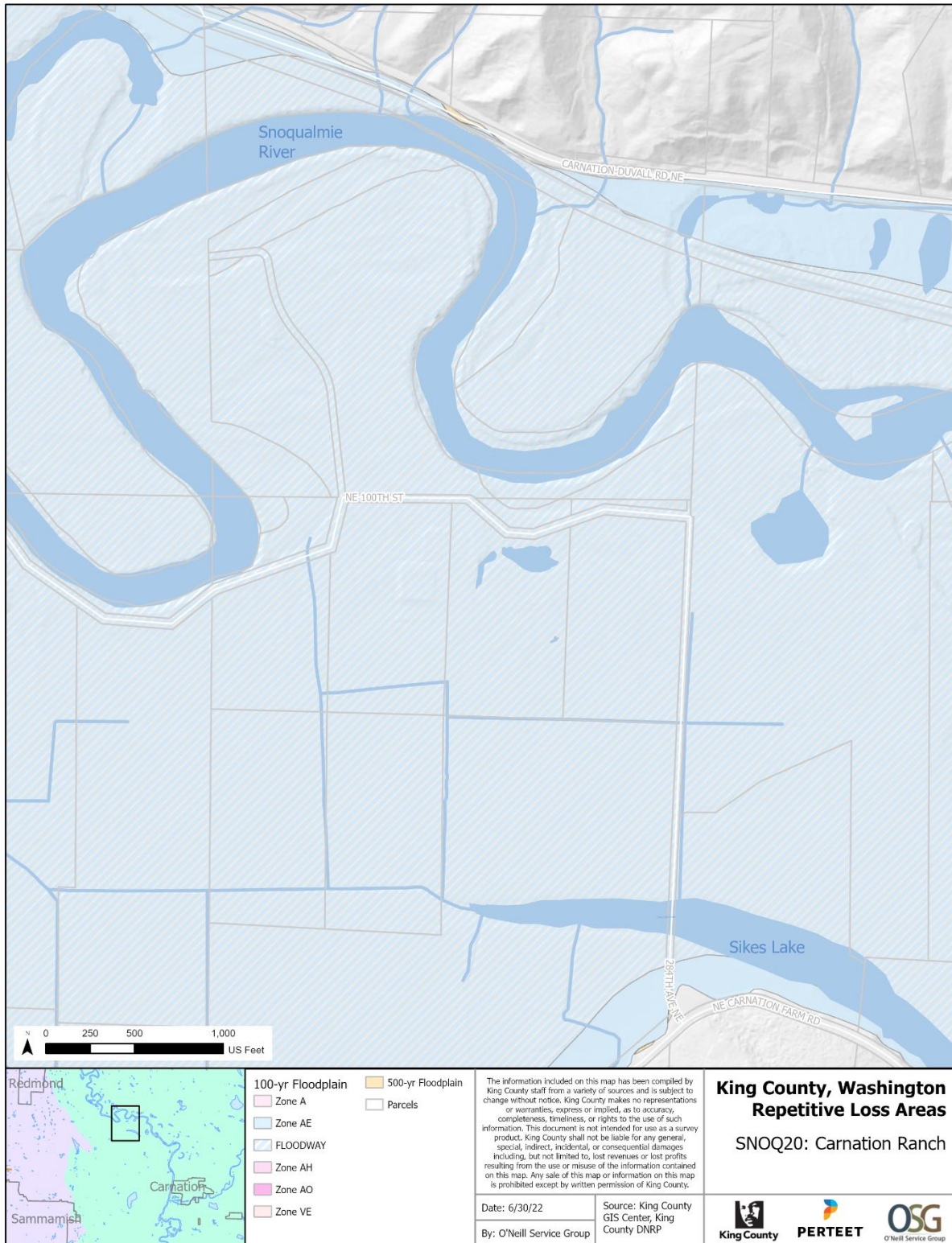


Exhibit 130. Carnation Ranch (SNOQ 20).



Repetitive Loss Area 21: Cherry Valley (SNOQ 21)

Cherry Creek is a tributary to the Snoqualmie River. The properties in this repetitive loss area are agricultural with farm homes constructed in the 1970s. The properties are located in a flat area where floodwaters can collect before entering a more constrained channel.

Residents reported that there is too much sediment in the creek which inhibits the flow and causes flooding.

Exhibit 131. Repetitive Loss Area Summary (SNOQ 21).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Cherry Valley	1	0	0	2	2	3

Exhibit 132. Repetitive Loss Area Detailed Analysis (SNOQ 21).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1978	Basement	Average
			1977	Unknown	Average
			1979	Slab on grade	Good

Exhibit 133. Repetitive Loss Area Field Survey Data (SNOQ 21).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	A	X					
	A						
	H						

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



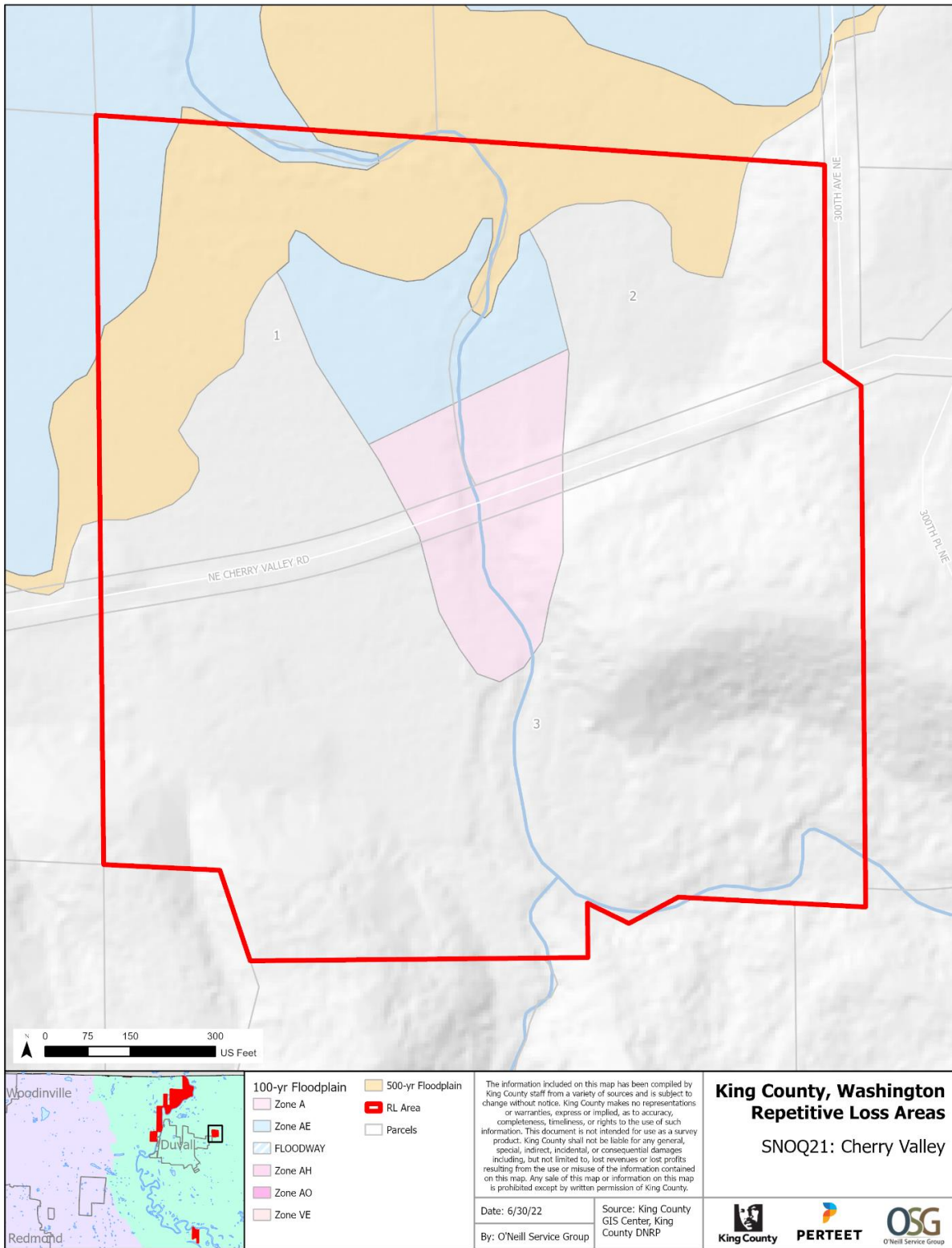


Exhibit 134. Cherry Valley (SNOQ 21).



Flood Photos



Snoqualmie River at Cherry Valley. February 8, 1996.

Example Properties



Repetitive Loss Area 22: Duvall (SNOQ 22)

The properties within this repetitive loss area are agricultural properties located along the left bank and within the floodway of the Snoqualmie River. They experience overbank flooding that inundates the entire area with several feet of flood water. Flood depths in this area are influenced by backwater conditions imposed by the Skykomish River at their confluence approximately six miles downstream.

Residents reported that the County does not understand flooding in this area.

Exhibit 135. Repetitive Loss Area Summary (SNOQ 22).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Duvall	9	1	2	11	18	22

Exhibit 136. Repetitive Loss Area Detailed Analysis (SNOQ 22).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1929	Crawl space	Average
			1973	Split level	Average
			1935	Crawl space	Poor
			1913	Crawl space	Average
			Unknown	Slab on grade	Average
			1944	Piers	Average
			Unknown	Crawl space	Average
			1900	Crawl space	Average
			1914	Crawl space	Average
			1963	Piers	Average
			Unknown	Unknown	Unknown
			1969	Unknown	Good
			1940	Slab on grade	Average
			1933	Crawl space	Average
			1965	Piers	Average
			1944	Piers	Average
			1970	Piers	Average
			1916	Crawl space	Average



Exhibit 137. Repetitive Loss Area Field Survey Data (SNOQ 22).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options			
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint. Other
	A	X				
	A	X				
	A	X	X			
	A	X				
	A	X				
	H	X				
	H	X				
	A	X				
	A	X				
	A	X	X			
	H					
	A	X				
	A	X				
	A	X				
	A	X				
	H					
	H					
	H					
	A	X	X			

Addresses are omitted from the external version.

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



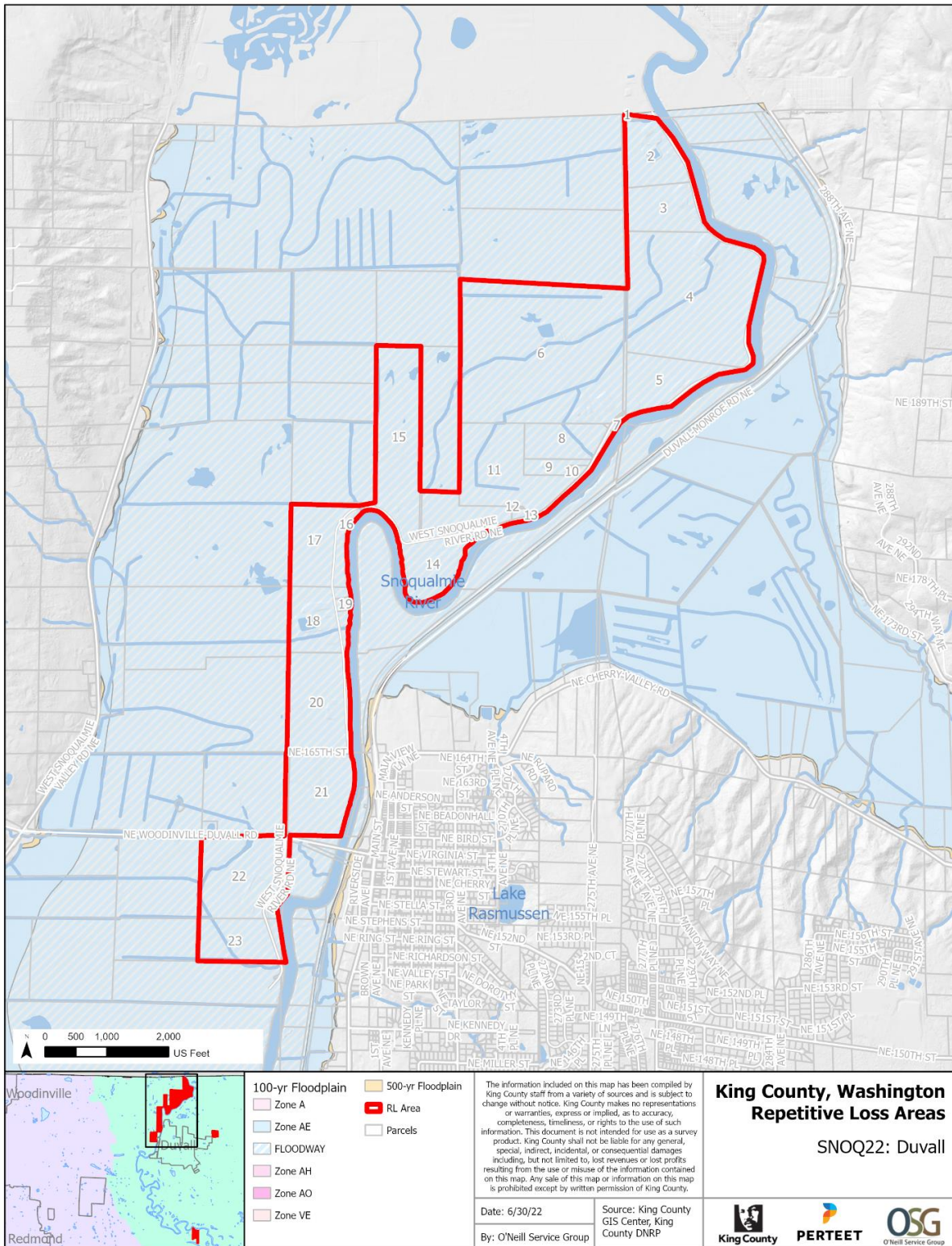


Exhibit 138. Duvall (SNOQ 22).



Flood Photos



Snoqualmie River at Duvall. November 6, 2006.



Snoqualmie River at Duvall. November 6, 2006.



Example Properties



BASIN 5 – VASHON ISLAND

Vashon Island is located in Puget Sound. The island is 36.9 square miles in size and is developed at a variety of densities, from large tracts formerly used for agriculture, to small, narrow lots along the waterfront. The floodplain is primarily VE zone along the shoreline, with A zones associated with some of the small creeks that drain into Puget Sound. There are two repetitive loss areas, three repetitive loss properties, and 31 properties with similar risk.



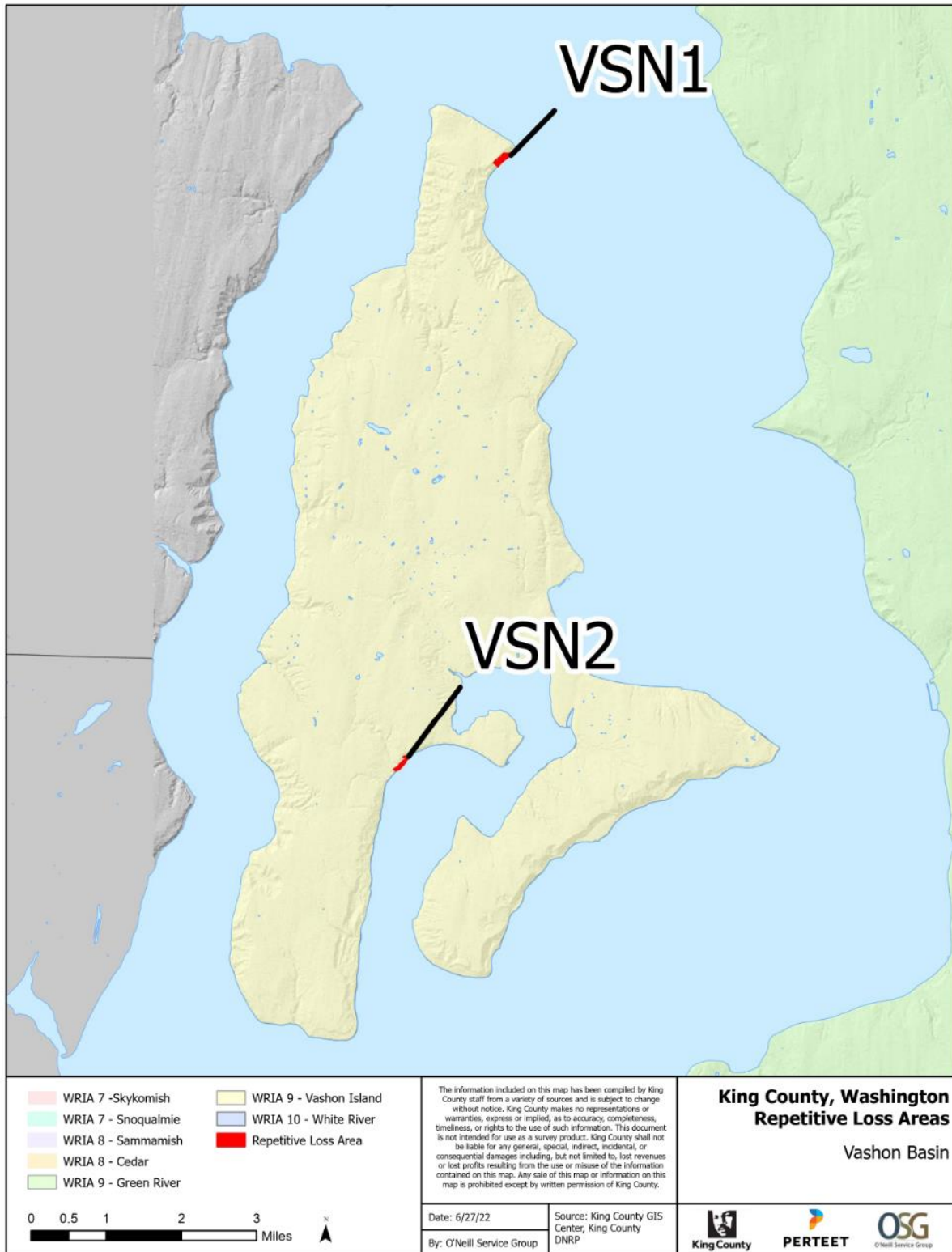


Exhibit 139. Vashon Island.



Repetitive Loss Area 1: Dolphin Point (VI 1)

Dolphin Point is located at the most northeastern point on the island. The properties within the repetitive loss area are located on a narrow shoreline backed by a steep hillside. In addition to flood risk, these properties are also at risk from mudslides or landslides. The properties at greatest risk of flooding are those constructed at the edge of the beach. Many properties have constructed bulkheads to reduce flooding risk.

Residents reported that landslides are a bigger problem than flooding.

Exhibit 140. Repetitive Loss Area Summary (VI 1).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Dolphin Point	2	0	1	11	3	14

Exhibit 141. Repetitive Loss Area Detailed Analysis (VI 1).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1922	Unknown	Average
			1960	Slab on grade	Average
			1918	Slab on grade	Average
			1977	Piers	Average
			1928	Crawl space	Average
			1963	Crawl space	Average
			1983	Slab on grade	Average
			1997	Slab on grade	Average
			1920	Basement	Average
			1963	Crawl space	Average
			1968	Garage	Average
			1959	Slab on grade	Average
			1924	Slab on grade	Average



Exhibit 142. Repetitive Loss Area Field Survey Data (VI 1).

Address	First Floor Elevation ¹	Possible Mitigation Options				
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint. Other
	L	X		X		
	L	X		X		
	A	X		X		
	H			X		
	A	X		X		
Addresses are omitted from the external version.	A	X		X		
	A	X		X		
	A	X		X		
	H			X		
	A	X		X		
	A	X		X		
	A	X		X		
	A	X		X		

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



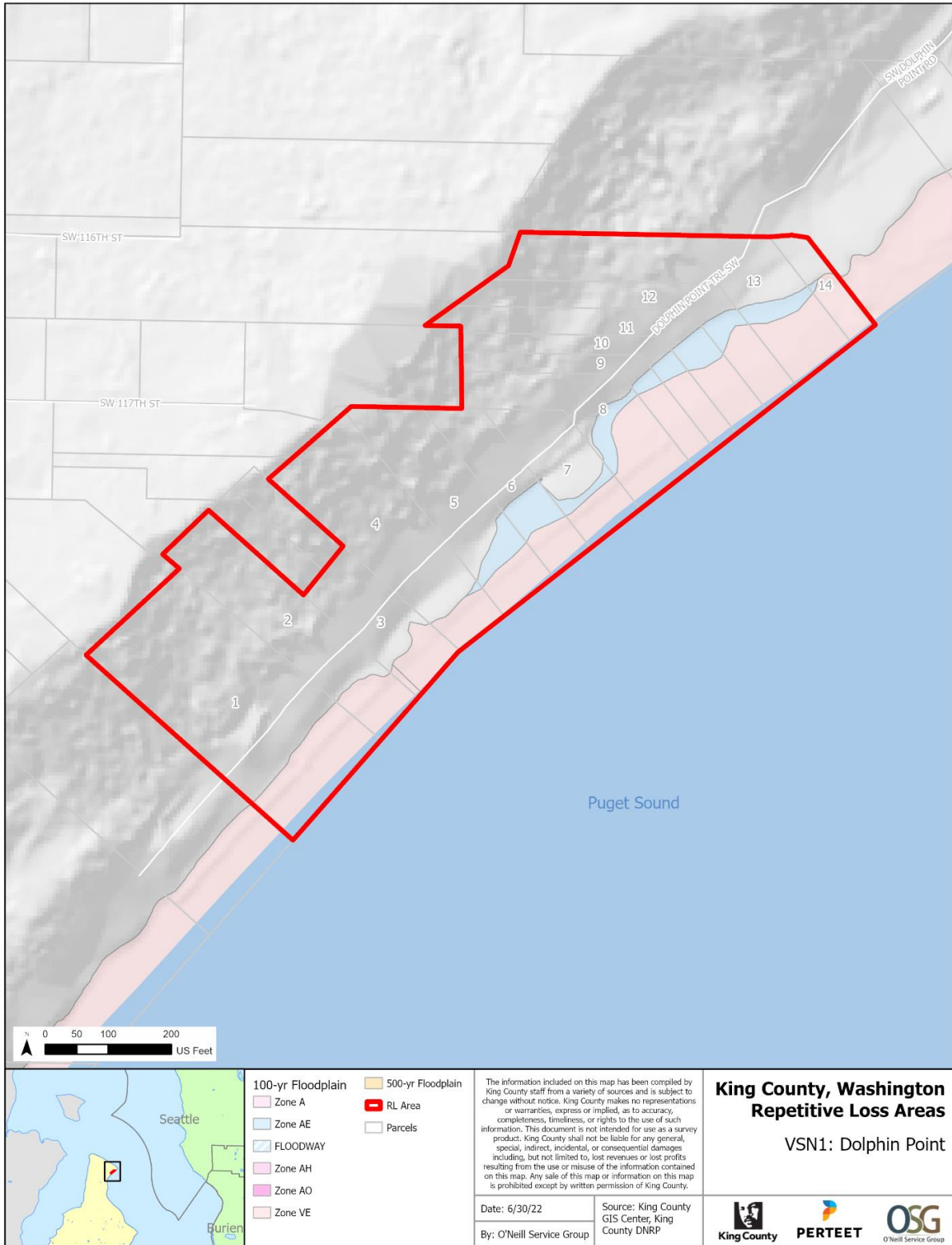


Exhibit 143. Dolphin Point (VI 1).



Example Properties



Repetitive Loss Area 2: Shawnee (VI 2)

The Shawnee neighborhood is located on the east side of Vashon Island, to the west of Maury Island. The neighborhood is located on an alluvial fan created by Fisher Creek. The residences are generally in the coastal AE zone, with some constructed at the boundary of the VE zone. At low tide, the beach extends for hundreds of feet. The properties at greatest risk are those located on lower ground closest to the beach. Most of the homes were constructed in the 1940s to 1960s.

Exhibit 144. Repetitive Loss Area Summary (VI 2).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Shawnee	1	0	3	13	1	17

Exhibit 145. Repetitive Loss Area Detailed Analysis (VI 2).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1968	Unknown	Average
			1943	Slab on grade	Average
			1947	Crawl space	Average
			1943	Crawl space	Average
			1932	Unknown	Average
			1967	Garage	Average
			1951	Crawl space	Average
			1952	Unknown	Average
			1946	Unknown	Average
			1964	Unknown	Average
			1955	Slab on grade	Average
			1946	Slab on grade	Average
			1979	Unknown	Average
			1979	Unknown	Average



Exhibit 146. Repetitive Loss Area Field Survey Data (VI 2).

Address	First Floor Elevation ¹	Possible Mitigation Options					
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
	A			X			
	A			X			
	A	X		X			
	A			X			
	A			X			
	A			X			
Addresses are omitted from the external version.	L			X			
	L			X			
	L			X			
	L			X			
	A			X			
	A			X			
	A			X			
	A			X			
	A			X			
	A			X			

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



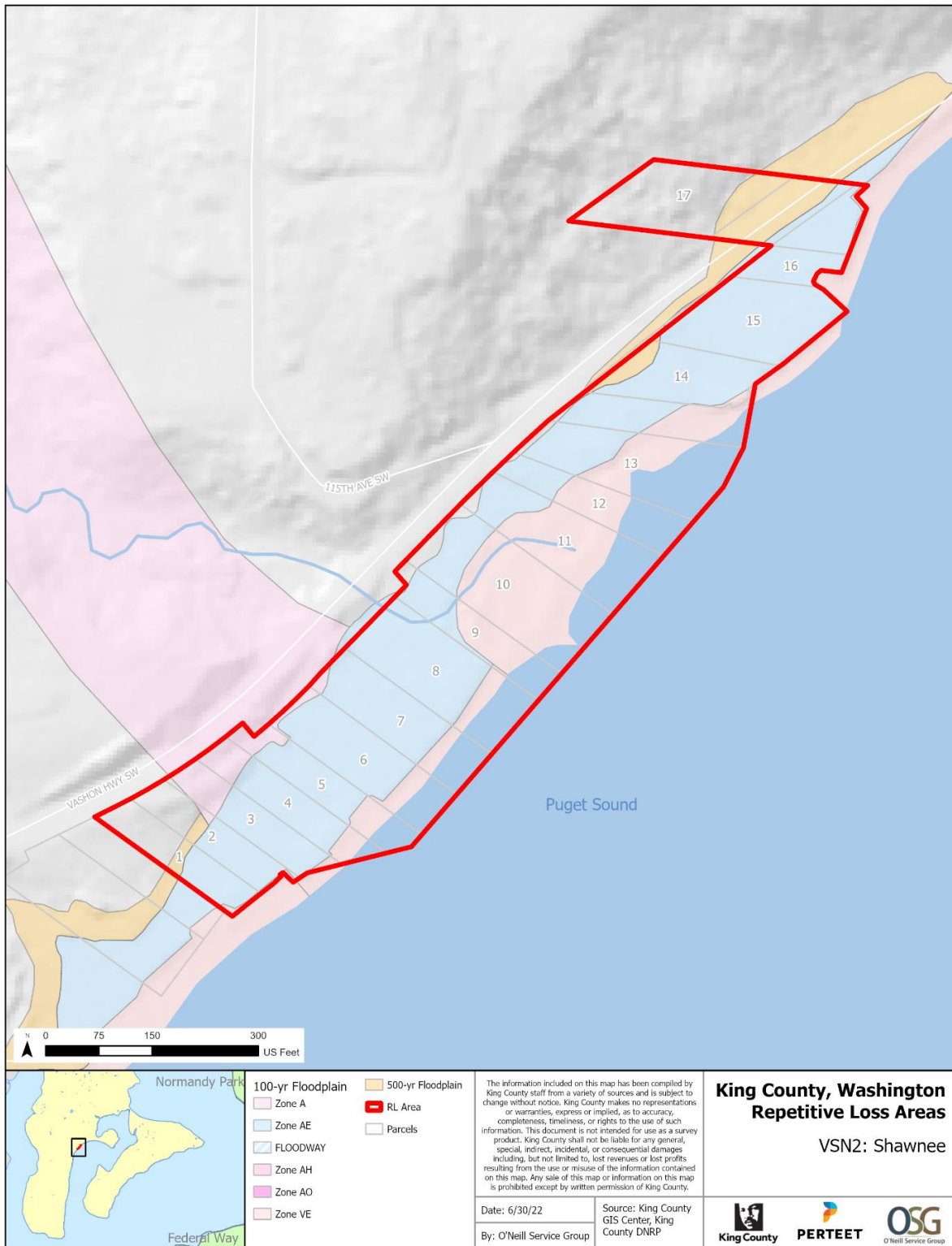


Exhibit 147. Shawnee (VI 2).



Example Properties



BASIN 6 – GREEN RIVER

The Green River Basin has 5 repetitive loss areas, 5 unmitigated properties, no mitigated properties, and 21 total properties.

Major flood control features along the Green River include Howard A. Hanson Dam, which is in the upper Green River sub-watershed, and the levee system that lines almost all riverbanks of the lower Green and Duwamish Rivers. Howard A. Hanson Dam and the levee system combine to reduce flooding in the lower river to a fraction of its historical magnitudes.

With major historical flooding largely controlled by a dam and levees, commercial and industrial land use in the largely flat and generally accessible lower Green and Duwamish River valleys has proliferated in what were formerly rural and agricultural communities. Agriculture endures in some parts of the lower Green River around the cities of Auburn and Kent, and agriculture and rural residential development are the primary land uses in the middle Green River.

Residents, businesses, and farms below the Howard A. Hanson Dam in the Green River Valley prepared for a higher risk of flooding due to damage that occurred to an earthen bank next to the dam after record high water in January 2009. While temporary improvements made by the US Army Corps of Engineers successfully lowered the risk of flooding in the Green River Valley, the dam continued to operate at a limited capacity during the 2010/2011 flood season, creating a heightened risk of flooding in the lower valley.

In March 2011, the US Army Corps of Engineers announced the return of full operational capacity at Howard A. Hanson Dam. However, this functioning dam and levee system does not eliminate all risks of flooding. The dam was formerly thought to control water up to a 500-year flood event. Now, the US Army Corps of Engineers recognizes the dam capacity can control water up to a 140-year flood event.

The King County Flood Control District is currently in the process of developing a Lower Green River Corridor Flood Hazard Management Plan for approximately 21 river miles of the Lower Green River. The goal of the Plan is to provide a long-term approach to reduce flood risk and improve fish habitat while supporting the economic prosperity of the region. The Flood Control District is also preparing a Programmatic Environmental Impact Statement (PEIS), which will analyze alternatives for flood protection that could be included in the Plan.

Current investments in the Green River Basin include:

Black River Pump Station Improvements

This project makes a number of improvements to the Black River Pump Station to ensure that the station continues to provide flood risk reduction benefits to this economically vibrant area. Improvements will also ensure the operation is safe, reliable, efficient, and avoids or minimizes impacts to the environment. Improvements include: seismic and structural, fish passage, mechanical renovations, and high-use engine replacement.

Galli's-Dykstra Levee Repair Project

This project completes a Phase 1 repair per a request from the City of Auburn by elevating a 3500-foot long levee reach to meet FEMA levee certification requirements.



Green River System-Wide Improvement Framework

The Green River System-Wide Improvement Framework outlines a prioritized strategy to address levee deficiencies in order to optimize flood risk reduction, address system-wide issues and maintain eligibility for the 17 miles of levees currently enrolled in the Corps of Engineers Levee Rehabilitation and Inspection Program under Public Law 84-99.

Lower Russell Levee Setback Project

This project will remove and replace the existing flood containment system of levee and revetments along the right (east) bank of the Green River between river mile 17.85 (S 212th Street) and river mile 19.25 (S 228th Street/Veterans Drive) in the City of Kent in order to construct a flood prevention system that balances policy directives regarding flood risk reduction, habitat restoration, and recreational use.



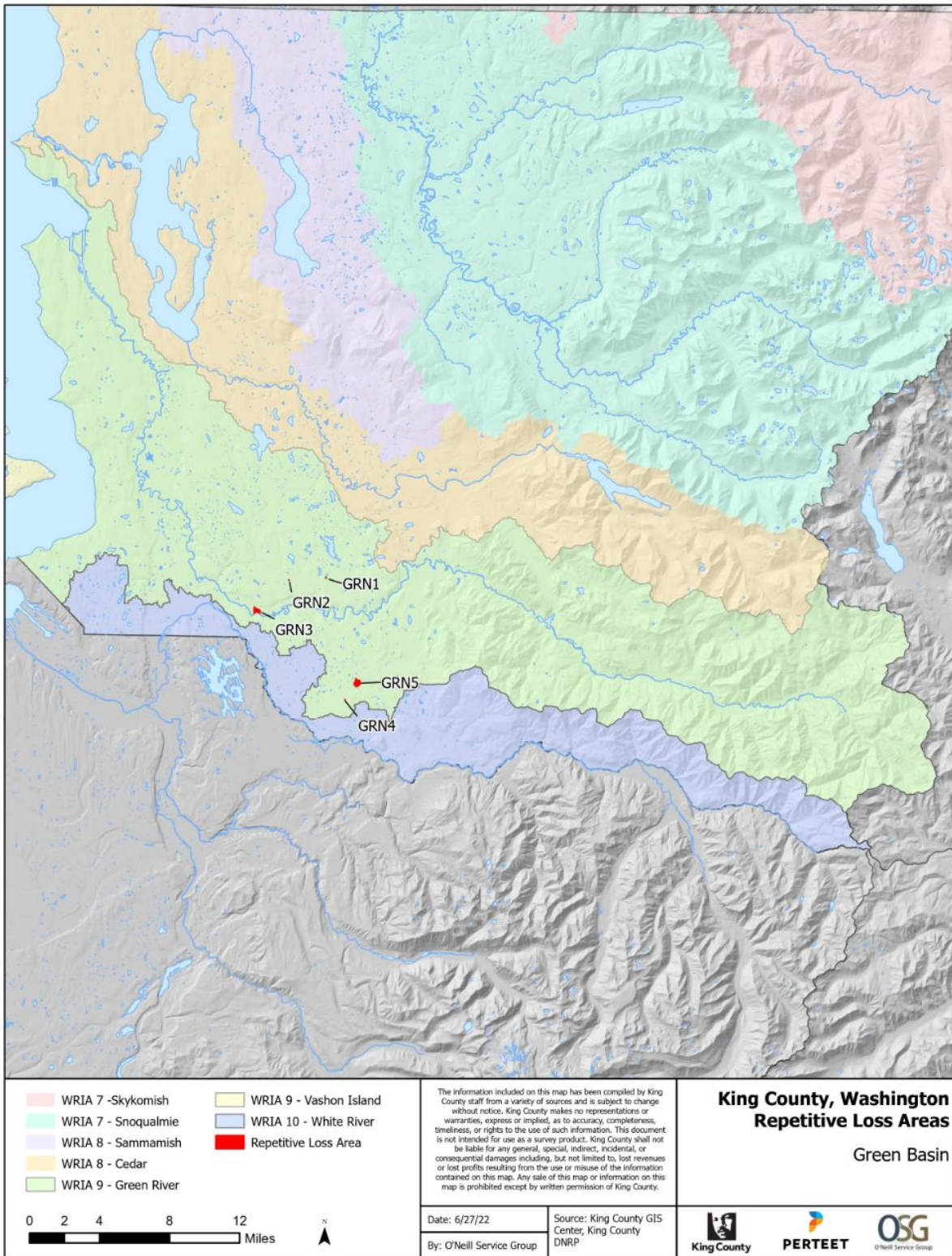


Exhibit 148. Green River Basin.



Repetitive Loss Area 1: Horseshoe Lake (GRN 1)

Horseshoe Lake is a small, closed lake just outside the City of Black Diamond that does not have a regulatory floodplain. About 75% of the lake is surrounded by homes. The remaining portion is a wetland that is inundated when the lake levels increase. The lake levels fluctuate throughout the year, with the highest levels in winter, spring, and early summer and lowest levels in the late summer and fall.

The properties in the repetitive loss area are at a lower elevation than the other properties surrounding the lake and are the first to be inundated when lake levels exceed normal elevations.

Exhibit 149. Repetitive Loss Area Summary (GRN 1).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Horseshoe Lake	1	0	0	2	1	3

Exhibit 150. Repetitive Loss Area Detailed Analysis (GRN 1).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1989	Crawl space	Average
			1991	Slab on grade	Average
			1991	Crawl space	Average

Exhibit 151. Repetitive Loss Area Field Survey Data (GRN 1).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options			
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint. Other
Addresses are omitted from the external version.	L	X				
	L			X		
	L			X		

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



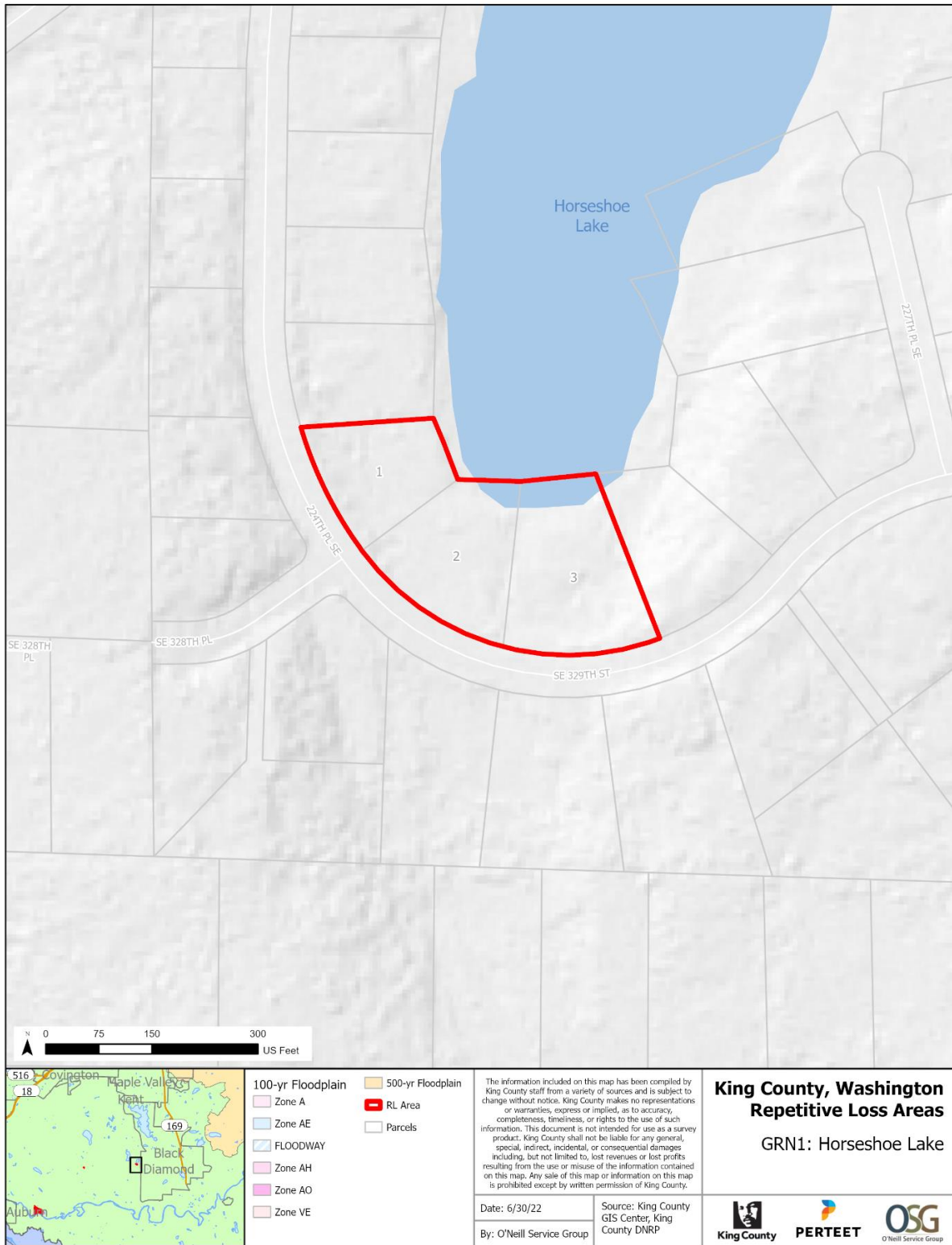


Exhibit 152. Horseshoe Lake (GRN 1).



Area Photos



Horseshoe Lake. September 21, 2021 (left) and May 22, 2022 (right).

Example Properties



Repetitive Loss Area 2: 192nd Avenue SE (GRN 2)

In accordance with the Privacy Act of 1974, information about individual repetitive loss properties will not be shared with the general public.

This property is within the 100-year floodplain of Covington Creek. The property is low and slopes down towards the creek from the road. The house sits lower than other houses in the vicinity.

Exhibit 153. Repetitive Loss Area Summary (GRN 2).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
192nd Avenue SE	1	0	0	0	1	1

Exhibit 154. Repetitive Loss Area Detailed Analysis (GRN 2).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1962	Slab on grade	Average

Exhibit 155. Repetitive Loss Area Field Survey Data (GRN 2).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Acquire/ Demolish	Possible Mitigation Options			
				Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.		L	X	X			

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



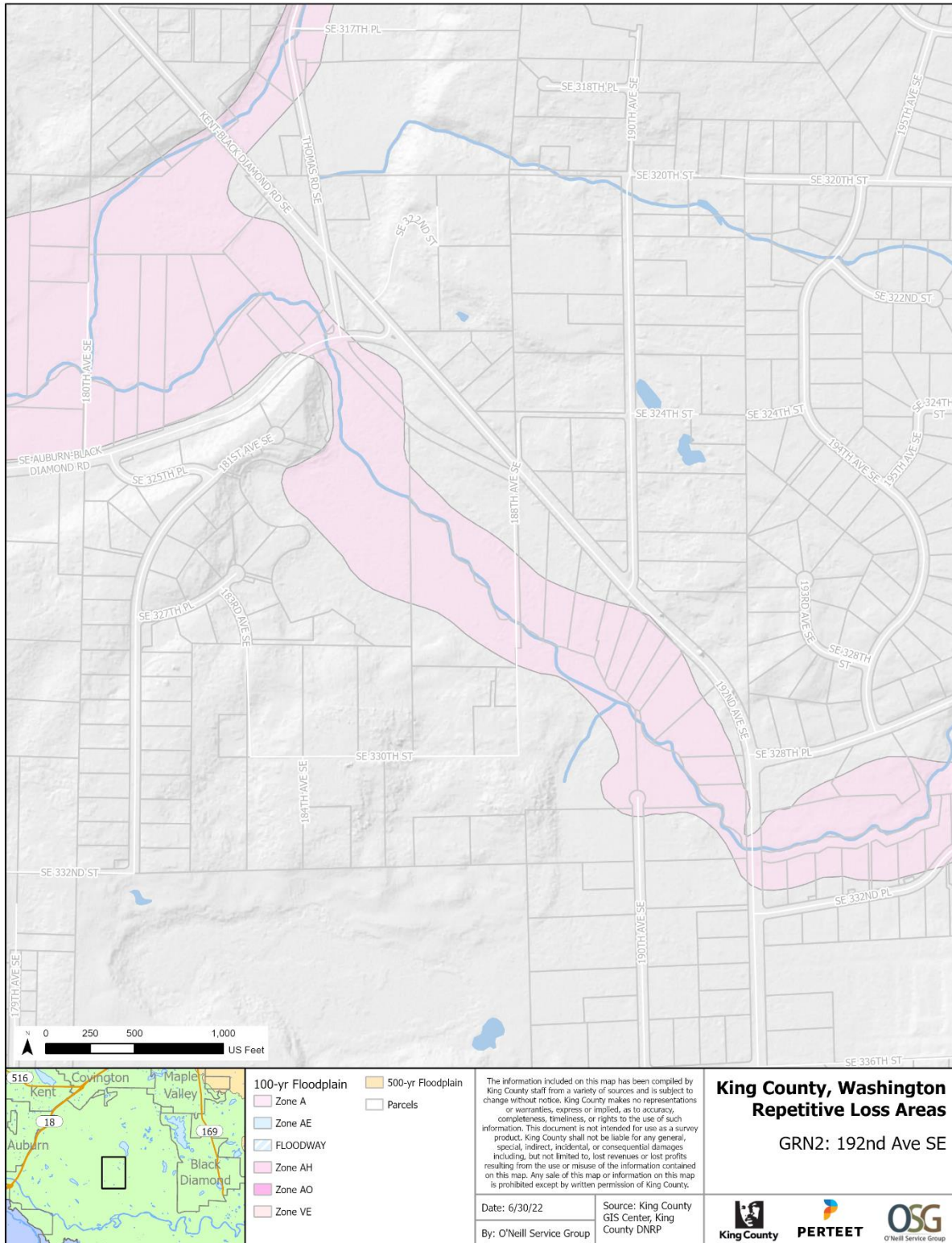


Exhibit 156. 192nd Avenue SE (GRN 2).



Repetitive Loss Area 3: Green Valley (GRN 3)

The Green Valley is an agricultural area along the Green River. The repetitive loss area properties are located alongside a side channel of the Green River and are partially within the 100-year floodplain. An adjacent property with similar risk was purchased by the County in 2014 to protect the high-quality side channel habitat and remove the risk of flooding to the residence.

Exhibit 157. Repetitive Loss Area Summary (GRN 3).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Green Valley	1	0	0	1	1	2

Exhibit 158. Repetitive Loss Area Detailed Analysis (GRN 3).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1990	Crawl space	Average
			1964	Split level	Average

Exhibit 159. Repetitive Loss Area Field Survey Data (GRN 3).

Address	First Floor Elevation ¹	Elevate/ Replace/ Relocate	Possible Mitigation Options				
			Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.	L	X					
	A	X					

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



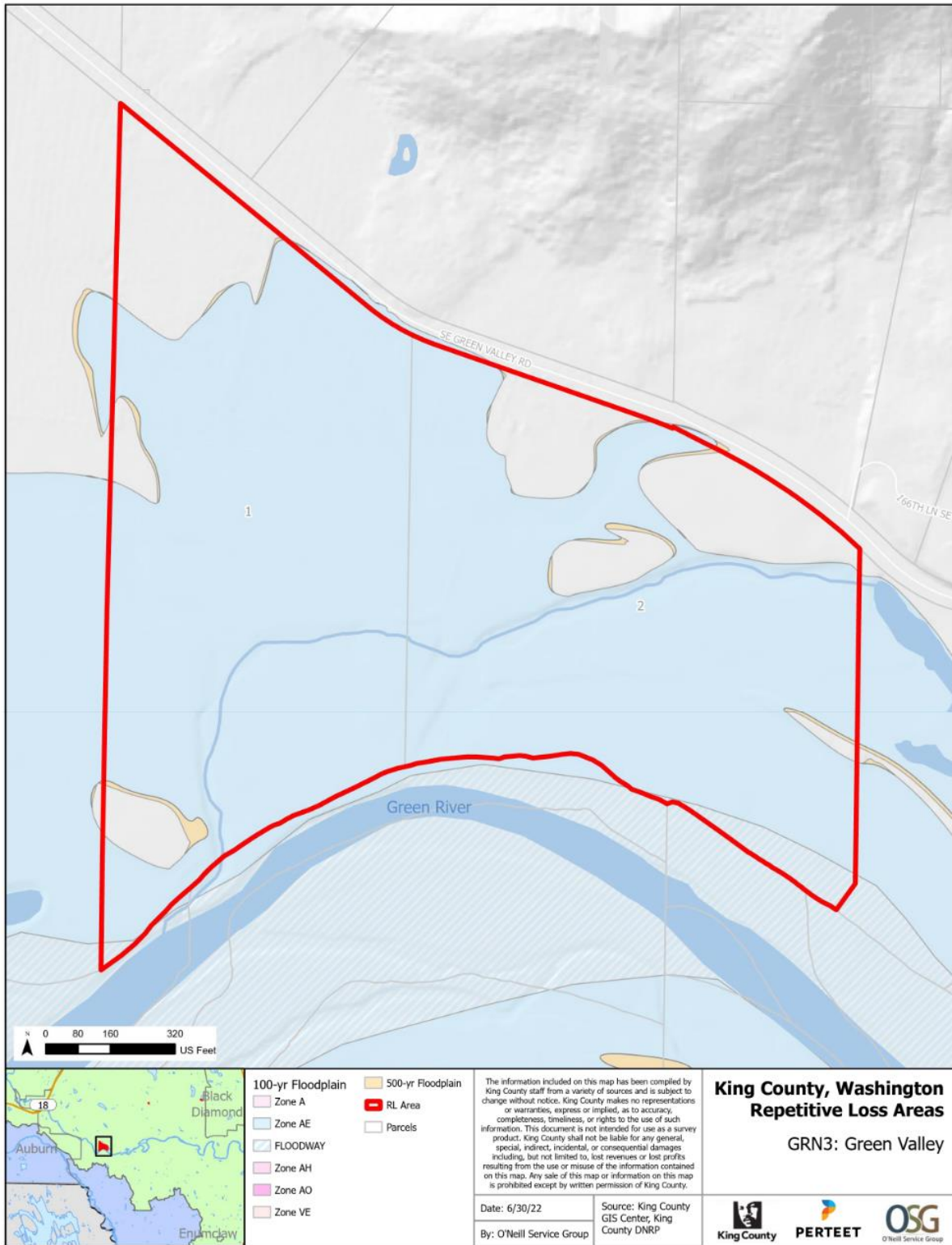


Exhibit 160. Green Valley (GRN 3).



Example Properties



Repetitive Loss Area 4: 440th Street (GRN 4)

In accordance with the Privacy Act of 1974, information about individual repetitive loss properties will not be shared with the general public.

This repetitive loss property is not within the floodplain nor is it close to any natural drainages, but there are drainage ditches across the street and nearby. The structure, constructed in 1933, claimed losses in November and December 2015. The residence is not visible from the street.

Exhibit 161. Repetitive Loss Area Summary (GRN 4).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
440th Street	1	0	0	0	1	1

Exhibit 162. Repetitive Loss Area Detailed Analysis (GRN 4).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1933	Unknown	Good

Exhibit 163. Repetitive Loss Area Field Survey Data (GRN 4).

Address	First Floor Elevation ¹	Possible Mitigation Options					
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint.	Other
Addresses are omitted from the external version.		A			X		X

¹First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



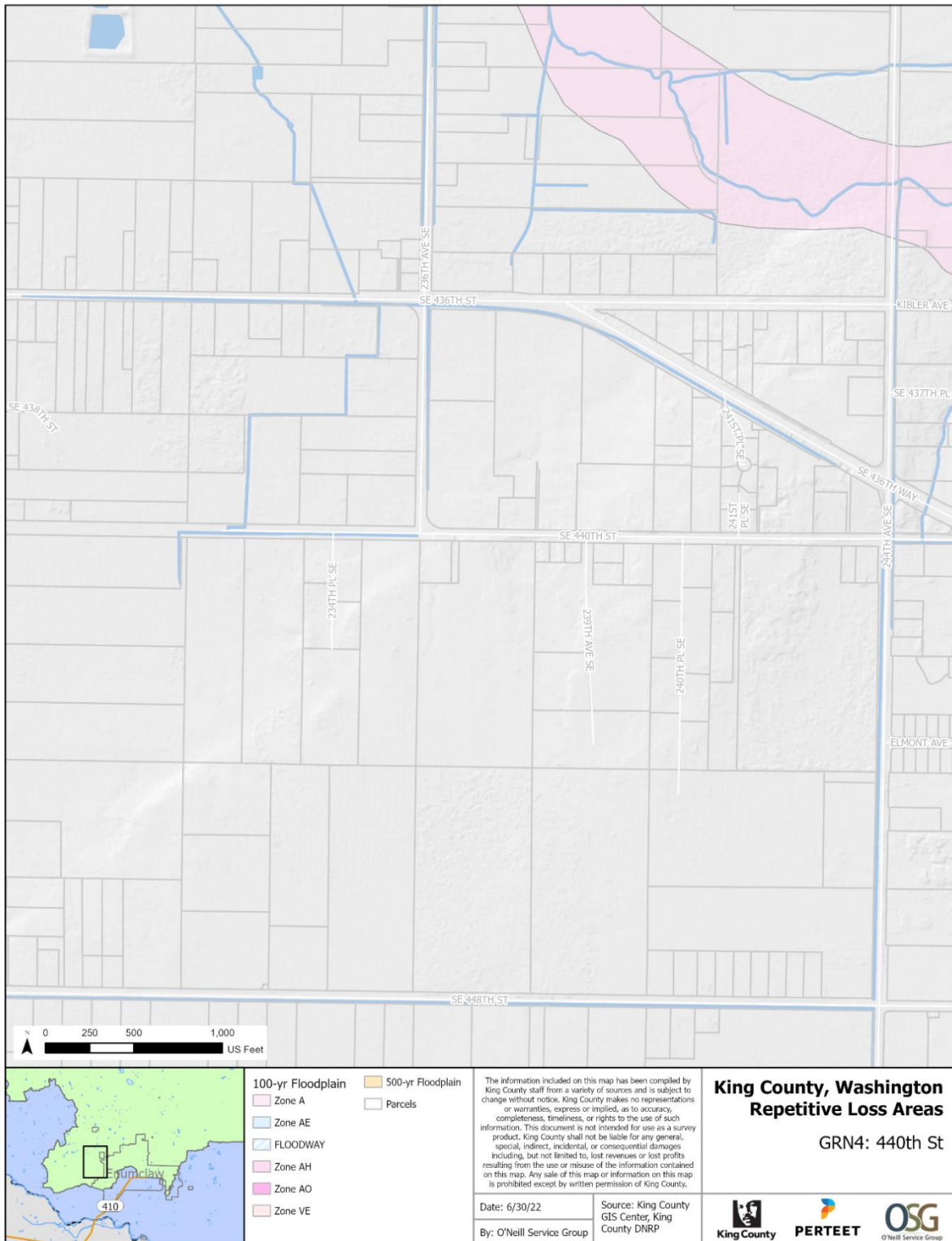


Exhibit 164. 440th Street (GRN 4).



Repetitive Loss Area 5: Newaukum Creek (GRN 5)

The Newaukum Creek repetitive loss area is located partially within the 100-year floodplain of Newaukum Creek and partially within areas alongside roadside ditches that are affected by flooding. The flooding from the repetitive loss property was associated with roadside ditch overflowing onto the property. Newaukum Creek crosses under SE 424th Street and during times of high flows, the creek water overflows into the drainage ditch which transports flood water outside of the 100-year floodplain.

Residents reported that flooding has increased since construction of a new school.

Exhibit 165. Repetitive Loss Area Summary (GRN 5).

Repetitive Loss Area	# of RL Properties	# of Mitigated RL Properties	# of Vacant Properties	# of Additional Properties	# of Properties with Insurance Claims	Total # of Properties in RL Area
Newaukum Creek	1	0	3	10	1	14

Exhibit 166. Repetitive Loss Area Detailed Analysis (GRN 5).

Address	# Claims	NFIP Insurance	Year Constructed	Foundation Type	Condition
Addresses, claims, and insurance information is omitted from the external version.			1968	Slab on grade	Average
			1944	Unknown	Poor
			1935	Crawl space	Average
			1936	Slab on grade	Average
			1938	Crawl space	Poor
			1991	Slab on grade	Average
			1960	Crawl space	Good
			1952	Crawl space	Average
			1993	Crawl space	Average

Exhibit 167. Repetitive Loss Area Field Survey Data (GRN 5).

Address	First Floor Elevation ¹	Possible Mitigation Options				
		Elevate/ Replace/ Relocate	Acquire/ Demolish	Modify (HVAC, etc.)	Capital Projects	Drainage Maint. Other
Addresses are omitted from the external version.	A			X		X
	A			X		
	A			X		
	A		X	X		X
	A			X		X
	A			X		
	A	X		X		X
	A			X		X
	A			X		

¹ First floor height compared to others in the same RL area. A = average height, H = higher than average, L = lower than average



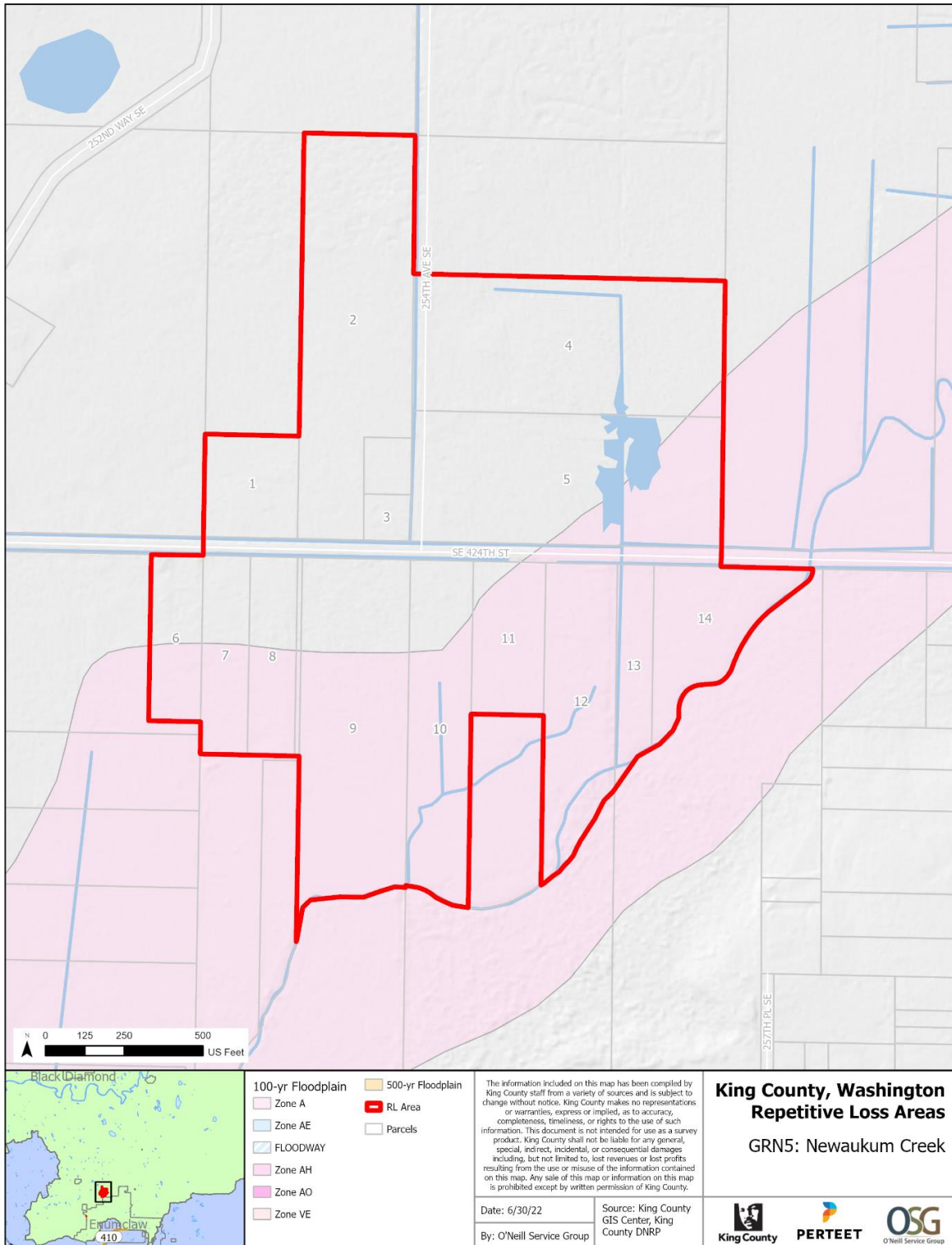


Exhibit 168. Newaukum Creek (GRN 5).



Example Properties



APPENDIX A

Repetitive Loss Property Notification Letter

PROPERTY OWNER NOTIFICATION LETTER



Water and Land Resources Division
Service provider to the King County Flood Control District
Department of Natural Resources and Parks
King Street Center
201 South Jackson Street, Mailstop 5600
Seattle, WA 98104-3855
206-477-4800 Fax 206-296-0192
TTY Relay: 711

June 13, 2022

Address
City, State Zip Code

Dear Property Owner or Resident,

At King County, we're concerned about flooding on properties and working to better understand where and how it happens. You have received this letter because your property is in a Repetitive Loss Area that has flooded several times. This does not mean that your property has flooded, only that it is in the same neighborhood as a property that has flooded multiple times. While we work to reduce flood risks, here are things you can do to prepare and help protect yourself from floods:

- 1. Tell us about flooding at your property and what you think causes it.** Take our online survey at: surveymonkey.com/r/KC_RLAA. You can also share your responses by completing the enclosed survey below and returning it by mail. **Surveys must be completed and returned by June 30, 2022.** We encourage you to provide any relevant flood information.



Scan with smart phone

To help determine causes of repeated flooding, King County field teams will visit your neighborhood over the next two weeks to assess the flood risk and to take photographs. Field staff will not access your property and will only gather information viewable from the street. Staff will be looking at drainage patterns to identify possible sources of flooding (rivers, streams, ditches, ponding water, etc.) as well as the type and condition of building foundations.

Once our evaluation is complete, we will provide a draft copy of the report to survey participants and will be accepting your feedback. If you would like a copy of the draft report, please provide your email address within the survey.

- 2. Buy flood insurance:** Homeowners or renters insurance does not cover loss caused by flooding. Purchasing flood insurance is important. Your property is eligible for a 40 percent flood insurance premium discount. Flood insurance to protect contents is available to both renters and property owners. To learn more visit floodsmart.gov, talk to your insurance agent, or contact me.
- 3. Prepare for flooding:**
 - Sign up for King County Flood Alerts by visiting kingcounty.gov/flood and download the King County Flood Warning mobile app to find out when rivers are rising.
 - Update your emergency plans and put together an emergency kit.

- Know how to shut off the electricity and gas to your house before a flood event.
- Store valuables and household chemicals above flood levels.

4. Protect your property from flooding:

- Move vehicles, equipment, livestock, or pets to higher ground.
- Anchor and secure propane tanks and other fuel containers.
- Install a floor drain plug or sewer backup valve.
- Keep street drains, storm grates and flap gates free of leaves and debris.
- Consider elevating your property. Learn more at kingcounty.gov/buyout-elevation.

Thank you for your interest and support in reducing repetitive flood losses in your neighborhood! Together we can help minimize flood losses and maximize the safety and enjoyment of your home.

If you have any questions or would prefer to respond to the survey by phone, please feel free to contact me directly at 206-477-7568 or lahendrix@kingcounty.gov. I look forward to hearing from you.

Sincerely,

Laura Hendrix, CFM
Floodplain Management Planner

Alternative Formats Available


Interpretation and translation services are available to you at no cost. If you need them, please contact us at lahendrix@kingcounty.gov or 206-477-7568 (TTY) Relay: 711.

King County Repetitive Loss Area Analysis

You can respond to the survey online at surveymonkey.com/r/KC_RLAA or fill out the hard copy below. Please return your responses by June 30, 2022 to:

Attn: Laura Hendrix
King County Water and Land Resources Division
201 South Jackson Street, Suite 5600
Seattle, WA 98104



Scan with smart phone 

1. Please provide your address. Your response will be used by King County to better understand the flooding in your area.

Address: _____

2. If you would like to review the draft Repetitive Loss Area Analysis, please provide your email address.

Email address: _____

3. How many years have you lived at this address or owned the property? Select one.

- Less than 1 year 5-10 years
 1-5 years 10+ years

4. Do you rent or own the property? Select one.

- Rent Own

5. What type of foundation does the home/building have? Select all that apply.

- Slab Ground floor garage
 Crawlspace Piers
 Basement I don't know

6. Has the home/building or property ever flooded or had a water problem? Select one.

- Yes I don't know
 No (if "no," skip to question 10)

7. In what year(s) did it flood? Please list all years.

8. Where did you get flood water and how deep was it? Circle the depth in each location.

In the basement	No flood water	Less than 1 foot	1-2 feet	3-4 feet	5+ feet
In the crawlspace	No flood water	Less than 1 foot	1-2 feet	3-4 feet	5+ feet
In the first floor	No flood water	Less than 1 foot	1-2 feet	3-4 feet	5+ feet
In the yard/field only	No flood water	Less than 1 foot	1-2 feet	3-4 feet	5+ feet

9. If flood water entered your home/building, how long did it stay?

- Less than 1 day 3+ days
 1-2 days

10. What do you think causes the flooding in your area? Check all that apply.

- Flooding from a waterbody (river, creek, lake, etc.)
 Saturated ground / ground water
 Blocked or undersized drainages/ditches/stormwater system
 Other (please specify)

11. What flood protection measures have you installed on your property? Check all that apply.

- Sump pump Backup power system/generator
 Waterproofed the outside walls
 Re-graded yard to keep flood water away Elevated structure
 Moved things out of basement Other (please specify)

12. Is the home/building located in the 1% chance floodplain (also known as the FEMA 100-year floodplain)? Select one.

- Yes I don't know
 No

13. Do you have FEMA flood insurance? Select one.

- Yes I don't know
 No

14. Please provide any additional information or comments you have about flooding in your area.

15. Would you like to receive additional information about how you can protect your home/building from flooding?

- No
 Yes, please contact me with more information.



Water and Land Resources Division
Service provider to the King County Flood Control District
Department of Natural Resources and Parks
King Street Center
201 South Jackson Street, Mailstop 5600
Seattle, WA 98104-3855
206-477-4800 Fax 206-296-0192
TTY Relay: 711

Estimado/a propietario/a o residente:

En el Condado de King estamos preocupados por las inundaciones en propiedades y estamos trabajando para entender mejor dónde y cómo ocurren. Usted ha recibido esta carta debido a que su propiedad está en un Área de Pérdida Repetitiva que se ha inundado varias veces. Esto no significa que su propiedad se haya inundado, solo que está en el mismo vecindario de una propiedad que se ha inundado en múltiples ocasiones. Mientras trabajamos para reducir los riesgos de inundaciones, aquí hay cosas que puede hacer para prepararse y ayudar a protegerse de las inundaciones:

1. **Díganos sobre las inundaciones en su propiedad y sobre lo que usted piensa que las causan.** Tome la encuesta en línea en: surveymonkey.com/r/AAPR. También puede compartir sus respuestas al completar la encuesta adjunta a continuación y devolverla por correo postal. **Las encuestas deben completarse y devolverse a más tardar el 30 de junio de 2022.** Le motivamos a que nos comparta cualquier información relevante a las inundaciones.



Escanear con el teléfono 

Para ayudar a determinar las causas de las inundaciones recurrentes, los equipos en campo del Condado de King visitarán su vecindario en las próximas dos semanas para evaluar los riesgos de inundación y para tomar fotografías. El personal en campo no accederá a su propiedad y solo recabará información visible desde la calle. El personal estará buscando a patrones de drenaje para identificar posibles fuentes de inundaciones (ríos, arroyos, diques, agua estancada, etc.) así como el tipo y condición de los cimientos de la construcción.

Una vez que se complete la evaluación, le otorgaremos un borrador del reporte a los participantes de la encuesta y aceptaremos sus comentarios. Si quiere una copia del borrador del reporte, por favor, otorgue su dirección de correo electrónico junto con la encuesta.

2. **Compre seguro para inundaciones:** El seguro para propietarios o arrendatarios de vivienda, no cubre las pérdidas causadas por las inundaciones. Comprar un seguro para inundaciones es importante. Su propiedad es elegible para un descuento de 40 por ciento de la prima del seguro para inundaciones. El seguro para inundaciones para proteger los contenidos de su propiedad está disponible tanto para arrendatarios como para propietarios de vivienda. Para obtener más información, visite floodsmart.gov, hable con su agente de seguro o contácteme.

3. Prepárese para las inundaciones:

- Regístrese para recibir Alertas de Inundaciones en el Condado de King al visitar kingcounty.gov/flood y descargue la aplicación móvil de Advertencia de Inundaciones del Condado de King para saber cuándo está subiendo el nivel de los ríos.
- Actualice sus planes de emergencia y prepare un kit de emergencia.
- Sepa cómo cortar la electricidad y el gas de su casa antes de un evento de inundación.
- Guarde los objetos de valor y las sustancias químicas para la casa arriba de los niveles del suelo.

4. Proteja su propiedad en contra de inundaciones:

- Mueva los vehículos, equipo, ganado o mascotas a una zona más alta.
- Ancle y asegure los tanques de propano y otros contenedores de combustible.
- Instale un tapón de desagüe en el piso o una válvula antirretorno de drenaje.
- Mantenga las alcantarillas de la calle, las rejillas y compuertas para el desagüe libres de hojas y basura.
- Considere elevar el nivel de su propiedad. Obtenga más información en kingcounty.gov/buyout-elevation.

¡Gracias por su interés y apoyo para reducir las pérdidas repetitivas por inundaciones en su vecindario! Juntos, podemos minimizar las pérdidas por inundaciones y maximizar la seguridad y el disfrute de su casa.

Si tiene preguntas o si prefiere responder a la encuesta por teléfono, por favor, no dude en contactarme directamente al 206-477-7568 o a lahendrix@kingcounty.gov. Espero saber de usted.

Atentamente,

Laura Hendrix, CFM
Planeadora de Gestión de Terrenos Inundables

Formatos Alternativos Disponibles

Hay servicios de interpretación y traducción disponibles para usted, sin costo. Si los necesita, por favor, contáctenos a lahendrix@kingcounty.gov o al 206-477-7568 Retransmisión TTY: 711.

Análisis del Área de Pérdida Repetitiva del Condado de King

Puede responder a la encuesta en línea en surveymonkey.com/r/AAPR o llenar la siguiente copia en papel. Por favor, devuelva las respuestas a más tardar el 30 de junio de 2022 a:

Attn: Laura Hendrix
King County Water and Land Resources Division
201 South Jackson Street, Suite 5600
Seattle, WA 98104



Escanear con el teléfono



1. Por favor, otorgue su dirección. Su respuesta será usada por el Condado de King para entender mejor las inundaciones en su área.

Dirección: _____

5. Si quiere revisar el borrador del Análisis del Área de Pérdida Repetitiva, por favor, agregue su correo electrónico.

Correo electrónico: _____

6. ¿Cuántos años ha vivido en esta dirección o ha sido dueño/a de la propiedad? Seleccione uno

- Menos de 1 año 5-10 años
 1-5 años Más de 10 años

7. ¿Usted renta o es dueño/a de la propiedad? Seleccione una opción.

- Rento Soy dueño/a

8. ¿Qué tipo de cimientos tiene la casa/edificio? Seleccione todas las opciones que correspondan.

- Losa de concreto Cochera en el primer piso
 Bloques y con espacio entre el suelo y la construcción Pilares
 Sótano No sé

9. ¿La casa/edificio o propiedad alguna vez se ha inundado o ha tenido un problema de agua?

Seleccione una opción.

- Sí No sé
 No (en caso que "no," pase a la pregunta 10)

10. ¿En qué año(s) se inundó? Por favor, indique todos los años.

11. ¿En qué parte tuvo agua de inundación y qué tan profunda estaba? Circule la profundidad en cada lugar.

En el sótano	No ha habido agua de inundación	Menos de 1 pie	1-2 pies	3-4 pies	Más de 5 pies
En el espacio entre el suelo y la casa	No ha habido agua de inundación	Menos de 1 pie	1-2 pies	3-4 pies	Más de 5 pies
En el primer piso	No ha habido agua de inundación	Menos de 1 pie	1-2 pies	3-4 pies	Más de 5 pies

Solo en el patio/campo	No ha habido agua de inundación	Menos de 1 pie	1-2 pies	3-4 pies	Más de 5 pies
------------------------	---------------------------------	----------------	----------	----------	---------------

12. Si el agua de inundación entró a su casa/edificio, ¿por cuánto tiempo permaneció ahí?

- Menos de 1 día
 Más de 3 días
 1-2 días

13. ¿Qué es lo que cree que causa las inundaciones en su área? Marque todas las opciones que correspondan.

- Inundaciones a partir de un cuerpo de agua (río, arroyo, lago, etc.)
 Terreno saturado / agua subterránea
 Drenajes/diques/ sistemas para agua pluvial bloqueados o de tamaño insuficiente
 Otro (por favor, especifique)

14. ¿Qué medidas de protección en contra de las inundaciones ha instalado usted en su propiedad? Marque todas las opciones que correspondan.

- Bomba de sumidero
 Sistema de energía de respaldo/generador
 Paredes exteriores en contra del agua
 Estructura elevada
 Nivelación del patio para alejar el agua
 Otro (por favor, especifique)
 Sacar las cosas del sótano

15. ¿Está la casa/edificio ubicado en un terreno inundable con 1 % de posibilidad (también conocido como terrenos inundables de 100 años de FEMA)? Seleccione una opción.

- Sí
 No sé
 No

16. ¿Tiene seguro para inundaciones de FEMA? Seleccione una opción.

- Sí
 No sé
 No

17. Por favor, agregue cualquier información adicional o comentarios que tenga sobre las inundaciones en su área.

18. ¿Le gustaría recibir información adicional sobre cómo puede proteger su casa/edificio en contra de inundaciones?

- No
 Sí, por favor, contácteme con más información.

APPENDIX B
Survey Results

Q1 Please provide your address. Your responses will be used by King County to better understand the flooding in your area.

Answered: 51 Skipped: 0

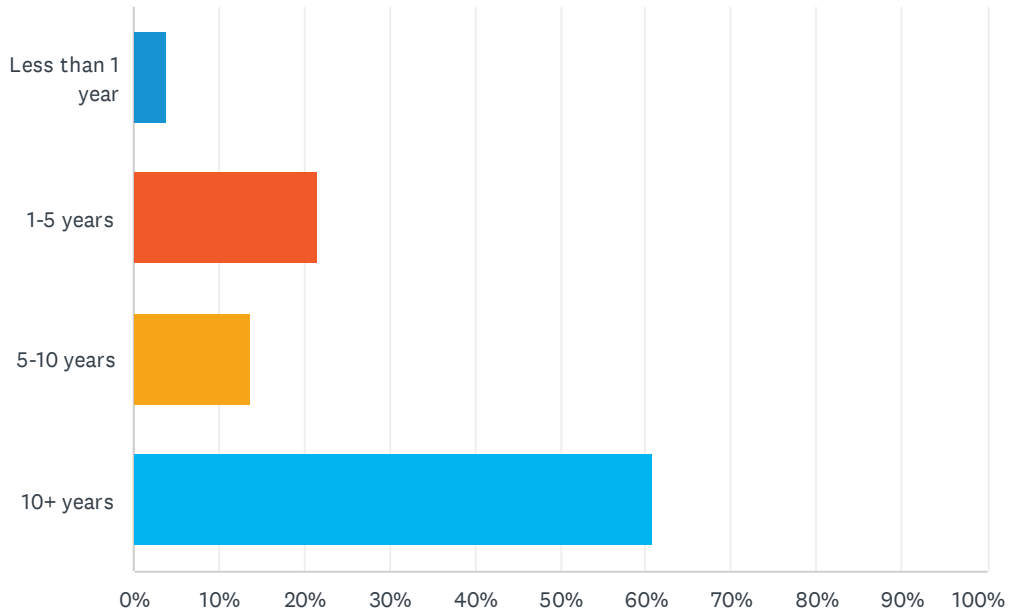
ANSWER CHOICES	RESPONSES	
Name	0.00%	0
Company	0.00%	0
Address	100.00%	51
Address 2	0.00%	0
City/Town	92.16%	47
Watershed	100.00%	51
ZIP/Postal Code	0.00%	0
Country	0.00%	0
Email Address	0.00%	0
Phone Number	0.00%	0

Q2 If you would like to review the draft Repetitive Loss Area Analysis, please provide your email address.

Answered: 42 Skipped: 9

Q3 How many years have you lived at this address or owned the property?

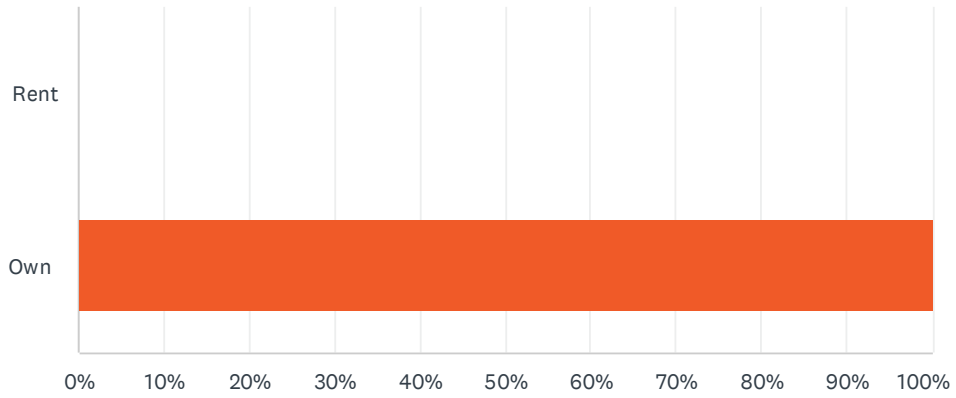
Answered: 51 Skipped: 0



ANSWER CHOICES	RESPONSES
Less than 1 year	3.92% 2
1-5 years	21.57% 11
5-10 years	13.73% 7
10+ years	60.78% 31
TOTAL	51

Q4 Do you rent or own the property?

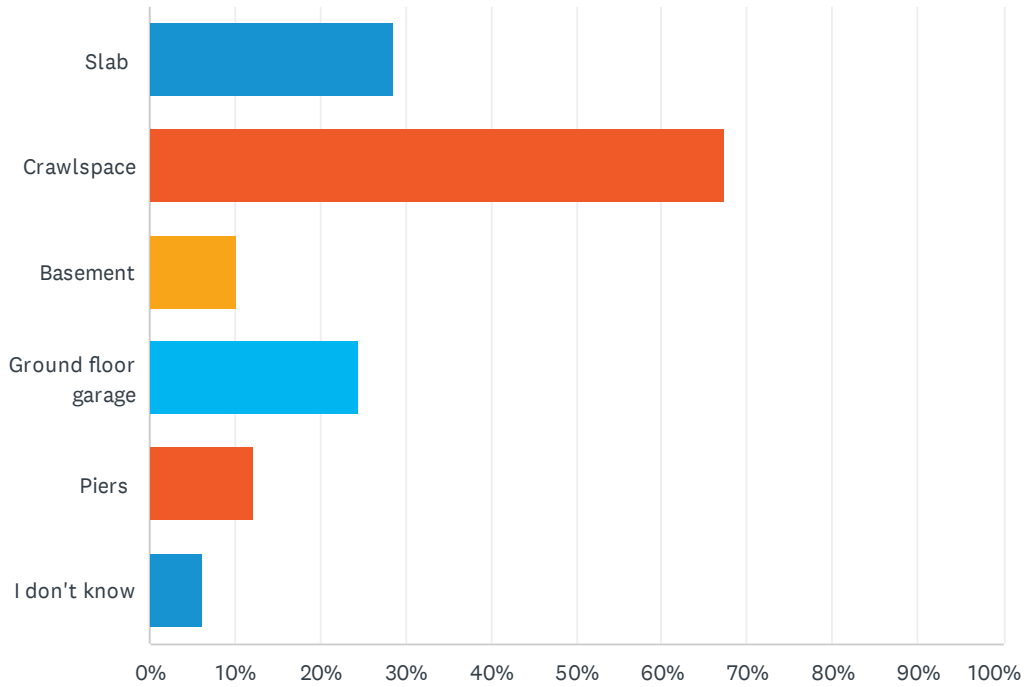
Answered: 51 Skipped: 0



ANSWER CHOICES	RESPONSES
Rent	0.00% 0
Own	100.00% 51
TOTAL	51

Q5 What type of foundation does the home/building have? Select all that apply.

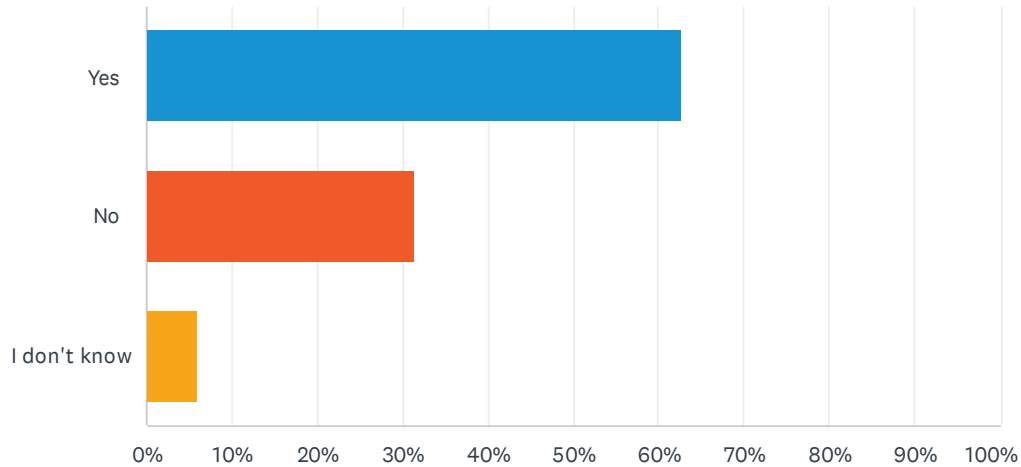
Answered: 49 Skipped: 2



ANSWER CHOICES	RESPONSES	
Slab	28.57%	14
Crawlspace	67.35%	33
Basement	10.20%	5
Ground floor garage	24.49%	12
Piers	12.24%	6
I don't know	6.12%	3
Total Respondents: 49		

Q6 Has the home/building or property ever flooded or had a water problem?

Answered: 51 Skipped: 0



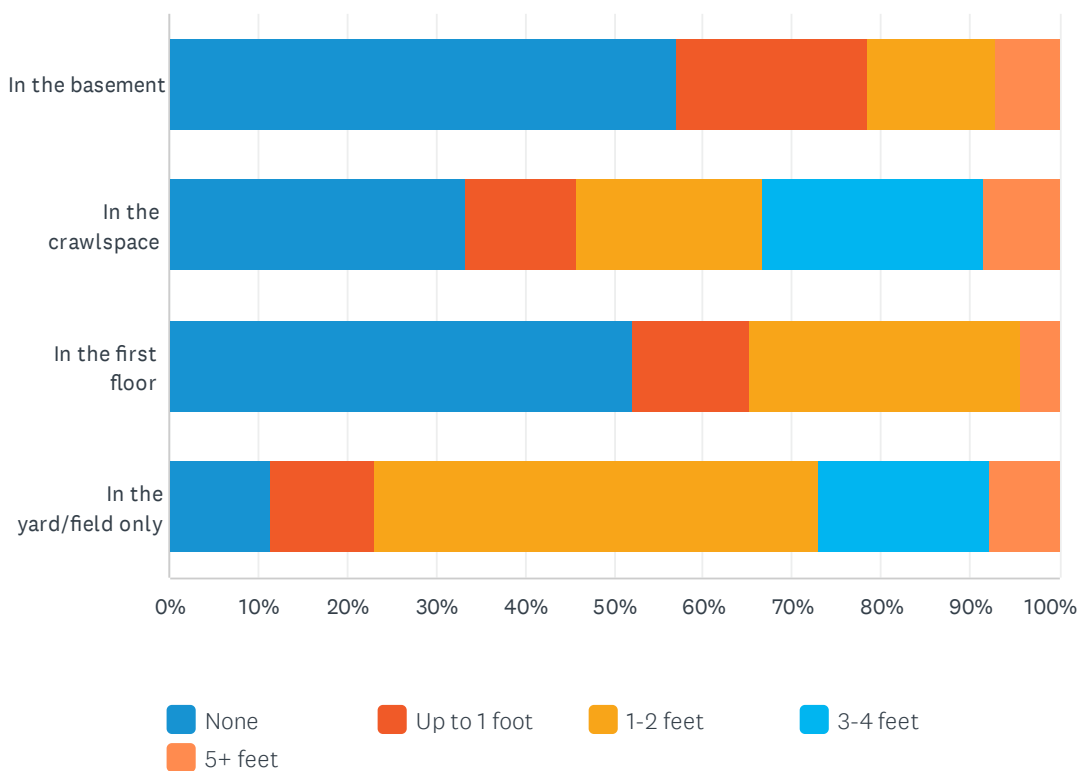
ANSWER CHOICES	RESPONSES	
Yes	62.75%	32
No	31.37%	16
I don't know	5.88%	3
TOTAL		51

Q7 In what year(s) did it flood?

Answered: 33 Skipped: 18

Q8 Where did you get flood water and how deep was it?

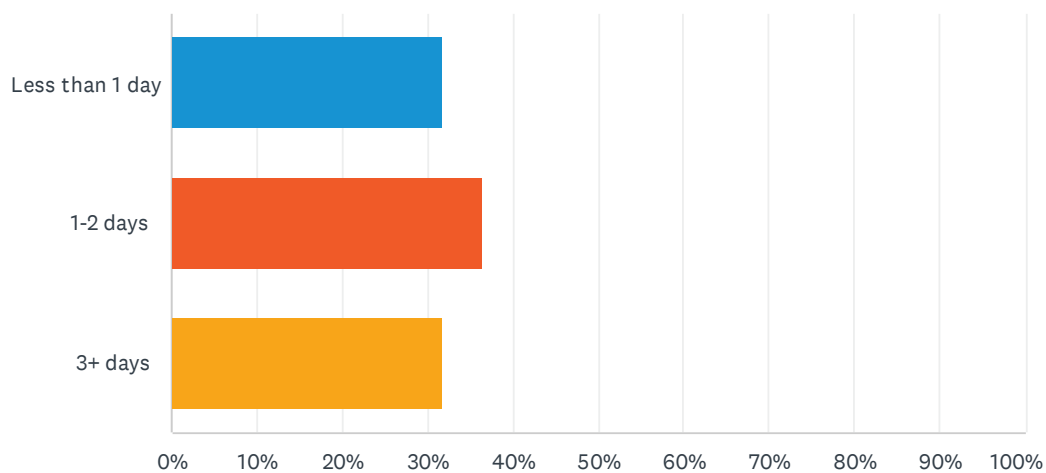
Answered: 33 Skipped: 18



	NONE	UP TO 1 FOOT	1-2 FEET	3-4 FEET	5+ FEET	TOTAL	WEIGHTED AVERAGE
In the basement	57.14% 8	21.43% 3	14.29% 2	0.00% 0	7.14% 1	14	1.79
In the crawlspace	33.33% 8	12.50% 3	20.83% 5	25.00% 6	8.33% 2	24	2.63
In the first floor	52.17% 12	13.04% 3	30.43% 7	0.00% 0	4.35% 1	23	1.91
In the yard/field only	11.54% 3	11.54% 3	50.00% 13	19.23% 5	7.69% 2	26	3.00

Q9 If flood water entered your home/building, how long did it stay?

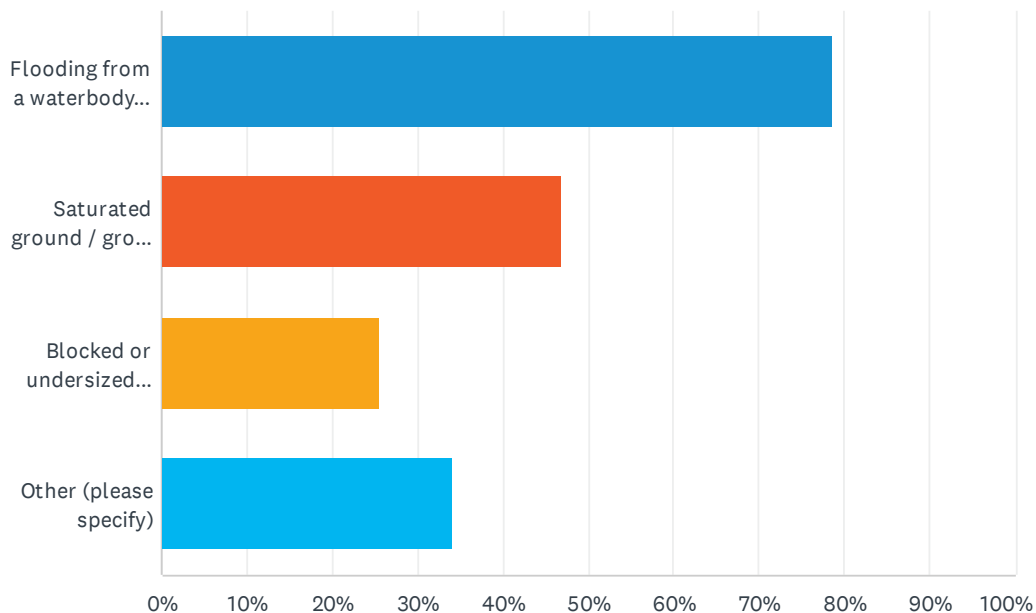
Answered: 22 Skipped: 29



ANSWER CHOICES	RESPONSES
Less than 1 day	31.82% 7
1-2 days	36.36% 8
3+ days	31.82% 7
TOTAL	22

Q10 What do you think causes the flooding in your area? Check all that apply.

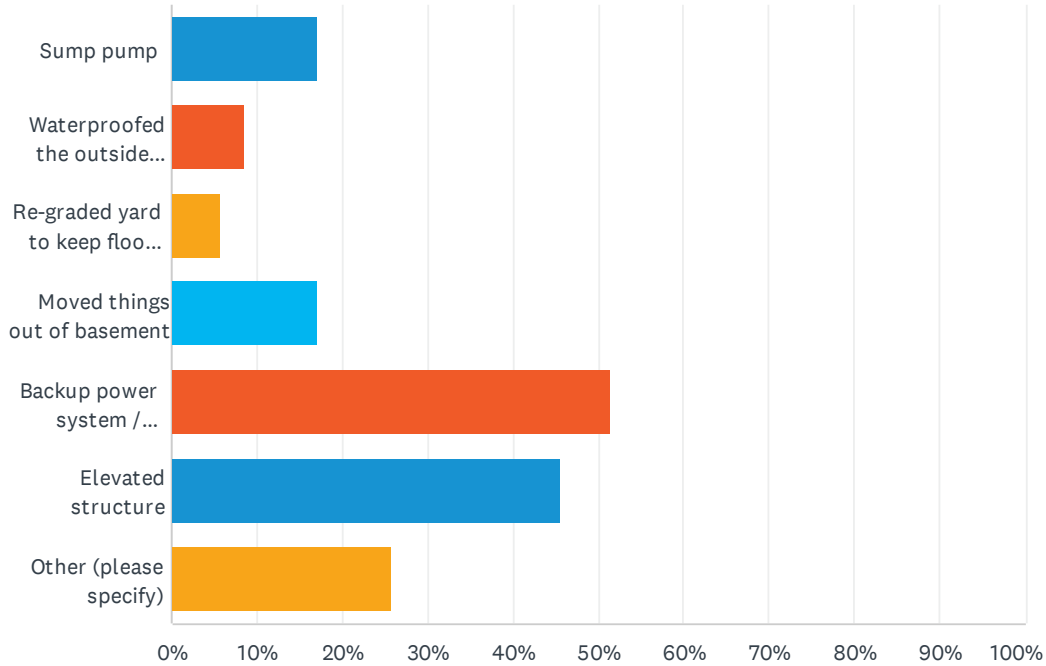
Answered: 47 Skipped: 4



ANSWER CHOICES	RESPONSES	
Flooding from a waterbody (river, creek, lake, etc.)	78.72%	37
Saturated ground / ground water	46.81%	22
Blocked or undersized drainages/ditches/stormwater system	25.53%	12
Other (please specify)	34.04%	16
Total Respondents: 47		

Q11 What flood protection measures have you installed on your property? Check all that apply.

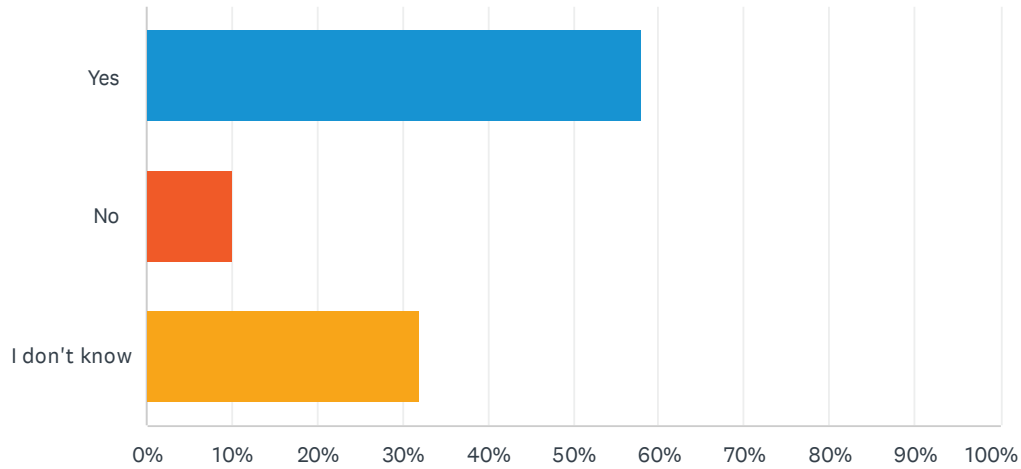
Answered: 35 Skipped: 16



ANSWER CHOICES	RESPONSES	
Sump pump	17.14%	6
Waterproofed the outside walls	8.57%	3
Re-graded yard to keep flood water away	5.71%	2
Moved things out of basement	17.14%	6
Backup power system / generator	51.43%	18
Elevated structure	45.71%	16
Other (please specify)	25.71%	9
Total Respondents: 35		

Q12 Is the home/building located in the 1% chance floodplain (also known as the FEMA 100-year floodplain)?

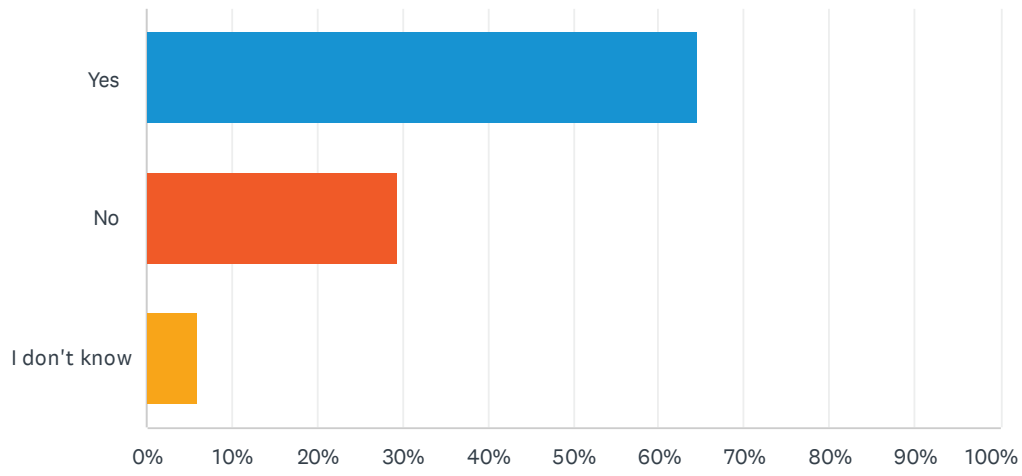
Answered: 50 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	58.00%	29
No	10.00%	5
I don't know	32.00%	16
TOTAL		50

Q13 Do you have FEMA flood insurance?

Answered: 51 Skipped: 0



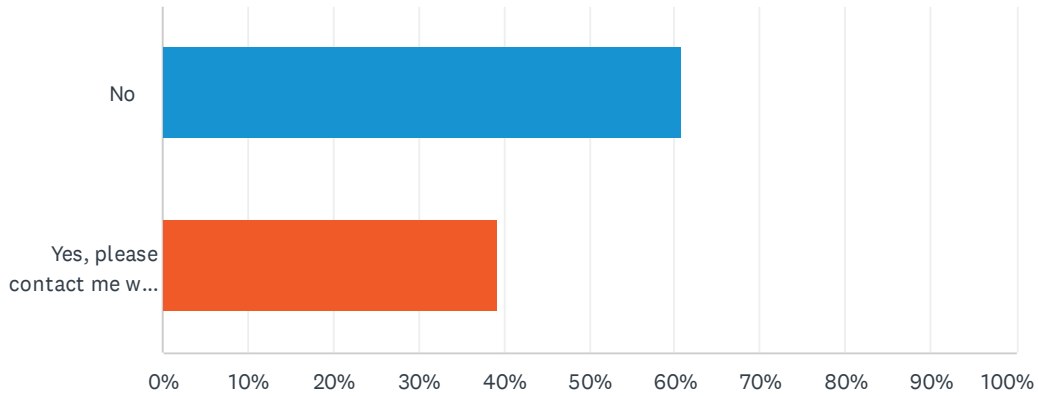
ANSWER CHOICES	RESPONSES	
Yes	64.71%	33
No	29.41%	15
I don't know	5.88%	3
TOTAL		51

Q14 Please provide any additional information or comments you have about flooding in your area.

Answered: 31 Skipped: 20

Q15 Would you like to receive additional information about how you can protect your home/building from flooding?

Answered: 46 Skipped: 5



ANSWER CHOICES	RESPONSES	
No	60.87%	28
Yes, please contact me with more information.	39.13%	18
TOTAL		46

APPENDIX C
Field Survey

FIELD SURVEY

Basin crews used the mobile application Survey123 to collect data in the field.

4:01

King County RLA Field Survey

Please complete this form for each property within the Repetitive Loss Areas.

Date of Field Survey

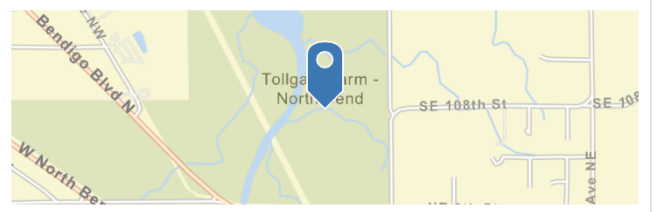
Monday, June 27, 2022

Property Address *

Map

Please use this map to help identify the property address if it is not obvious from the road. An address must be filled out in the question above for the form to be submitted.

47°30'N 121°47'W



Data collected by:

Primary Land Use

Select all that apply.

Residential

Commercial

Agricultural

Vacant

✓

2:35

King County RLA Field Survey

Does the structure have a basement?

Yes

No

Unknown

Compared to other structures in the RLA, is this structure's first floor elevation:

Higher than average

Average height

Lower than average

Unknown

Foundation Type

Slab on Grade

Basement

Garage

Crawlspace

Elevated/Piers

Unknown

Other

Foundation Condition

Good = new structure or foundation

Average/Fair = structure or foundation is neither obviously new nor obviously damaged

Poor = obvious damage (describe in comments)

Good

✓

2:35



King County RLA Field Survey



Foundation Condition

Good = new structure or foundation

Average/Fair = structure or foundation is neither obviously new nor obviously damaged

Poor = obvious damage (describe in comments)

- Good
- Average/Fair
- Poor
- Unknown

Structure Condition

Good = new or very well kept structure

Average/Fair = neither good nor poor (most structures will be average)

Poor = Obvious need for improvements

- Good
- Average/Fair
- Poor
- Unknown

What type of mitigation may be effective for this property?

- Elevation/Replacement of Structure
- Relocation
- Acquisition/Demolition
- Elevate Components (e.g. HVAC)
- Drainage Maintenance
- Capital Improvement Projects (e.g. levee)



2:35



King County RLA Field Survey



Good = new or very well kept structure

Average/Fair = neither good nor poor (most structures will be average)

Poor = Obvious need for improvements

- Good
- Average/Fair
- Poor
- Unknown

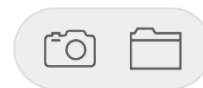
What type of mitigation may be effective for this property?

- Elevation/Replacement of Structure
- Relocation
- Acquisition/Demolition
- Elevate Components (e.g. HVAC)
- Drainage Maintenance
- Capital Improvement Projects (e.g. levee)

Drainage Notes, Observations, and Comments

Text input field for notes and comments

Photo(s)



Appendix I

Status of Flood Hazard Mapping Studies

APPENDIX I

Status of Flood Hazard Mapping Studies

**TABLE I-1.
FLOOD STUDIES COMPLETED SINCE 2013 FHMP UPDATE OR IN-PROGRESS**

River	Study Reach (Length in river miles)	Hydrologic Period of Record	Date of Physical Base Data	Date Submitted to FEMA	Date of Effective FIRM
Cedar River	Elliot Bridge to Landsburg (17 miles)	Two gages: 1946 - 1999; 1920 - 1999	1999 aerials and 1999- 2000 topographic maps and channel surveys	December 2002, technically approved in 2003	August 19, 2020
Lower Snoqualmie River	Snohomish County line to Snoqualmie Falls (34 miles)	1930 - 2004	2004 aerials, topographic maps and channel survey	May 2006	August 19, 2020
Patterson Creek	Mouth to upstream crossing of SR 202 (9 miles)	Three gages: 1991-2005; 1991-2005; 1991-2005	2004 aerials and topographic maps and 2005 channel survey	July 2006	August 19, 2020
Lower Green River	16th Avenue Bridge to SR 18	1962-2007	2006 aerials, topographic maps and channel survey	March 2010	August 19, 2020
Middle Green River	SR 18 to Flaming Geyser State Park	1962-2007	2006 aerials, topographic maps and channel survey	March 2010	August 19, 2020
White River (Zone 4)	SR 410 near Enumclaw to Mud Mountain Dam	1946-2007	2007 aerials and topographic maps and 2007 channel survey	September 2009, technically approved in January 2012	August 19, 2020
Sammamish River	Mouth at Lake Washington to Lake Sammamish	1948-2008	2009 aerials and topographic mapping and 2009 channel survey	July 2012, technically approved in January 2012	August 19, 2020
Vashon Maury Island	Entire marine shoreline	1948 to 2010 wind data and most recent tidal epoch	2009 aerials and topographic maps	August 2011, technically approved in January 2012	August 19, 2020
Incorporated Marine Shoreline	Marine shoreline Snohomish county line to Pierce county line, and Duwamish Waterway	1948 to 2010 wind data and most recent tidal epoch	2010 aerials and topographic maps	December 2011, technically approved in January 2012	August 19, 2020
South Fork Skykomish River	Confluence of Tye and Foss Rivers to King-Snohomish county line (13 miles)	Several gages; 1903-1982; 1930-1970; 1999-2016; 2016-2020	2020 aerial imagery and topographic LiDAR and 2020 channel survey	August 2022	In review

River	Study Reach (Length in river miles)	Hydrologic Period of Record	Date of Physical Base Data	Date Submitted to FEMA	Date of Effective FIRM
Newaukum Creek	Boise Ridge to confluence with the Green River (16 miles)	HSPF hydrologic model calibrated to gage data; 1949-2021	2020 aerial imagery and topographic Lidar and 2020-2022 channel survey	Anticipated submittal in 2024	Dependent on review timeline
Seidel Creek	Redmond Watershed Preserve to confluence with Bear Creel (1.4 miles)	HSPF hydrologic model calibrated to King County gage data; 2016-2024	2020 aerial imagery and topographic Lidar and 2021 channel survey	Anticipated submittal in 2024	Dependent on review timeline
Covington Creek	328 th Place to confluence with Big Soos Creek (3.6 miles)	HSPF hydrologic model and King County gage data; 1988-2021	2020 aerial imagery and topographic Lidar and 2022 channel survey	Anticipated submittal in 2024	Dependent on review timeline
Jenkins Creek	SE 272 nd Street to confluence with Big Soos Creek (2.4 miles)	King County gage data; 1988-2022	2020 aerial imagery and topographic Lidar and 2022 channel survey	Anticipated submittal in 2024	Dependent on review timeline
Little Soos Creek	Upstream limit near Lake Youngs to confluence with Big Soos Creek	King County gage data; 1995-2022	2020 aerial imagery and topographic Lidar and 2021 channel survey	Anticipated submittal in 2024	Dependent on review timeline
Issaquah Creek and tributaries	SR18 to mouth at Lake Sammamish (13.3 miles) and portions of the North Fork (1.2 miles), East Fork (6.6 miles), McDonald Creek (2.7 miles), Tributary O217 (1.4 miles), Carey Creek (1.5 miles), and Holder Creek (1.2 miles)	HSPF hydrologic model and gage data; 1986-2023	2021 aerial imagery and topobathymetric Lidar and 2022-2023 bridge and supplemental survey	Anticipated submittal in 2025	Dependent on review timeline

Appendix J

Review of Categories of Floodplain Management Activities

APPENDIX J

Review of Categories of Floodplain Management Activities

This appendix supplements the information in Chapter 3 (Risk Reduction Tools and Approaches) of the 2024 King County Flood Management Plan. Tables J-1 through J-6 document the results of review of the six categories of floodplain management activities outlined in Step 7 of activity 512.a (Floodplain management planning) in the Community Rating System Coordinator’s Manual.¹

TABLE J-1. REVIEW OF PREVENTIVE ACTIVITIES

Mitigation Activity	Reason for Recommending or Not Recommending	Meeting Expectations, Achieving Desired Outcomes?	Funding Options, including all potential funding sources
<i>Prevention Activities Considered and Not Recommended</i>			
None			
<i>Prevention Activities Recommended for Implementation</i>			
Floodplain and flood hazard areas mapping	Provides best available information to communicate risk, which informs regulatory updates, project-level decisions, and public awareness and preparedness.	Insofar as mapping provides useful information, this activity is meeting expectations. However, the pace of completing new and updated mapping and the lag time between data collection and map adoption can hinder the effectiveness of these programs and their use for land use regulation (although King County regulates to the best available information). Also, data show that climate change is expected to increase rainfall intensity in King County, which would increase flood frequency and flood depths but not necessarily change the locations of flood hazards. Changes to mapping that incorporate climate data or future conditions hydrology into	FCD, various grants

¹ https://www.fema.gov/sites/default/files/documents/fema_community-rating-system_coordinators-manual_2017.pdf.

Mitigation Activity	Reason for Recommending or Not Recommending	Meeting Expectations, Achieving Desired Outcomes?	Funding Options, including all potential funding sources
		flood models will make this information more useful in the future.	
Regulations (zoning, land use, building codes, subdivisions, stormwater management)	One of the most effective ways to prevent development in risk-prone areas and ensure that redevelopment or improvements are done in ways that reduce existing risk.	King County's flood hazard and critical area regulations are aimed at preventing new at-risk development from occurring for most hazards. Current regulations present challenges to the County's ability to efficiently restore floodplain habitat and natural floodplain functions, improve culvert capacity, and construct stormwater management infrastructure; new regulations are needed for alluvial fans, which are not adequately addressed by the existing regulatory framework.	Operating Budget, Surface Water Management Fee, FEMA BRIC
Open space conservation	Can protect natural floodplain functions and allow other natural processes to occur without risk to people or property when development rights are permanently removed from the land. Can also protect watershed hydrologic functions and reduce runoff.	King County has a very active open space conservation program. The primary limitation to King County's ability to protect open space is the availability of funding. The County would likely be able to protect more open space if more funding were available.	Various state and federal grants, local Conservation Futures and Parks Levy, Surface Water Management fee, FCD

TABLE J-2. REVIEW OF PROPERTY PROTECTION ACTIVITIES

Mitigation Activity	Reason for Recommending or Not Recommending	Meeting Expectations, Achieving Desired Outcomes?	Funding Options, including all potential funding sources
<i>Property Protection Activities Considered and Not Recommended</i>			
None			
<i>Property Protection Activities Recommended for Implementation</i>			
Elevations	Elevating structures in areas of slow-moving floodwaters has proven an effective mitigation activity in King County.	Implemented projects are performing well, but there are opportunities to expand the geography of the program, increase the pace of implementation, and improve the equity of service delivery.	Grants, FCD
Acquisitions	Acquisition and demolition of structures and permanently removing development rights from properties that have flooded or that are at high risk of flooding or channel migration completely remove the flood risk and eliminate vulnerability while supporting natural floodplain functions and providing opportunities for environmental enhancement.	Acquisitions achieve the desired outcomes in riverine environments in terms of removing risk for those who are aware of the program. Acquisitions in the coastal environment are currently driven by environmental objectives, so the use of this tool could be expanded to include coastal areas that are at risk from coastal flooding or sea level rise.	Grants (including Conservation Futures, Parks Levy, and state grants, such as Floodplains by Design, Salmon Recovery Funding Board, Puget Sound Acquisition and Restoration), Flood Control District, King County Surface Water Management
Relocation	Relocation provides risk mitigation while protecting housing stock and providing housing outside of at-risk areas. Many at-risk properties can be more effectively mitigated through elevation (where floodwaters are slow-moving) or acquisition (where flooding is fast or erosion is possible).	Relocation has limited application in King County, and elevations and acquisitions are used more often than relocation. An option for expanding the use of relocation as a tool to reduce risk could be relocating structures from the severe channel migration hazard area to a location on the same property that does not face this risk.	Grants
Promoting Flood Insurance	Encouraging the purchase of flood insurance can raise general awareness of flood preparedness and can help to protect people in the event they incur flood damage. This includes property owners and renters. It includes property owners and renters both in the regulatory floodplain and in areas outside of the regulatory floodplain but with	King County could do more to promote the purchase of flood insurance by way of promoting general awareness about flood risk and flood preparedness, especially to renters and socially vulnerable communities.	Grants, King County Surface Water Management

Mitigation Activity	Reason for Recommending or Not Recommending	Meeting Expectations, Achieving Desired Outcomes?	Funding Options, including all potential funding sources
	residual flood risk (such as in areas shown on flood maps as being protected by levees).		
Floodproofing	As a retrofitting method, floodproofing can help to reduce flood losses when implemented in appropriate settings.	Elevations and acquisitions have typically been used more often than floodproofing in King County.	Grants

TABLE J-3. REVIEW OF NATURAL RESOURCE PROTECTION ACTIVITIES

Mitigation Activity	Reason for Recommending or Not Recommending	Meeting Expectations, Achieving Desired Outcomes?	Funding Options, including all potential funding sources
<i>Natural Resource Protection Activities Considered and Not Recommended</i>			
Headwaters protection for major rivers	Major river headwaters in King County are already protected/in public ownership.		
<i>Natural Resource Protection Activities Recommended for Implementation</i>			
Floodplain reconnection/restoration	Effective tool to reduce flood and flood-related risks, improve natural floodplain functions, and enhance habitat for ESA-listed species.	Implemented projects have resulted in documented flood risk reduction benefits and improved habitat quantity/quality. Complete restoration of process is often limited by land use/development, which limits space available for river process; land ownership; and flow regulation, which can impact transport of sediment and wood, as well as habitat formation.	Various federal, state, and local grants; Surface Water Management fee; FCD
Large wood management	King County's approach to managing naturally occurring large wood needs review and clarification about intent, the types of actions that will be taken and when, and the roles of different agencies.	While not a flood risk mitigation activity per se, large wood is often managed in association with risk to people and public safety in waterways. King County is cognizant of this risk, yet current practices are not achieving all desired objectives.	Surface Water Management fee
Headwaters protection for tributaries	Provides opportunities for infiltration and limits flashy flows that are expected to get worse with climate change.	Acquisition of tributary headwaters areas is limited by the availability of funding and by willing sellers. As opportunities become available and resources are secured, lands can be acquired.	Various federal, state, and local grants
Wetlands protection/restoration	Provides natural flood risk reduction benefits and protects/improves habitat for aquatic species.	Local regulations allow for some amount of wetland development and conversion with mitigation yet providing mitigation off-site results in a loss of function at the area of impact.	Various federal, state, and local grants; Surface Water Management fee
Beaver restoration and management	Provides natural flood risk reduction benefits and protects/improves habitat for aquatic species. Relocation or management of beaver	King County has developed extensive guidance on living with beavers and managing beaver activity. As beaver populations increase, the tools made	Surface Water Management fee

Mitigation Activity	Reason for Recommending or Not Recommending	Meeting Expectations, Achieving Desired Outcomes?	Funding Options, including all potential funding sources
	activity in problem areas can reduce flood risk.	available will need to be revisited to ensure they continue to be useful.	
Green stormwater infrastructure (GSI)	Effective tool to slow runoff and limit its effects.	Meeting expectations at small, site-specific scales. Implementing GSI solutions at larger scales could have more meaningful benefit.	Various federal, state, and local grants; Surface Water Management fee
Marine shoreline restoration	Provides long-term improvement of ecological conditions and reduces the effects of coastal erosion and impacts on critical habitat features, like eelgrass meadows, kelp forests, marshes, beaches, and riparian zones.	Individual projects are successful in reducing erosion and improving environmental conditions, but shoreline restoration is limited in effectiveness as a flood risk reduction measure unless combined with other property protection measures. This is an area for future program development.	Various federal, state, and local grants; Surface Water Management fee

TABLE J-4. REVIEW OF EMERGENCY SERVICES ACTIVITIES

Mitigation Activity	Reason for Recommending or Not Recommending	Meeting Expectations, Achieving Desired Outcomes?	Funding Options, including all potential funding sources
<i>Emergency Services Activities Considered and Not Recommended</i>			
None			
<i>Emergency Services Activities Recommended for Implementation</i>			
Provide regional flood warning services to residents and partners throughout King County	Serves as an essential service to help individuals, businesses, and other local governments prepare for impending flooding and assemble resources needed to provide response and support.	The program is a valuable service, yet there are opportunities for King County to work with partners to evaluate expanding the flood warning system to include Lake Sammamish and the Sammamish River, small tributaries, and coastal flooding and high-tide events. Additionally, the flood phases should be periodically revisited to ensure the flow thresholds correspond to the extent of flooding that results at those flows.	Grants, FCD
Emergency response	Provides essential services to the public and other partners during times of emergency.	King County and other agencies and jurisdictions within the county have robust emergency response programs. However, during development of the Flood Plan, community members and partners expressed a desire for greater coordination between agencies.	King County (Emergency Management budget)
Community capacity building for emergency response	Can provide additional (and in some cases perhaps more effective) means to reach vulnerable communities and improve their flood resilience.	Not currently implemented—new service.	Grants
Technical assistance	Provides opportunity to improve resilience in new ways.	Not currently implemented—new service.	Grants, King County (Emergency Management budget)

TABLE J-5. REVIEW OF STRUCTURAL ACTIVITIES

Mitigation Activity	Reason for Recommending or Not Recommending	Meeting Expectations, Achieving Desired Outcomes?	Funding Options, including all potential funding sources
<i>Structural Activities Considered and Not Recommended</i>			
None			
<i>Structural Activities Recommended for Implementation</i>			
Levees and floodwalls	Maintenance of existing structures is needed to ensure they continue to provide the intended protection. Higher levels of flow containment than currently provided are planned for the Green River, Tolt River, Cedar River, and other river systems, as needed and recommended by capital investment strategies. Looking forward, maintenance should follow the provisions outlined in this Flood Plan for identifying multiple benefit opportunities and supporting resilience to climate change.	King County routinely inspects flood protection infrastructure to ensure it is performing as designed and, in cases where it is not, determines the appropriate measures to improve performance, including reconstruction to current engineering standards.	FCD, USACE PL 84-99 rehabilitation program, grants
Revetments	Maintenance of existing structures is needed to ensure they continue to provide the intended protection. Looking forward, maintenance should follow the provisions outlined in this Flood Plan for identifying multiple benefit opportunities and supporting resilience to climate change.	King County routinely inspects flood protection infrastructure to ensure it is performing as designed and, in cases where it is not, determines the appropriate measures to improve performance.	FCD, FEMA and other grants
Pump stations	Maintenance of existing pump stations is necessary to ensure their continued performance. Rehabilitation of the Black River Pump Station is ongoing to upgrade systems, pumps, engines, seismic improvements and significantly improve fish passage.	Given the negative impacts of flapgates on juvenile fish passage into tributary streams, opportunities should be explored to replace flapgates with fish passable structures.	FCD, grants
Culverts	Replacing existing undersized or damaged culverts can improve conveyance and fish passage. Box culverts or bridges may be needed in some applications.	King County has many existing culverts that are not capable of passing high flows and which block passage for ESA-listed salmonids. Efforts to replace these culverts are under way.	Grants, Surface Water Management fee
Instream flow deflection structures	Can reduce erosion risk while also providing instream habitat function.	Typically installed as a component of a project with other elements, these structures effectively divert flow away from undesired locations.	FCD

Mitigation Activity	Reason for Recommending or Not Recommending	Meeting Expectations, Achieving Desired Outcomes?	Funding Options, including all potential funding sources
Dredging and gravel removal	Dredging and gravel removal as a stand-alone flood risk reduction action does not support the goals and objectives of this Flood Plan. However, in limited circumstances, it can be considered, such as when a small part of a larger, long-term solution is undertaken as part of Congressionally authorized flood control projects.	Provides limited and temporary flood risk reduction, has highly restrictive permit requirements, and is detrimental to aquatic ecosystems and salmon habitat.	FCD, Surface Water Management fee
Sedimentation basins	Maintenance of existing sedimentation basins is necessary to ensure their continued performance.	Current maintenance must be regularly performed.	Surface Water Management fee
Stormwater management projects	Especially important given increased development pressure in unincorporated King County and impacts that will result from climate change.	Current services provided by King County have gaps, and those could be addressed by making proposed program modifications.	Surface Water Management fee, grants
Flood storage projects	More stormwater flow control facilities are needed to manage the volumes of stormwater that are anticipated to result from future development and from climate change. Innovative, regional solutions such as stormwater parks are being developed to manage large volumes of stormwater and provide other amenities.	Older flow control facilities are often not able to handle the runoff volumes associated with severe storms.	Surface water management fee, grants

TABLE J-6. REVIEW OF PUBLIC INFORMATION ACTIVITIES

Mitigation Activity	Reason for Recommending or Not Recommending	Meeting Expectations, Achieving Desired Outcomes?	Funding Options, including all potential funding sources
<i>Prevention Activities Considered and Not Recommended</i>			
None			
<i>Prevention Activities Recommended for Implementation</i>			
Flood hazard and flood preparedness education	Ongoing outreach and education are necessary to engage and inform community members to become disaster-resilient. Messaging will focus on opportunities for households, businesses, and employers to minimize losses from flood hazards that threaten the county.	Improvements can be made to better reach priority communities. Developing and implementing a PPI will support this work. Additionally, there are a vast number of communication strategies from digital to in-person engagement that King County should continue to refine and improve. In-person outreach is limited in the current approach.	FCD, grants, community partnerships
Technical assistance for property owners and builders	Building, remodeling, and repairing flood damages in flood risk areas requires the navigation of complex safety regulations. Limited access to easily understandable requirements and processes hinders the County's success at preventing new risk from being created and unnecessarily lengthens the permitting process. Improved technical services is an investment that would provide more readily available information so property owners and renters could understand flood hazard-related regulations, more successfully evaluate building flood-safe structures, and help the County avoid costly mitigation for illegal, at-risk development.	New proposal	Permit fees
Map information improvements	The Cedar River Flood Level Viewer is an interactive web-based mapping application that shows inundation areas and flood depths at various modeled high-flow conditions. It allows the public to understand potential flood risk and take action to become more resilient and less vulnerable to flooding. During the February 2020 flood, this tool proved to be effective in communicating risk to the	The existing service is available only on the Cedar River and has been successful at demonstrating potential risks associated with different extents of flooding. This proposal is to assess the feasibility and develop a scope and cost estimates to extend Flood Level Viewers to other flood-prone areas of the county.	Grants, FCD, Surface Water Management fees

Mitigation Activity	Reason for Recommending or Not Recommending	Meeting Expectations, Achieving Desired Outcomes?	Funding Options, including all potential funding sources
	<p>public, particularly since it had been more than 11 years since the Cedar River had a higher peak flow. The displayed inundation areas and depths on the Cedar River Flood Level Viewer resembled conditions that occurred during the February 2020 flood.</p> <p>The analysis would determine the feasibility of producing similar Flood Level Viewers on other major rivers using existing information and models already available to the public, such as those used for FEMA’s Flood Insurance Rate Map studies and reports.</p>		
<p>Program for Public Information (PPI)</p>	<p>Research shows that when public information efforts are planned, coordinated, and implemented considering the unique needs of different communities related to different hazards, people will take steps to protect themselves. Development and implementation of a PPI will connect a varied collection of floodplain managers and partners to collaboratively create and implement more targeted outreach to change behavior, build more resilient communities, and raise awareness about flooding. In addition to being a method of achieving more effective outcomes, a PPI is a highly credited CRS activity, which helps ensure that property owners in King County maintain access to discounted FEMA flood insurance. A PPI can expand the effectiveness of other public information resources King County already provides.</p>	<p>Not a current activity.</p>	<p>Grants, King County, FCD</p>