



**KING COUNTY
FLOOD CONTROL
DISTRICT**



King County

Department of Natural Resources and Parks
Water and Land Resources Division
River and Floodplain Management Section

King County Flood Control District Scope of Services 2009 Annual Report and First Quarter 2010 Performance Report

April 2010



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River and Floodplain Management Section

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File: I004FCDannualReport.indd lpre, skrau

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I. INTRODUCTION AND HIGHLIGHTS

In April 2007, the King County Flood Control District (the District) was created (Ordinance No. 15728) to provide a comprehensive and countywide approach to flood protection. In November 2007, the District entered into an interlocal agreement (ILA) with King County to provide flood protection services for the District (resolution FCZD 2007-05). The ILA directs King County to provide annual and semi-annual reports regarding services rendered under, and compliant with, the adopted work program. This report provides the King County Flood Control District Board of Supervisors with a status report on the implementation of each element of the District's annual work program for 2009 and the first quarter of 2010.

Highlights of project and program successes between January 2009 and March 2010 include:

- Completed repairs to 26 flood facilities damaged in the January 2009 flood disaster.
- Completed modeling, assessment, planning work and implementation of levee raising and other flood protection activities on the Green River in response to the reduced flood storage capacity of the Howard Hanson Dam that is owned and operated by the U.S. Army Corps of Engineers (Corps). This work was completed in close cooperation with the Corps and the Green River valley cities.
- Participated in an external expert review of the Flood District's strategy for the Green River in light of the reduced storage capacity of the Howard Hanson Dam. The panel supported King County's overall floodplain management approach to the Green River.
- Leveraged over \$4 million in federal funding in 2009 to construct high-priority flood repairs in partnership with the Corps at the Horseshoe Bend Levee in Kent, as well as \$10 million to the City of Kent from the Washington State Department of Ecology for the long-term rehabilitation of this levee.
- Lobbied successfully for \$3.2 million in Corps funding for advanced flood fighting efforts on the Green River.
- Leveraged over \$7.4 million from the Federal Emergency Management Agency (FEMA) in 2010 to repair revetments and buy homes damaged in the January 2009 flood, complete residential flood mitigation projects, and improve coastal hazard maps.
- Submitted a request to FEMA for reimbursement of \$11.5 million in flood preparation costs made necessary by the compromised state of the Howard Hanson Dam on the Green River.
- Developed the King County Flood Alert System, a countywide automated flood warning notification system.

- Initiated an unprecedented, award-winning public outreach campaign in response to heightened flood risks in the Green River valley.
- Developed, in cooperation with the District's Advisory Committee, recommended budget adjustments to reflect the impacts of the January 2009 flood.

II. SCOPE OF SERVICES

The District's work program is comprised of two major components:

- 1.** Operational and programmatic activities, such as identifying flood risks, preparing for and responding to flood events, maintaining over 500 facilities in King County's flood protection system, and coordinating the District Executive Committee, Advisory Committee and Basin Technical Committees (BTCs); and
- 2.** A capital improvement program to rehabilitate flood protection facilities and other projects to protect structures at high risk of flooding. Over 85 percent of the District's funds are allocated to the capital component of the work plan in addition to federal and state grant funds to implement capital improvement projects.



January 2009 flooding in the Snoqualmie Valley.

A. Capital Improvement Program Implementation

Projects proposed in the District's capital program reduce risks to public health, safety, and critical public infrastructure from flooding, erosion, and rapid channel migration. A detailed description of flood hazard management conditions and objectives for each major river system is available in the adopted 2006 King County Flood Hazard Management Plan, which serves as the District's Comprehensive Plan. The District's capital program fulfills one or more of the following flood hazard management objectives:

- Repair, rehabilitate, and improve flood facility protection through major commercial, industrial and residential areas;
- Reduce hazards by removing flood, erosion, and landslide prone residential structures;
- Improve flood water conveyance and capacity; and
- Provide safe access to homes and businesses by protecting key transportation routes.

The District's 2009 capital program includes 51 capital projects (31 projects initiated in 2008 and 20 projects initiated in 2009), with 26 projects constructed during 2009. (See Appendix E for the complete list.) The 2009 capital program includes the following activities:

- Immediate flood damage repair;
- Levee rehabilitation and reconstruction;
- Acquisitions to reduce flood risk;
- Elevations to minimize flood risk; and
- Technical studies.

Activities in 2009 included a thorough assessment of flood facility damages following the January 2009 flood, the prioritization of repair needs, and the evaluation of priorities (along with 2010 proposed projects) with the BTCs and the Advisory Committee. King County staff assessed all 500 facilities in King County's inventory during the first quarter of 2009, and identified over \$25 million in damages to over 18,800 linear feet of flood facilities throughout King County.

During the second quarter, King County staff worked with the BTCs and Advisory Committee to evaluate and prioritize flood response needs against the District's adopted criteria, and 32 new flood response projects were added to the 2009 capital program at a total cost of \$7.1 million. In addition to over 7,000 feet of high priority facility repairs, this included funds to acquire substantially damaged homes (e.g. those with damages exceeded 50 percent of the value of the structure) in Fall City and the City of Snoqualmie, structures damaged by a levee breach on the Tolt River, and homes flooded when the White River overtopped its banks in the City of Pacific. King County staff worked with King County's Department of Development and Environmental Services to identify homes that were substantially damaged during the flood. As a result of this effort,

structures on the Tolt River, Lower Snoqualmie River, and Upper Snoqualmie River were eligible for expedited FEMA grants under the Hazard Mitigation Grant Program cycle that was triggered by the January 2009 Presidential disaster declaration.

Following the assessment of flood response needs and the reallocation of District funds in May 2009 (formally adopted in July 2009), King County staff fast-tracked designs and permits to enable summer construction at as many sites as possible. Construction was scheduled for 2009 on 25 projects, with an additional six emergency repairs from the January 2009 flood completed during the first quarter. Of the summer construction season's 25 projects, ten were in the Cedar River Basin, nine in the Snoqualmie and South Fork Skykomish Basin, and six projects were scheduled for the Green River Basin. Four of these projects were proposed partnerships with the Corps under their Public Law 84-99 Rehabilitation and Inspection Program (PL 84-99), of which two were completed with funds remaining from the November 2006 damage repairs and two were postponed due to resource constraints.

Highlights for the 2009 construction season include:

- **Si View and Reif Road Levees, South Fork Snoqualmie River:** Early action repairs were completed as part of a multi-year \$7 million project initiated in 2008 to rehabilitate the five-mile-long South Fork Snoqualmie levee system. This levee system protects commercial and residential areas of unincorporated King County and the City of North Bend as well as roads and other public infrastructure.
- **Cedar River Trail, Cedar River:** As a result of the January 2009 storm, the Cedar River eroded the river bank within a few feet of State Route 169 and the Cedar River Trail. Under the trail is a major fiber optic cable that transmits financial and other electronic transactions throughout the Northwest. Emergency repairs were undertaken immediately to stabilize the adjacent river bank. Over the summer, construction was completed on two revetments to further shore up the trail and its neighboring infrastructure.
- **Cedar Grove Mobile Home Park (acquired in 2008), Cedar River:** By the end of 2009 all residents of the 42 mobile home units were relocated to superior housing outside of the flood hazard area. All of the structures and the majority of the infrastructure have been removed.
- **Temporary Levee Raising, Green River:** A partnership with the Corps and the four valley cities to temporarily raise 26 miles of lower Green River levees to increase conveyance capacity to 13,900 cubic feet per second from the current 12,800 cubic feet per second.
- **Horseshoe Bend Levee, Green River:** Partnered with the Corps to repair 2,200 feet of the levee at five distinct sites. This work had elevated importance given the limited capacity at the Howard Hanson Dam. The Corps provided 100 percent of the construction funds necessary to complete this project, leveraging over \$4 million in federal funds. This investment was further leveraged by \$10 million in state funds awarded to the City of Kent to contribute to the long-term rehabilitation of the levee.

- **Stoneway Lower, Green River:** Designs were initiated to repair a sloughing embankment and cracked road under which a pipe carries runoff from a Superfund landfill site to Renton’s wastewater treatment facility. Phase 1 construction to address the most critical elements of the emergency repair were completed in spring 2010 and Phase 2 construction will be completed in summer 2010.
- **42 Avenue South Emergency Repair, Green River:** An emergency repair to 95 feet of revetment damaged in the January 2009 flood. The repair was necessary to protect a water main that serves all of Southcenter and much of Tukwila.
- **Dykstra Low Spot Repair, Green River:** Construction added height to a low spot in the levee increasing the level of protection provided by this facility and providing a minimum height consistent with other levees on the Green River.
- **White River Corridor:** Installed a temporary 3,500 foot floodwall around Pacific City Park to provide temporary flood protection to residential areas of Pacific. Long-term floodplain reconnection projects on both banks of the White River proceeded with acquisitions of several key properties.
- **Opportunity Fund:** The Board of Supervisors adopted approximately \$5.7 million in projects to fund local flooding and stormwater projects within jurisdictions in 2009, and another \$3.5 million in 2010. As of March 2010, local governments have requested 20 percent (\$1.65 million) of the \$9.2 million available.

Rainbow Bend, Cedar River



November 1990 – Eleven homes subject to severe flood damage.



January 2009 – One home subject to flooding.

The capital program includes \$8.4 million in interim flood protection measures for the Green River valley adopted by the District in October 2009 following nine months of modeling, assessment, and planning in partnership with the Corps, valley cities, and state and local agencies.

- Funds were used to raise levees along the lower Green River with the goal of containing up to 13,900 cubic feet per second (an increase from the current capacity of approximately 12,800 cubic feet per second) with an additional three feet of elevation for safety.
- Approximately \$5.6 million of the \$8.4 million went toward large sandbags (Supersaks) and metal reinforced sand containers (HESCO barriers) to increase levee capacity until repairs to the Howard Hanson Dam can be completed by the Corps.
- Approximately \$1 million is being used for pump station improvements. Back up generators, enhanced fuel storage, installation of a debris control barrier to protect the pumps, removal of accumulated sediments from the forebay, and flood fighting measures along the outlet channel will ensure continuous operation of the Black River Pump Station in Renton, which plays a critical role in maintaining levee capacity and, in the event of a flood, will be necessary to help drain floodwaters from the valley. Also ensuring the safe use of auxiliary generator power and building a new access road into the P-17 Pump Station in Tukwila, as the levee – the primary access – is currently blocked by sandbags.
- Approximately \$430 thousand was used to cut vegetation for compliance with federal levee standards, to complete hydraulic and geotechnical studies in support of the emergency installations, to provide emergency backup power connections at the Tukwila pump station, and to provide enhanced communication equipment for levee patrol activity.
- The remaining \$1.5 million is a contingency fund. (Note: Expenditures are as of March 2010 with additional expenditures being incurred following the publication of the Annual Report.)

Planning, coordination, and outreach efforts related to Howard Hanson Dam response efforts will be described elsewhere throughout this report.

*Temporary flood barriers
along 26 miles of the
Green River.*



B. Flood Preparedness, Regional Flood Warning Center and Post Flood Recovery Program

The District's operational work program includes a comprehensive approach to preparing and educating citizens for flood events, coordinating emergency response and regional flood warning center operations during flood events, and ensuring consistency across basins for post-flood recovery actions.

Flood preparation activities in the Green River valley took on heightened importance, with King County staff participating in multi-agency planning efforts to prepare residents and businesses in the Green River valley for an increased risk of flooding in response to reduced flood storage capacity at the Howard Hanson Dam. The work included river models used by the Corps to develop inundation scenarios, identification of likely areas of overtopping, mapping of vulnerable flood facilities and infrastructure, evaluation of flood-fighting techniques, and proposed alignments for temporary levee raising, and protection and operational improvements of the Black River and P-17 Pump Stations. Technical support by King County staff has been instrumental in the region's efforts to understand the potential impacts of flooding on people, businesses, and the critical public infrastructure they depend upon. This work also has informed the public outreach effort described in Section D.



Black River Pump Station

King County staff responded to three motions passed by the King County Council to help improve King County's flood warning system, in light of the Howard Hanson Dam situation – though many of the results benefitted King County's flood warning system as a whole:

- improve notification of residents in flood-prone areas about imminent flooding (Motion #12935);
- identify locations for the stockpiling of materials and equipment for sandbags to be provided free of charge to the public and to increase public awareness of these locations in the event of flooding (Motion #16379); and
- improve communications between local, state and federal flood control agencies about their respective actions that may affect the severity of a flooding event (Motion #12937).

In November 2009, the King County Flood Alert System was launched, improving King County's ability to rapidly warn large numbers of people of flood conditions. The new automated notification system provides real-time messages by phone, text or e-mail. Alerts are sent when flood phases are reached on major rivers and in the event of a flood emergency such as a levee breach. The Flood Alert System has, to date, been used during minor flooding on the Tolt and Snoqualmie Rivers. The Flood Alert System public outreach campaign included public meetings, mass mailings, and press

releases that have resulted in the registration of 3,121 individuals. More information, including how to sign up, can be found at www.kingcounty.gov/flood.

King County staff developed a sandbag response plan that identifies locations for the stockpiling of materials and equipment for sandbags to be provided free of charge to the public and to increase public awareness of these locations in the event of flooding. Partnerships with ten cities and one community group now make sand and sandbags available free throughout King County. While sandbags are available continuously at some locations, most locations open only when flooding is forecast. Current information on sandbag availability is listed at www.kingcounty.gov/flood or by calling the Flood Warning Center information line 800-945-9263.

In addition to the Flood Alert System and the sandbag plan, King County staff also made the following changes to improve communication between flood control agencies surrounding Green River operations:

- **Increase flood patrols:** King County's Flood Warning Center has added flood patrol staff on the Green River to handle the increased demands.
- **Base flood warnings and alerts on planned releases:** Flood phase definitions for the Green River were changed to take into account upcoming dam releases that are expected to exceed phase thresholds.
- **Support changes of flood warning thresholds:** The National Weather Service has changed its notification threshold for flood warning alerts for the Green River and White River.
- **Improve the documentation for receiving information from dam operators:** Four Howard Hanson dam operations information sheets were created for the 2009-2010 flood season for the King County Flood Warning Center.

The Flood Warning Center opened on five separate occasions during the 2009-2010 flood season. Each of the flood events was considered minor. (Note: Tolt River Flood Phase 2 is 2,500 cubic feet per second at the Tolt River gage near Carnation. Snoqualmie River Flood Phase 2 is 12,000 cubic feet per second at the Sum of the Forks gage.)

- October 23-24, 2009: Tolt River exceeds flood phase 2 threshold.
- October 26, 2009: Tolt and Snoqualmie Rivers exceed flood phase 2 thresholds.
- October 31, 2009: Tolt River exceeds flood phase 2 threshold. Automated Flood Alerts issued.
- November 17, 2009: Tolt and Snoqualmie Rivers exceed flood phase 2 thresholds. Automated Flood Alerts issued.
- January 13-14, 2010: Tolt River exceeds flood phase 2 threshold. Automated Flood Alerts issued.

Additional flood preparedness information is available at: www.kingcounty.gov/flood.

C. Flood Hazard Studies, Mapping and Technical Services Program

The purpose of this work program element is to generate technical information such as studies and maps to develop and implement strategies to reduce flood risks.

The operational changes to the Howard Hanson Dam could result in higher flows on the middle and lower Green River during a large storm event. The value of the recently updated Green River floodplain models is demonstrated in their use for emergency management scenarios as the Corps and local officials have used the models to evaluate the impact of different flow levels on critical facilities, vulnerable populations, evacuation routes, and residential and commercial structures. This information also provides an essential function in helping residents understand potential flood risks and their options to reduce them.

Technical analyses were critical to ensuring flood fighting efforts in the Green River basin are strategically targeted and to the extent possible do not transfer flood risks to others. Immediately following the Corps' recognition of damages to the Howard Hanson Dam, King County provided flood models. King County then, with Northwest Hydraulic Consultants, developed inundation scenario data. King County's flood model was made available to the Corps to enable the creation of inundation scenarios. During the second and third quarters, the inundation scenarios generated by the Corps were used to map areas where levee overtopping was likely so that locations for levee raising could be identified.

Staff also provided analyses of how levee raising would impact upstream and downstream areas. Staff worked with external geotechnical experts to evaluate the impacts of levee raising (as well as higher flood elevations) on the structural integrity of Green River levees. This analysis also benefited from previous models for the Green River, and the rapid analysis would not have been possible without the prior investment in both flood models and geotechnical analyses by King County staff. Finally, King County staff worked with the cities to provide an analysis of secondary containment options to further reduce flood risks through flood fighting efforts landward of the levees.

This work program element also includes the development of new flood studies for the Sammamish River and the coastal shoreline study of Vashon-Maury Island, both consistent with FEMA requirements. King County staff are coordinating with the affected cities along the river prior to submitting the Sammamish River study to FEMA in the second quarter of 2010. A grant agreement with FEMA was also finalized during this reporting period that will provide \$270,000 towards the coastal flood hazard analysis of the westerly incorporated areas of King County along the Puget Sound shoreline. In the White River Basin, flood studies for the lower White River near Pacific and the upper White River near Enumclaw were also provided to FEMA to update the flood insurance rate maps and studies. Additional collaboration on technical analyses includes partnerships with the Corps, Pierce County, and the U.S. Geological Survey to increase our understanding of sediment transport in the White River in and around the City of Pacific.

D. Public Outreach, Repetitive Loss Mitigation, Flood Hazard Planning and Grants

PUBLIC OUTREACH

In light of the Howard Hanson Dam operational changes and the fact that the dam has largely controlled flooding in the lower valley for the last 50 years, outreach efforts focused considerable attention on raising awareness of the increased flood risks in the lower and middle Green River valley. This work was recognized by the National Association of Government Communicators with a Blue Pencil Award – an international award that recognizes superior government communication products and those who produce them.

King County staff developed a new Green River Flooding brochure (“Green River Flooding: Are You Ready?”) that was distributed to over 170,000 addresses in and around the Green River valley. In an effort to reach vulnerable populations, this brochure was translated into Chinese, Spanish, Khmer, Laotian, Punjabi, Russian, Somali, Ukrainian and Vietnamese and posted on the King County Web site.

The Flood Warning Information brochure that is mailed annually to all floodplain residents in King County was also updated with information about flood phases, the real-time river gage system and the new Flood Alert System. In past years this brochure has only been mailed to approximately 6,000 property owners in the King County floodplain (incorporated and unincorporated). In November 2009 the brochure was mailed to approximately 46,000 residents and businesses to coincide with the launch of the new Flood Alert System.

Staff also developed a new flood response booklet entitled, “Before, During and After a Flood,” in collaboration with Public Health – Seattle & King County, the Local Hazardous Waste Management Program of King County, and the King County Office of Emergency



Management. The 35-page, in-depth flood response resource was also mailed to approximately 46,000 residents and businesses in the King County floodplain and potential inundation area of the Green River valley and additional supplies were distributed to libraries, government agencies, community service centers and private businesses in November. The project includes translating the brochure into Spanish, which will be available for the 2010-2011 flood season.

Staff have also responded to over 1,000 citizen inquiries, provided presentations at multiple public meetings that have been well-attended with several hundred participants at each event, and provided information to the media. In addition, King County staff obtained public service announcements on the National Flood Insurance Program from FEMA that have aired on KCTV. Staff have also provided presentations to community and civic groups, and taken part in business and trade expositions in valley cities. This effort will continue, with six more public meetings and events scheduled to be held in October.

COMMUNITY RATING SYSTEM (CRS) FLOOD INSURANCE DISCOUNTS

Through this work program element, the District participates in planning and regulatory processes to ensure coordination between the 2006 King County Flood Hazard Management Plan recommendations and the King County Comprehensive Plan, King County Regional Multi-Hazard Mitigation Plan, and planning efforts by other jurisdictions. A major element of King County's floodplain planning effort supports King County's participation in the National Flood Insurance Program's Community Rating System (CRS). Through CRS, FEMA recognizes communities that go beyond the federal government's minimum requirements for floodplain management. Incorporated cities in King County that participate in the CRS benefit from many of the floodplain management activities implemented by King County.

King County is a Class 2 community, and is the highest rated county in the nation under the CRS. As a result of this rating, flood insurance policy holders in unincorporated King County save up to 40 percent overall on annual flood insurance premium costs. During the fourth quarter King County staff prepared and submitted the reverification report required to document and maintain King County's Class 2 status.

A key element of the CRS program is to provide public information about flooding. During October, King County hosted the annual public information strategy meeting with emergency preparedness staff from different agencies throughout King County. The purpose of the meeting is to share information and identify opportunities for collaboration which would increase public awareness of flood hazards and actions to reduce risk.

LEEVE VEGETATION MANAGEMENT AND PARTNERING WITH THE U.S. ARMY CORPS OF ENGINEERS

The issue of vegetation on levees has been a source of disagreement between King County and the Corps since the early 1990s. Since the 1990s, King County floodplain managers have observed that incorporating native vegetation in flood facility repairs decreases susceptibility while supporting the objectives of the Clean Water Act and Endangered Species Act (ESA). Conversely, the Corps has hypothesized since the 1930s that woody vegetation increases the risk of flood damage to levees. Thus woody vegetation must be removed from levees for local governments to be eligible for Corps cost-sharing programs to repair damaged levees and revetments. Vegetation management actions required for compliance with federal levee repair funding programs have been the source of controversy because of conflicts with federal Endangered Species Act requirements for protected salmon species. During 2009, eligibility for federal levee repair funding, as well as concerns about local liability for levee failures on the lower Green River because of higher flows from the Howard Hanson Dam, drove the decision to remove levee vegetation in 2008 and again in 2009. (Additional background information regarding this issue can be found in the video, "An Examination of Levee Vegetation Policy," at www.kingcounty.gov/flood under "Levee Vegetation Speech.")

During the fourth quarter, maintenance staff completed tree removal work necessary to bring several Green River levees into compliance with the Corps' Rehabilitation and Inspection Program's (PL 84-99) vegetation management requirements. This includes permitting, removal of 512 trees from the Green, Snoqualmie, and Raging Rivers, and mitigation for the tree removal. King County removed many of these trees to bring more Green River levees into compliance with PL 84-99 so that future flood damage repairs could be eligible for federal cost-sharing with the Corps. Total cost of the tree removal effort to date is approximately \$300,000. Staff are working with local governments and landowners to find mitigation sites for tree planting and large wood installation on the Snoqualmie and lower Green Rivers, as required by state and local permits. This is especially problematic on the lower Green River, as there is limited land available that is not also subject to the Corps' vegetation management requirements. Mitigation costs are estimated at \$2.1 million, and are not currently included in the District's adopted budget. These costs will be proposed in the 2011 budget.

Despite the commitments made at the 2009 Corps' Seattle District Levee Vegetation Policy Symposium and the participation of several federal, state, and local agencies and tribal governments, the disconnect between federal funding requirements and federal ESA requirements threatens to grow due to a proposed levee vegetation management policy change proposed by the Corps. This proposal would rescind existing regional variances for Districts of the Corps and establish an arduous process for local governments (rather than Districts) to request variances for individual levees. Preliminary estimates of the impacts of this policy change indicate that a conservative estimate of 13,000 trees would need to be removed from King County riparian areas, at an estimated cost of at least \$95 million, not including the potential need for additional property to serve as mitigation sites.

Finally, King County is seeking to inform this policy debate by requesting grant funding to implement the research recommendations of the 2009 Symposium since the Puget Sound-focused pilot project was left unfunded by the Corps' Headquarters. The proposal, submitted in partnership with the Corps, calls for three inter-related studies: a retrospective study of flood facility damages following a Presidential disaster declaration, an evaluation of the susceptibility of native tree species to windthrow, and a comparison of habitat attributes of bioengineered versus conventional flood facility repair projects. The study results will inform levee vegetation management decisions and policies. The intended outcome is to reduce conflicts between federal mandates that limit regional efforts to restore riparian habitat and water quality. Concurrently, King County is also coordinating with the Corps on a national evaluation of levee vegetation that includes a site on the Skagit River in Skagit County.

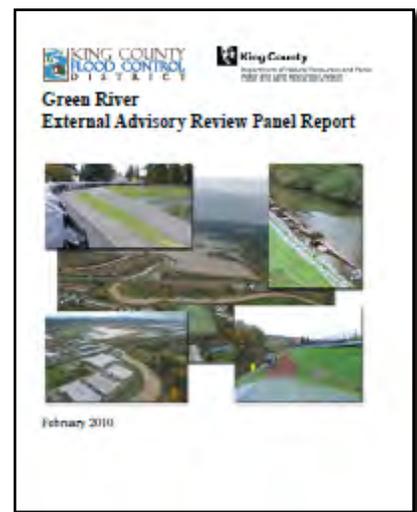
GREEN RIVER EXTERNAL ADVISORY REVIEW PANEL

In the fall of 2009, an expert panel was convened to review the 2006 Flood Plan's overall approach to floodplain management for the Green River, and was also asked to provide any other recommendations deemed warranted in light of the reduced storage capacity of the Howard Hanson Dam. The panelists included licensed engineers, geotechnical engineers, Certified Floodplain Managers, and environmental policy experts. The panelists responded to a range of questions on topics such as flood preparation and planning, levee design, management of levee vegetation, sediment management, and options for large wood debris jams.

The panel supported King County's overall flood plain management approach to the Green River. While the panel did not recommend significant changes to specific flood risk reduction actions currently underway, they did recommend that future planning efforts should assume greater maximum flood flows than the current maximum of 12,000 cubic feet per second (cfs). The panel further recommended that planning for higher flows would result in a long-term flood risk reduction strategy (20-50 years) that focuses on a much wider floodplain corridor than currently envisioned for the Green River. The panel also recommended greater consistency in floodplain management codes and regulations across jurisdictional boundaries.

Following is an excerpt of the main recommendations from the Green River External Advisory Panel Review Report. (The full report can be found at www.kingcounty.gov/flood/.)

1. Based on the regional economic value and importance of the Green River valley, the review panel believes that, in the long-term, planning for the Green River levee system should assume flood flows higher than 12,000 cfs. Higher flows could occur after the near-term repair to the Howard Hanson Dam, and the resulting economic consequences to the Lower Green River would be considerable. Because of this,



the review panel does not believe that continuing to plan for maximum flood flows of 12,000 cfs in the Lower Green River valley is wise. (Page 22.)

- 2.** A floodplain management strategy that addresses flood flows greater than 12,000 cfs will generally require either larger, higher levees or a wider flood corridor. King County recognizes the benefits of a wider flood corridor and has already identified many opportunities for setting levees farther back from the river channel. Moving levees farther from the channel would provide many advantages over the current, more constraining levee network, such as reduced flood elevations and flow velocities for a given flow. It would also provide environmental benefits. (Page 24.)
- 3.** Future management strategies should simultaneously address environmental concerns and flood risks. Strategies should involve the protection, enhancement, and restoration of aquatic and riparian habitat, including implementation of salmon habitat recovery plans. (Page 25.)
- 4.** Considering the development that has occurred in the Lower Green River floodplain, it is evident to the review panel that this lack of regulatory consistency (between jurisdictions) has resulted in a significant increase in risk exposure over time. (Page 26.)
- 5.** The review panel endorses bioengineering techniques for the Green River, but recommends that future levees should be designed for a higher flow standard. This may necessitate integration of more “hard” elements into the bioengineered/traditional hybrid levee design currently used by King County and the Corps on the lower Green River. (Page 26.)
- 6.** In summary, the review panel does not support a single, universal answer to the question of when and where to use bioengineered and traditional levee features. The panel endorses an approach that considers bioengineered levee features as a preference but ultimately evaluates local site conditions as part of the design process before making final decisions. (Page 46.)
- 7.** Unless indicated by additional analyses, sediment removal is not appropriate as either a short-term or long-term strategy to increase channel capacity and decrease flood risk along the confined Lower Green River. Sediment removal may destabilize nearby structures, it rarely provides significant additional channel capacity, and its benefits tend to be temporary as the river works to fill back in to readjust its profile. (Page 52.)
- 8.** [Regarding Levee Vegetation] The review panel believes that the best resolution to this apparent conflict will be in the careful performance review of alternatively designed and constructed levees, incorporated within an adaptive management framework. (Page 55.)
- 9.** [Regarding Federal Mandates] The review panel recognizes a direct conflict between the U.S. Corps’ levee-vegetation standards and National Oceanic and Atmospheric Administration Fisheries’ biological opinion. A similar conflict between the Corps’ and the County’s design and maintenance guidelines for levees is recognized by all parties. Because there are no clear-cut

answers or obviously unsafe practices being advocated by any party, we propose an adaptive management approach. Already, two alternative levee designs have been constructed along the right bank of the Lower Green River immediately adjacent to each other (at the Riverbend Golf Complex), offering a direct opportunity to evaluate their performance. Similarly, a conscious evaluation of alternative vegetation-management approaches, if incorporated into the process of setting future actions, would offer a credible way to resolve existing differences in approach. (Pages 57-58.)

- 10.** [Regarding Large Wood] We strongly recommend the continued (passive) management practices currently being followed. This material may pose a risk to downstream infrastructure if not removed from active transport by functional “log-straining” features in the channel or the immediately adjacent floodplain. Based on observed conditions at the RM 32.5 jam, this feature has been performing this function for many years. We anticipate that it will continue to be highly effective under all but the most extreme of discharges, under which circumstances any increased release of logs would probably not constitute the major flood impacts on the Lower Green River valley. (Page 63.)

NATIONAL FLOOD INSURANCE PROGRAM BIOLOGICAL OPINION

In September 2008, the Northwest Region of the National Marine Fisheries Service (NMFS) issued a final Biological Opinion concerning implementation of FEMA’s National Flood Insurance Program (NFIP) and the effect of this program on Puget Sound salmon and killer whales, species listed under the Endangered Species Act (ESA). The Biological Opinion was issued following a formal consultation between NMFS and FEMA pursuant to Section 7 of the ESA and consistent with judicial order (NWF v. FEMA).

The main focus of the Biological Opinion is whether activities conducted under the NFIP are likely to jeopardize the survival or recovery of ESA-listed species in the Puget Sound region or adversely modify the critical habitat of these species. Analysis focused on three elements of the NFIP—floodplain mapping, minimum floodplain management criteria, and the Community Rating System—with the intent being to understand whether causation exists between activities fundamental to the NFIP and habitat changes that adversely affect listed species and their critical habitat.

At the request of FEMA, in 2009 King County staff participated in a work group of local governments and natural resource agencies that developed a model floodplain development ordinance, as well as supporting tools such as recommended assessment methodologies for riparian areas, channel migration zones, and floodplain habitat. In compliance with the Biological Opinion, King County staff also responded to FEMA’s request for reports on floodplain development activity since September 2008.

In January 2009, King County staff supported the King County Department of Development and Environmental Services (DDES) with a FEMA Community Assistance Visit audit to determine compliance with the National Flood Insurance Program. This visit occurs approximately every three years, and functions as an audit of King County’s efforts to implement floodplain development policies and regulations. The primary concerns at the audit meeting involved: conformance of local floodplain regulations with NFIP minimum requirements; procedures for implementing these regulations; and information to document findings from the field inspection report. As a result of the audit, King County proposed two code changes to the King County Council that were also the subject of a public meeting held in June 2009 in the lower Snoqualmie River valley:

- To amend King County Code 21A.24.270 to remove the ability for a professional engineer to prepare Elevation Certificates. This code amendment is in accordance with the determination made by the State Board of Registration for Professional Engineers and Land Surveyors on what professionals are able to complete the Elevation Certificate.
- To establish flood regulations for shallow flooding zones.

The King County Council approved these code amendments on October 26, 2009.

LEVERAGING FUNDS THROUGH GRANT APPLICATIONS

The District continues to leverage local funding through aggressive efforts to secure external funds through grants and partnerships. In 2009, the District received \$1.7 million in grant funds from FEMA to buyout and elevate at-risk structures. The District’s flood risk reduction efforts also benefited from \$4.7 million in Corps funding to repair several sites at the Horseshoe Bend levee through the PL 84-99 program. In addition, the City of Kent received \$10 million from the State of Washington for rehabilitation of the Horseshoe Bend levee. Already, in the first quarter of 2010 the District has received \$7.4 million in external funding.

Grant revenue included in the 2010 budget is summarized as follows:

Funding Source	Amount Awarded
FEMA Flood Mitigation Grants	\$4,700,000
FEMA Public Assistance (in response to January 2009 Flood)	\$910,000
FEMA Cooperating Technical Partner Agreements (Coastal Hazard Mapping)	\$270,000
Puget Sound Energy Lower Snoqualmie Flood Mitigation Contribution	\$300,000
Washington State Salmon Recovery Funding Board	\$1,261,996
Total External Revenue in 2010 Budget	\$7,441,996

GRANTS AWARDED

Immediately following the January 2009 flood, King County staff provided information to floodplain residents about flood mitigation grant opportunities. In the second quarter, King County staff continued work with DDES to complete substantial damage inspections of flood damaged homes. As a result of this effort, four homes were determined to be substantially damaged, making these homes eligible for expedited FEMA funding under the Hazard Mitigation Grant Program (HMGP) grant cycle that was triggered by the January 2009 Presidential disaster declaration. Two public meetings were held to discuss this grant program, and two applications were submitted to the State of Washington in September 2009. Both grant applications received FEMA awards in late October 2009 – one of the grants will acquire three of the substantially damaged homes near Fall City, while the other application will acquire a substantially damaged mobile home park (Riverside Mobile Home Park) within the City of Snoqualmie.

In September 2009, King County was notified of two federal grant awards:

- Approximately \$935,000 – submitted through the HMGP following the December 2007 flood disaster – will acquire at-risk homes on the Cedar, Green, and South Fork Skykomish Rivers, as well as floodproof a home in the Kimball Creek area near Snoqualmie.
- Approximately \$300,000 – funded in September 2009 and submitted under FEMA's annual Pre-Disaster Mitigation Program – will fund the elevation of four homes in the Snoqualmie and South Fork Skykomish river basins.

King County was also awarded FEMA funds in the spring of 2009. Two separate grants were approved that will elevate homes in the Shamrock Park neighborhood on the South Fork Snoqualmie River near the City of North Bend, as well as eleven homes in the Kimball Creek neighborhood near the City of Snoqualmie and three homes and one commercial structure in the lower Snoqualmie River valley. The total cost of these two projects is \$2.4 million, with \$2.09 million of this amount being supplied through federal and state resources.

While many FEMA grants fund flood mitigation projects, some grants, such as those under the Cooperating Technical Partners program, fund technical analyses and studies. King County received a \$270,000 grant award through this program in October 2009. The grant will support updates to coastal flood hazard data for the Puget Sound coastline along the incorporated areas of the county, as well as the development of coastal flood maps.

In addition to federal grants, King County has successfully applied for state and local grants to advance the work of the King County Flood Control District. Two Salmon Recovery Funding Board grants (offered through the Washington State Recreation and Conservation Office) were awarded and will support multi-objective flood hazard management projects in the White River basin:

- \$1.29 million in funding to perform property acquisitions and restoration on a large floodplain restoration project along the White River near the City of Pacific and the Pierce County border.

- \$125,000 to conduct a feasibility study that will examine levee setback and levee removal options for the Trans-Canada Levee along the White River in the vicinity of the City of Auburn.

The Conservation Futures Tax and King County Parks Expansion Levy are local programs that fund property acquisitions. An application was awarded \$262,000 in 2009 to acquire undeveloped property near the City of Pacific to support floodplain reconnection efforts.

PENDING EXTERNAL FUNDING REQUESTS

Two King County-submitted federal grants are currently under review:

- A planning grant requesting approximately \$270,000 in FEMA funds to support the upcoming effort to update the 2006 King County Flood Hazard Management Plan. Per the requirements of FEMA's Community Rating System, the plan must be updated and adopted by January 2012. This grant has passed the first round of state review and is currently being reviewed by FEMA.
- An Environmental Protection Agency grant that seeks to conduct a study on the effects of native riparian vegetation on structural and habitat attributes of levees and revetments. This grant seeks approximately \$700,000 in federal funding. A decision is expected in July 2010.

Additionally, King County currently has a proposal under review for Conservation Futures and Parks Levy funding that seeks to acquire a predominately undeveloped 36.7 acre riverfront parcel along the lower Green River to serve as the mitigation site for PL 84-99 tree cutting and to restore natural floodplain function. The amount of funding requested is \$800,000 (out of a total acquisition cost of \$2.5 million).

King County staff are working with a consultant to develop a Local Hazard Mitigation Plan for the King County Flood Control District. This plan, which is required under the federal Disaster Mitigation Act of 2000 to receive FEMA grant funds, assesses flood, dam failure, earthquake, liquefaction, landslide, lahar and wildfire hazards, identifies vulnerabilities, and identifies actions to reduce these vulnerabilities. Until this plan is complete, adopted by the Board of Supervisors, and approved by FEMA, grant applications cannot be submitted by the King County Flood Control District.

As part of Howard Hanson Dam response efforts, King County and the four valley cities asked Governor Christine Gregoire to request "Advanced Measures" from the Corps under the PL 84-99 Rehabilitation and Inspection Program. This provision allows the Corps to fund activities such as flood-fighting when there is an imminent risk of flooding. Based on requests from the jurisdictions, the Corps requested over \$15 million in federal funds for Advanced Measures on the Green River. Only \$3.2 million in federal funding was made available from other sources to support local efforts to raise levees to the height necessary to contain a flow of 13,900 cubic feet per second plus a factor of safety (normal levee capacity is approximately 12,800 cubic feet per second), as well as other temporary flood protection measures.

Most recently, King County submitted a request to FEMA for reimbursement of flood preparation costs. This request seeks reimbursement for activities triggered by the increased threat of flooding in the Green River valley such as Green River levee raising effort; installing HESCO and Supersak barriers along 26 miles of the lower Green River; as well as anticipated costs for annually wrapping with plastic to avoid UV degradation and their eventual removal. Other costs included proposed pump station upgrades and public outreach materials. The total request is for \$11.5 million and a decision is expected in the second quarter of 2010.

E. King County Flood Control District Coordination

This work program element includes coordination with King County cities through the Executive Committee, the 15-member Advisory Committee of elected officials and the BTCs. Activities during April and May 2009 included multiple meetings in each basin to develop recommendations for the 2009 capital program reallocation in response to the January 2009 flood, as well as recommendations for 2010. Recommendations were presented to the Advisory Committee at three meetings in April and May 2009, with unanimous support for the recommended capital project list and operating work program. The Advisory Committee met again in November 2009 for an annual progress report and to hear a detailed briefing on Green River flood preparation activities. The Green River BTC continued to serve as a key coordination venue for flood preparation activities during 2009.

As part of their response to this emergency and direct requests from the Green River valley cities, the King County Flood Control District Board of Supervisors reallocated \$8.4 million from the approved 2009 work program for emergency measures to address the potential for Green River flooding. This reallocation was in addition to the \$7.1 million for flood response activities across King County that the Advisory Committee recommended and the Board of Supervisors approved for reallocation in the spring of 2009 to address emergency flood response needs. Combined with approximately \$2 million in January 2009 flood damage repairs budgeted for 2010, the January 2009 flood resulted in unplanned expenditures of over \$17 million or approximately one half the District's annual revenue.

Given the urgency of the need for flood-fighting resources last fall, the reallocation request was not reviewed by the Basin Technical Committees or the Advisory Committee using the normal process. Rather than identify specific capital changes in 2010 and the 6-year CIP, the Board of Supervisors included a budget contra for \$8.4 million in 2010 and directed the Advisory Committee to provide recommended adjustments to the CIP by the end of the first quarter. As part of the budget resolution, the Board of Supervisors directed the Advisory Committee to give deference to projects that were displaced by the 2009 flood response efforts. The 2010 budget reallocation was reviewed by the BTCs in January and February, and discussed with the Advisory Committee in February 2010. The Advisory Committee unanimously supported the budget reallocation. The main point of discussion with the Advisory Committee was the rising cost of participating in the Corps' Rehabilitation and Inspection Program under Public Law 84-99. Specifically, members had concerns about the cost of tree removal, mitigation, and land acquisition necessary for Corps repair projects as well as habitat mitigation sites.

F. Resource Management, Annual Maintenance and Facility Assessment Program

FLOOD FACILITY AND PROPERTY MAINTENANCE

This element of the District's work program includes coordination of facility and property maintenance of approximately 500 flood protection facilities covering 119 linear miles and approximately 430 acres of land acquired for flood mitigation purposes, as well as pump stations and related flood protection infrastructure. In 2009, staff completed routine maintenance of over 22 miles of facilities to remove blackberries and other non-native invasive species. Property maintenance continued to focus on removing structures in and around the Cedar Grove Mobile Home Park.

In 2009, residents from four single family homes and one mobile home park, in the vicinity of the Raging and Cedar rivers, were relocated outside the flood hazard area and the structures removed. In the first quarter of 2010, 20 structures on 17 parcels in the vicinity of the South Fork Skykomish, Tolt, Snoqualmie, Cedar, Middle Green and White rivers will be prepared for removal. Preparation includes removal of utilities, asbestos inspection and abatement and building materials salvage. Sites are either returned to a natural condition or are held for future capital projects.

G. Program Management and Supervision; Finance, Budget and General Administration

This element of the operational work program includes supervisory, budgeting, and administrative services for the District. Major activities during 2009 included working with the District's Executive Director to modify the format for invoices and financial reports, and working closely with the District's accountant and the State Auditor's Office to respond to questions about the District's audit as well as an audit of a Salmon Recovery Funding Board grant. Additional activities included grant billing and financial management for 16 active grants, working with homeowners to provide accurate records of reimbursable home elevation costs, and the development of a capital project tracking and accounting database system. (See Appendices for a financial summary for operating and capital expenditures from January 2009 through March 2010.)

FINANCIAL ACCOUNTABILITY

The King County Flood Control District received a clean report from the Washington State Auditor's Office in its first accountability and financial audit covering 2008. The State Auditor provides audits to the public as a reporting tool to help citizens assess government operations. The audit found the Flood District to be in full compliance with financial reporting, internal controls, laws, contracts, and regulations. The District will continue to be audited by the State on an annual basis.

STAFFING RESOURCES

A key program management task for the River and Floodplain Management Section was the completion of hiring processes for multiple positions during 2009 and the first quarter of 2010. Twelve vacant positions were filled during 2009, including engineers, ecologists, a communications specialist, budget and finance officer, and a contracts specialist. Hiring processes have been completed for three more engineering positions during the first quarter of 2010.

Appendix A

2009 Budget

2009 Budget

District Administration¹

District Administration	\$450,000
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Operating Budget¹

Annual Maintenance, Facility Assessments	\$1,858,176
Flood Hazard Planning, Grants, Outreach	\$440,817
Flood Hazard Studies, Maps, Technical Services	\$483,461
Flood Preparation, Flood Warning Center, Post Flood Activities	\$296,255
Program Management, Supervision, Finance, Budget	\$1,981,307
Program Implementation	\$824,960
Total Operating Budget	\$5,884,977

Capital Budget²

FL0000 SKYKOMISH MILLER RIVERS FLOOD PROTECTION

FL0002	MILLER R RD PROTECTION	\$110,748
FL0003	TIMBERLANE VILLAGE BUYOUT	\$1
FL0004	TIMBER LN EROSION BUYOUTS	\$1,132,730
FL0007	MCKNIGHT REPAIR	\$60,000
FL0008	NE 196TH & 635TH NE RPR	\$50,000
FL0009	MILLER RIVER CURVE REPAIR	\$80,000
FL0000 Total		\$1,433,479

FL1000 UPPER SNOQUALMIE RIVER FLOOD PROTECTION

FL1018	CITY OF SNOQUALMIE NA ACQ	\$236,928
FL1019	MF LEVEE SYSTEM IMPROVMNT	\$238,916
FL1024	MASON THORSON EXT RPAIR	\$90,000
FL1027	MASON THORSON ELLS REPAIR	\$80,000
FL1029	VALLCUDA REPAIR	\$50,000
FL1030	ALLEN REPAIR	\$60,000
FL1023	UPR SNO RESID FLD MITIGTN	\$375,000
FL1002	N BEND RESID FLOOD MITGTN	\$638,455
FL1003	SF LEVEE SYSTEM IMPROVE	\$1,264,372

FL1001	MF SNOQ FLOOD REPAIRS	\$20,001
<i>FL1007</i>	<i>MASON THORSON ELLS</i>	\$1
<i>FL1008</i>	<i>MASON THORSON EXTENSION</i>	(\$3)
<i>FL1009</i>	<i>MF SNO LARGE WOOD MTGTN</i>	\$4
FL1001 Total		\$20,003

FL1004	SF SNOQ R FLOOD REPAIRS	\$365,933
<i>FL1012</i>	<i>ALLEN REVETMENT</i>	\$66,119
FL1004 Total		\$432,052

FL1005	UPPR SNOQ R FLOOD REPAIRS	\$161,180
<i>FL1011</i>	<i>SNO 205 LEFT REVETMENT</i>	\$193,116
<i>FL1017</i>	<i>KIMBALL CREEK DRAINAGE</i>	\$33,109
FL1005 Total		\$387,405

FL1000 Total		\$3,873,131
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1) The district administration and operating budgets were adopted under resolution FCD2008-15.

2) The capital budget was revised in the 13th accounting month of 2009 under resolution FCD2010-27.

FL2000 LOWER SNOQUALMIE RIVER FLOOD PROTECTION		
FL2001	ALDAIR BUYOUT	\$887,943
FL2003	NEAL ROAD RELOCATION	\$40,884
FL2012	MCELHOE/PERSON LEVEE	\$0
FL2015	MCELHOE-PEARSON REPAIR	\$0
FL2014	L SNO R REP LOSS MITGTION	\$145,000
FL2002	LWR SNOQ R FLOOD REPAIRS	(\$437,945)
FL2006	MCELHOE PEARSON	\$0
FL2007	ALDAIR	\$457
FL2008	SINNERA QUALE UPPR RVTMNT	\$836,595
FL2002 Total		\$399,107

FL2000 Total **\$1,472,934**

FL3000 TOLT RIVER FLOOD PROTECTION		
FL3001	TOLT RIVER FLOOD REPAIRS	\$200,001
FL3002	TOLT R SUPPLEMENTAL STUDY	\$276,780
FL3003	TOLT R RD SHOULDER PRTCTN	\$199,922
FL3005	SAN SOUCI NBRHOOD BUYOUT	\$1,003,845
FL3007	TOLT SR 203 FLDPLN RECON	\$0
FL3009	TOLT R MILE 1.1 SETBACK	\$1,870,000
FL3010	TOLT MOUTH SR 203 FLDPLN	\$701,008
FL3011	HWY TO RR BR EMRGNCY RPR	\$155,845
FL3012	FREW EMERGNCY RPR	\$45,862
FL3014	TOLT R LEVEE RIGHT REPAIR	\$125,000

FL3000 Total **\$4,578,262**

FL4000 RAGING RIVER FLOOD PROTECTION		
FL4017	PRESTON FALL CTY LWST RPR	\$200,000
FL4018	BRIDGE TO BRIDGE LEFT RPR	\$100,000
FL4019	BRIDGE TO BRIDGE RT RPR	\$10,000
FL4020	BRIDGE TO MOUTH R REPR	\$15,000
FL4021	PRESTON FALL CTY UPPR RPR	\$15,000
FL4002	RAGING R FLOOD REPAIRS	\$122,841
FL4004	ARRUDA REVETMENT	\$11,335
FL4005	BRYCE BUMP LEVEE RVTMNT	\$25,208
FL4006	PRESTON FL CTY LOW RVTMNT	\$91,049
FL4007	RAGING BR TO BR LEFT	(\$1)
FL4008	RAGING BR TO MOUTH RIGHT	\$0
FL4009	WARING REVETMENT	\$1,776
FL4002 Total		\$252,208
FL4001	ALPINE MANOR MOB PRK ACQ	\$940,387
FL4011	UPPER PRESTON HMGP ACQ	\$542,516
FL4001 Total		\$1,482,903

FL4000 Total **\$2,075,111**

FL6000 ISSAQUAH CREEK FLOOD PROTECTION

FL6001	ISSAQUAH CR STRMBANK STAB	\$101,869
FL6000 Total		\$101,869

FL7000 CEDAR RIVER FLOOD PROTECTION

FL7000	CEDAR R FLOOD PROTECTION	(\$1)
FL7004	CEDAR R REP LOSS MITIGATN	\$1,330,593
FL7005	ELLIOTT BR LEVEE SETBACK	\$1,853,119
FL7006	RAINBOW BND LEVEE SETBACK	\$441,476
FL7011	DORRE-DON	(\$4)
FL7015	HERZMAN LEVEE SETBACK	\$149,845
FL7016	JAN RD-RTLDGE LEVEE STBCK	\$77,513
FL7021	RIVERBEND ACQ & SETBACK	\$0
FL7026	BELMONDO EMERGENCY REPAIR	\$160,000
FL7028	CEDAR R TRAIL 1 REPAIR	\$250,000
FL7029	CEDAR R TRAIL 3 REPAIR	\$175,000
FL7030	ORCHARD GROVE REPAIR	\$65,000
FL7031	PETORAK-WADHAMS REPAIR	\$110,000
FL7032	RHODE LEVEE REPAIR	\$100,000
FL7033	JAN ROAD REPAIR	\$60,000
FL7034	BYERS CURVE REPAIR	\$30,000
FL7035	RAINBOW BEND REPAIR	\$10,000
FL7036	LOWER DORRE DON REPAIR	\$5,000

FL7003	CEDAR R FLOOD REPAIRS	\$858,245
<i>FL7008</i>	<i>BANCHERO-BARNES REVETMENT</i>	<i>\$4</i>
<i>FL7009</i>	<i>BELMONDO REVETMENT</i>	<i>\$0</i>
<i>FL7010</i>	<i>CEDAR R TR SITE 2 RVTMNT</i>	<i>\$1</i>
FL7003 Total		\$858,250

FL7001	CEDAR GROVE MOBILE ACQ	\$2,671,654
<i>FL7012</i>	<i>CEDAR GROVE MOBILE SRFB</i>	<i>\$0</i>
<i>FL7013</i>	<i>RAINBOW BEND PHASE 2 KCD</i>	<i>\$0</i>
<i>FL7025</i>	<i>CEDAR GROVE NON-GRANT</i>	<i>\$0</i>
FL7011 Total		\$2,671,654

FL7002	CEDAR RAPIDS LEVEE SETBCK	\$404,999
<i>FL7027</i>	<i>CEDAR RAPIDS REPAIR</i>	<i>\$0</i>
FL7002 Total		\$404,999

FL7000 Total		\$8,752,444
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FL8000 GREEN RIVER FLOOD PROTECTION

FL8002	AK WY SEAWALL FEAS & DSN	\$1,494,042
FL8005	NURSING HOME LEVEE	\$1,009,118
FL8011	KENT SHOPS-NARITA	\$1,469,683
FL8016	BRISCOE LEVEE #1-#3 #5-#8	\$1,262,419
FL8017	DESIMONE LEVEE #1	\$152,730
FL8018	DESIMONE LEVEE #2	\$190,728
FL8019	DESIMONE LEVEE #3	\$114,825
FL8020	DESIMONE LEVEE #4	\$628,706
FL8021	RIVERSIDE ESTATES/RDDNGTN	\$789,486
FL8022	SEGALE LEVEE #2 & #3	\$858,776
FL8023	42ND AVE SOUTH REPAIR	\$363,509
FL8024	S PARK DUWAMISH BACKWATER	\$272,727
FL8026	SEGALE LEVEE #4	\$175,000
FL8027	STONEWAY LOWER REPAIR	\$150,000
FL8029	HORSESHOE BEND REPAIR	\$60,000
FL8030	RATOLO REPAIR	\$25,000
FL8043	DYKSTRA LOWSPOT REPAIR	\$200,000
FL8045	GREEN R FLD EMGNCY PREP	\$8,400,000
FL8003	GREEN R FLOOD REPAIRS	\$334,405
FL8007	DYKSTRA REVETMENT	(\$2)
FL8008	FOSTER GOLF RVTMNT	(\$1)
FL8009	GALLI'S SECTION	\$0
FL8010	HORESHOE BEND 205	(\$1)
FL8012	MYER'S GOLF LEVEE	(\$1)
FL8013	TUKWILA 205	\$1,025
FL8014	FOSTER GOLF COURSE FEMA	\$1
FL8003 Total		\$335,426

FL8000 Total **\$17,952,175**

FL9000 WHITE RIVER FLOOD PROTECTION

FL9000	WHITE R FLOOD PROTECT	(\$1)
FL9001	COUNTYLINE TO A STREET	\$2,494,087
FL9002	RED CREEK ACQUISITIONS	\$939
FL9003	WHITE R FLD REPR STUCK DR	\$5,998
FL9004	WHITE-GREENWATER ACQ	\$8,615
FL9006	STUCK RIVER DRIVE	\$0
FL9007	PACIFIC ACQ & STBACK BERM	\$1,800,000

FL9000 TOTAL **\$4,309,638**

FLM000 Countywide Monitoring/Maintenance

FLM000	FLOOD CIP MON/MAINT	\$43,201
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FLM000 Total **\$43,201**

FLS000 Subregional Opportunity Fund

FLS000	SUBREGIONAL OPPRTNTY FUND	(\$1,100,064)
FLS001	ALGONA SUBRGNL OP	\$10,444
FLS002	AUBURN SUBRGNL OP	\$139,186
FLS003	BEAUX ARTS SUBRGNL OP	\$2,700
FLS004	BELLEVUE SUBRGNL OP	\$605,318
FLS005	BLACK DIAMOND SUBRGNL OP	\$12,922
FLS006	BOTHELL SUBRGNL OP	\$54,201
FLS007	BURIEN SUBRGNL OP	\$83,303
FLS008	CARNATION SUBRGNL OP	\$4,551
FLS009	CLYDE HILL SUBRGNL OP	\$36,404
FLS010	COVINGTON SUBRGNL OP	\$41,458
FLS011	DES MOINES SUBRGNL OP	\$58,349
FLS012	DUVALL SUBRGNL OP	\$17,836
FLS013	ENUMCLAW SUBRGNL OP	\$22,463
FLS014	FEDERAL WAY SUBRGNL OP	\$181,962
FLS015	HUNTS POINT SUBRGNL OP	\$17,385
FLS016	ISSAQUAH SUBRGNL OP	\$106,473
FLS017	KENMORE SUBRGNL OP	\$60,490
FLS018	KENT SUBRGNL OP	\$212,224
FLS019	UNINCORP KC SUBRGNL OP	\$1,090,142
FLS020	KIRKLAND SUBRGNL OP	\$200,473
FLS021	LAKE FRST PRK SUBRGNL OP	\$47,551
FLS022	MAPLE VALLEY SUBRGNL OP	\$49,602
FLS023	MEDINA SUBRGNL OP	\$60,516
FLS024	MERCER ISLAND SUBRGNL OP	\$194,479
FLS025	MILTON SUBRGNL OP	\$1,803
FLS026	NEWCASTLE SUBRGNL OP	\$43,755
FLS027	NORMANDY PARK SUBRGNL OP	\$29,322
FLS028	NORTH BEND SUBRGNL OP	\$15,561
FLS029	PACIFIC SUBRGNL OP	\$10,040
FLS030	REDMOND SUBRGNL OP	\$236,654
FLS031	RENTON SUBRGNL OP	\$214,824
FLS032	SAMMAMISH SUBRGNL OP	\$189,343
FLS033	SEATAC SUBRGNL OP	\$89,120
FLS034	SEATTLE SUBRGNL OP	\$2,350,151
FLS035	SHORELINE SUBRGNL OP	\$154,890
FLS036	SKYKOMISH SUBRGNL OP	\$500
FLS037	SNOQUALMIE SUBRGNL OP	\$32,729
FLS038	TUKWILA SUBRGNL OP	\$87,823
FLS039	WOODINVILLE SUBRGNL OP	\$50,949
FLS040	YARROW POINT SUBRGNL OP	\$17,403

FLS000 Total **\$5,735,235**

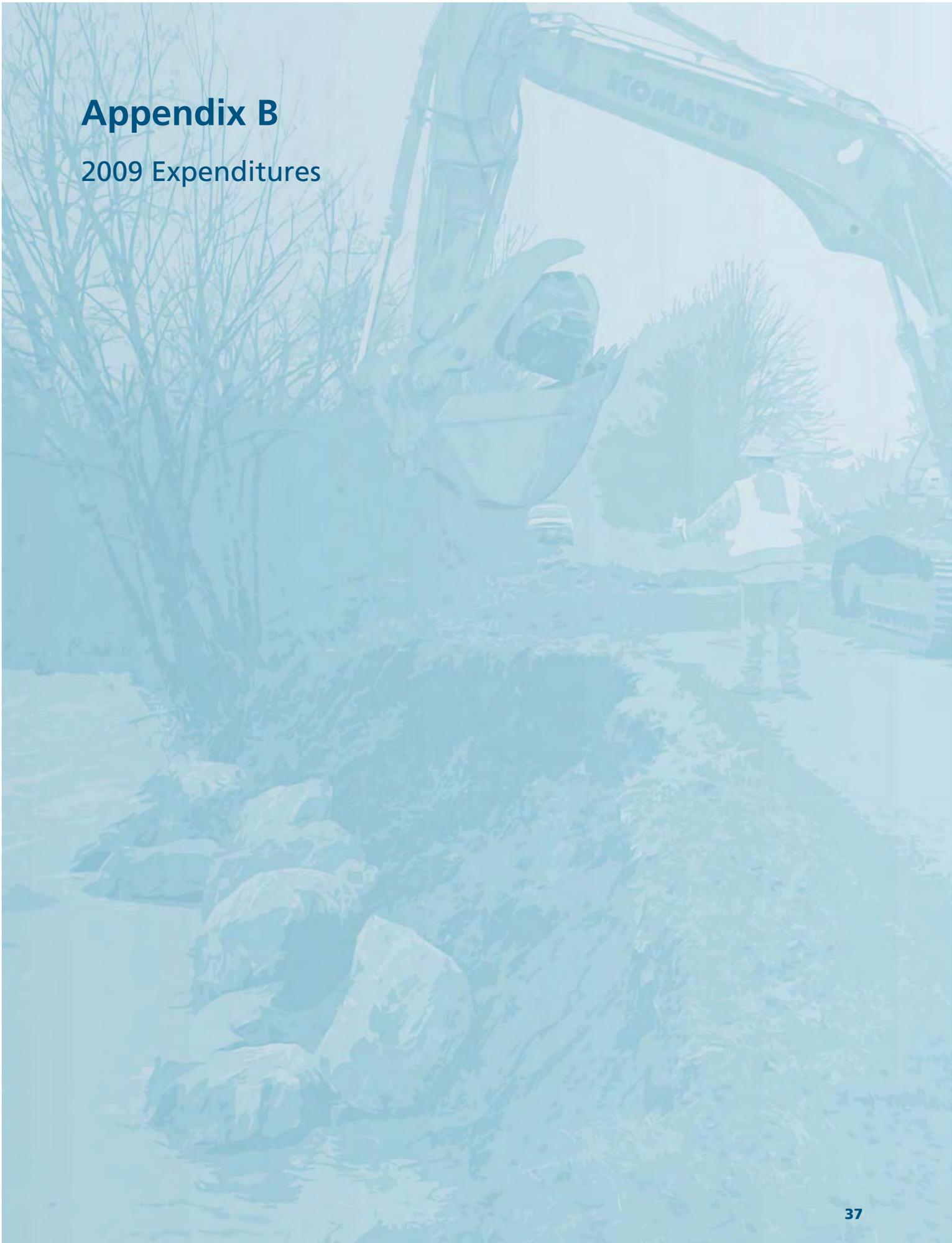
FLX100 FLOOD DISTRCT CONTINGENCY (\$74,219)

Capital Total **\$50,253,260**

Grand Total **\$50,703,260**

Appendix B

2009 Expenditures



2009 Expenditures

District Administration Expenditures

District Administration	\$482,616.00
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Operating Expenditures

ANNUAL MAINTENANCE, FACILITY ASSESSMENTS	\$1,024,306.38
FLD HAZARD PLANNING, GRANTS, OUTREACH	\$525,681.10
FLD HAZARD STUDIES, MAPS, TECHNICAL SERVICES	\$482,000.13
FLOOD PREPARATION, FLOOD WARNING CENTER, POST FLOOD ACTIVITIES	\$365,390.69
PROGRAM MANAGEMENT, SUPERVISION, FINANCE, BUDGET	\$1,738,275.62
PROGRAM IMPLEMENTATION	\$673,886.15
GREEN RIVER / HOWARD HANSEN DAM (PROJECT FLD105)	\$156,154.86
PAID TIME OFF / OVERHEAD REIMBURSEMENT	\$434,131.54
Total Operating Expenditures:	\$5,399,826.47

Capital Expenditures

FL0000 - SF Skykomish / Miller Rivers

FL0001	MILLER RIVER HOME BUYOUT	\$1,015.38
FL0002	MILLER R RD PROTECTION	\$6,794.87
FL0003	TIMBERLANE VILLAGE BUYOUT	\$1,598.48
FL0004	TIMBER LN EROSION BUYOUTS	\$1,033,490.73
FL0007	MCKNIGHT REPAIR	\$2,521.15
FL0009	MILLER RIVER CURVE REPAIR	\$1,233.99
FL0000 Total		\$1,046,654.60

FL1000 - Upper Snoqualmie River

FL1019	MF LEVEE SYSTEM IMPROVMNT	\$103,335.17
FL1024	MASON THORSON EXT RPAIR	\$53,625.14
FL1029	VALLCUDA REPAIR	\$2,619.55
FL1030	ALLEN REPAIR	\$2,943.66
FL1001	MF SNOQ FLOOD REPAIRS	\$202.99
FL1007	MASON THORSON ELLS	\$12,791.50
FL1008	MASON THORSON EXTENSION	\$6,148.90
FL1009	MF SNO LARGE WOOD MTGTN	\$2,271.25
FL1012	ALLEN REVETMENT	\$1,159.47
FL1005	UPPR SNOQ R FLOOD REPAIRS	\$48,132.01
FL1011	SNO 205 LEFT REVETMENT	\$510.88
FL1013	O'BERT LEVEE	\$2,038.69

FL1014	RIVERBEND	\$6,331.16
FL1015	SI VIEW PARK	\$93,111.20
FL1017	KIMBALL CREEK DRAINAGE	\$12,897.18
FL1002	N BEND RESID FLOOD MITGTN SHAMROCK PARK HMGP	\$63,729.06
FL1016	ELEVTN	\$161,218.95
FL1003	SF LEVEE SYSTEM IMPROVE	\$291,486.54
FL1025	REIF RD RM3.2L REPAIR	\$2,275.08
FL1026	REIF RD RM4.1L REPAIR	\$23,571.66
FL1034	CLOUGH CREEK FLAP GATES	\$19,062.89
FL1036	HMGP 2009 SNOQ MBL HM PRK	\$914.23
FL1000 Total		\$910,377.16
FL2000 - Lower Snoqualmie River		
FL2001	ALDAIR BUYOUT	\$169,041.24
FL2003	NEAL ROAD RELOCATION	\$102.18
FL2006	MCELHOE PEARSON	\$10,477.68
FL2007	ALDAIR	\$501.84
FL2008	SINNERA QUALE UPPR RVTMNT	\$1,234.42
FL2036	HMGP 2009 FALL CITY ACQ	\$1,548.57
FL2000 Total		\$182,905.93
FL3000 - Tolt River		
FL3001	TOLT RIVER FLOOD REPAIRS	\$36,013.99
FL3002	TOLT R SUPPLEMENTAL STUDY	\$7,472.23
FL3003	TOLT R RD SHOULDER PRTCTN	\$193,800.21
FL3005	SAN SOUCI NBRHOOD BUYOUT	\$5,199.38
FL3009	TOLT R MILE 1.1 SETBACK	\$862,996.22
FL3010	TOLT MOUTH SR 203 FLDPLN	\$702,420.93
FL3011	HWY TO RR BR EMRGNCY RPR	\$155,844.81
FL3012	FREW EMERGNCY RPR	\$47,789.97
FL3000 Total		\$2,011,537.74
FL4000 - Raging River		
FL4017	PRESTON FALL CTY LWST RPR	\$406.01
FL4018	BRIDGE TO BRIDGE LEFT RPR	\$15,274.42
FL4019	BRIDGE TO BRIDGE RT RPR	\$49,402.66
FL4021	PRESTON FALL CTY UPPR RPR	\$12,997.95
FL4022	PRESTON FALL CTY LWER RPR	\$14,386.05
FL4002	RAGING R FLOOD REPAIRS	\$2,805.63
FL4004	ARRUDA REVETMENT	\$632.67
FL4006	PRESTON FL CTY LOW RVTMNT	\$118,775.94
FL4007	RAGING BR TO BR LEFT	\$85,659.76
FL4008	RAGING BR TO MOUTH RIGHT	\$17,156.90
FL4009	WARING REVETMENT	\$451.10
FL4001	ALPINE MANOR MOB PRK ACQ	\$43,736.91
FL4011	UPPER PRESTON HMGP ACQ	\$480,875.71
		\$842,561.71
FL6000 - Issaquah Creek		
FL6001	ISSAQUAH CR STRMBANK STAB	\$13,004.38
FL6000 Total		\$13,004.38

FL7000 - Cedar River

FL7005	ELLIOTT BR LEVEE SETBACK	\$1,804,095.57
FL7006	RAINBOW BND LEVEE SETBACK	\$25,195.63
FL7015	HERZMAN LEVEE SETBACK	\$20,240.92
FL7021	RIVERBEND ACQ & SETBACK BELMONDO EMERGENCY REPAIR	\$75.59
FL7026		\$158,350.65
FL7028	CEDAR R TRAIL 1 REPAIR	\$296,452.56
FL7029	CEDAR R TRAIL 3 REPAIR	\$184,826.65
FL7030	ORCHARD GROVE REPAIR	\$4,589.80
FL7031	PETORAK-WADHAMS REPAIR	\$154,752.48
FL7032	RHODE LEVEE REPAIR	\$13,810.18
FL7033	JAN ROAD REPAIR	\$11,251.86
FL7035	RAINBOW BEND REPAIR	\$11,104.81
FL7036	LOWER DORRE DON REPAIR	\$10,486.20
FL7003	CEDAR R FLOOD REPAIRS BANCHERO-BARNES REVETMENT	\$1,551.64
FL7008		\$2,428.47
FL7009	BELMONDO REVETMENT	\$10,686.32
FL7010	CEDAR R TR SITE 2 RVTMNT	\$982.42
FL7011	DORRE-DON	\$458.02
FL7041	CEDAR R TR-BR 2266-10	\$28,591.54
FL7001	CEDAR GROVE MOBILE ACQ	\$2,006,941.21
FL7013	RAINBOW BEND PHASE 2 KCD	\$812.16
FL7025	CEDAR GROVE NON-GRANT	\$154,304.46
FL7002	CEDAR RAPIDS LEVEE SETBCK	\$12,428.76
FL7027	CEDAR RAPIDS REPAIR	\$402,866.72
FL7004	CEDAR R REP LOSS MITIGATN	\$725,581.10
FL7000 Total		\$6,042,865.72

FL8000 - Green River

FL8002	AK WY SEAWALL FEAS & DSN	\$164,562.29
FL8005	NURSING HOME LEVEE	\$4,224.24
FL8011	KENT SHOPS-NARITA	\$772,639.98
FL8016	BRISCOE LEVEE #1-#3 #5-#8	\$137,238.97
FL8017	DESIMONE LEVEE #1	\$16,602.95
FL8019	DESIMONE LEVEE #3	\$304.48
FL8020	DESIMONE LEVEE #4	\$652.82
FL8021	RIVERSIDE ESTATES/RDDNGTN	\$26,587.78
FL8023	42ND AVE SOUTH REPAIR	\$353,570.09
FL8026	SEGALE LEVEE #4	\$14,232.67
FL8027	STONEWAY LOWER REPAIR	\$93,571.25
FL8043	DYKSTRA LOWSPOT REPAIR	\$192,536.67
FL8003	GREEN R FLOOD REPAIRS	\$13,966.63
FL8007	DYKSTRA REVETMENT	\$22,433.11
FL8008	FOSTER GOLF RVTMNT	\$146,150.51
FL8009	GALLI'S SECTION	\$2,188.15
FL8010	HORESHOE BEND 205	\$117,981.58
FL8012	MYER'S GOLF LEVEE	\$4,830.80
FL8013	TUKWILA 205	\$28,565.97
FL8014	FOSTER GOLF COURSE FEMA	\$32,203.32
FL8045	GREEN R FLD EMGNCY PREP	\$15,171.17

FL8046	BLACK RIVER PUMP STN	\$24,838.94
FL8047	TUKWILA PUMP STN	\$31,451.30
FL8050	AUBURN CONTAINMENT	\$1,019,694.94
FL8051	TUKWILA CONTAINMENT	\$1,286,064.48
FL8052	RENTON CONTAINMENT	\$92,836.19
FL8053	CONTAINMENT COORDINATION	\$26,581.56
FL8055	PORTER BR LEVEE FLD PREP	\$231,233.00
FL8056	GRN R LEVEE TREE REMOVAL	\$136,953.12
FL8057	VALENTINE ADVNCE MEASURES	\$228,049.52
FL8000 Total		\$5,237,918.48

FL9000 - White River

FL9001	COUNTYLINE TO A STREET	\$203,264.40
FL9003	WHITE R FLD REPR STUCK DR	\$4,559.75
FL9004	WHITE-GREENWATER ACQ	\$6,893.86
FL9007	PACIFIC ACQ & STBACK BERM	\$1,305,399.75
FL9000 Total		\$1,520,117.76

FLM000 Flood CIP Monitoring/Maintenance

FLM000	FLOOD CIP MON/MAINT	\$368.81
MM1007	MASON THORSON ELLS	\$1,576.09
MM1008	MASON THORSON EXTENSION	\$1,907.35
MM1014	RIVERBEND	\$1,469.95
MM2001	ALDAIR BUYOUT	\$1,783.37
MM2006	MCELHOE PEARSON	\$1,284.28
MM2007	ALDAIR	\$5,210.44
MM4001	ALPINE MANOR MOB PRK ACQ	\$13.10
MM4006	PRESTON FL CTY LOW RVTMNT	\$276.29
MM4008	RAGING BR TO MOUTH RIGHT	\$1,146.50
MM7001	CEDAR GROVE MOBILE ACQ	\$2,557.93
MM7002	CEDAR RAPIDS LEVEE SETBCK	\$22,391.21
MM7004	CEDAR R REP LOSS MITIGATN	\$10,636.53
MM7005	ELLIOTT BR LEVEE SETBACK	\$7,178.65
MM8007	DYKSTRA REVETMENT	\$1,392.51
MM8009	GALLI'S SECTION	\$4,030.89
MM9006	STUCK RIVER DRIVE	\$5,694.44
FLM000 Total		\$68,918.34

FLS000 - Subregional Opportunity Fund

FLS004	BELLEVUE SUBRGNL OP	\$605,318.00
FLS008	CARNATION SUBRGNL OP	\$920.69
FLS009	CLYDE HILL SUBRGNL OP	\$3,640.00
FLS010	COVINGTON SUBRGNL OP	\$4,145.80
FLS014	FEDERAL WAY SUBRGNL OP	\$181,962.00
FLS026	NEWCASTLE SUBRGNL OP	\$43,755.00
FLS032	SAMMAMISH SUBRGNL OP	\$189,343.00
FLS033	SEATAC SUBRGNL OP	\$89,120.00
FLS040	YARROW POINT SUBRGNL OP	\$17,403.00
FLS000 Total		\$1,135,607.49

FLX000 - Countywide Projects

FLX012	HOLE ROCK STOCKPILE	(\$28.14)
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FLX000 Total		(\$28.14)

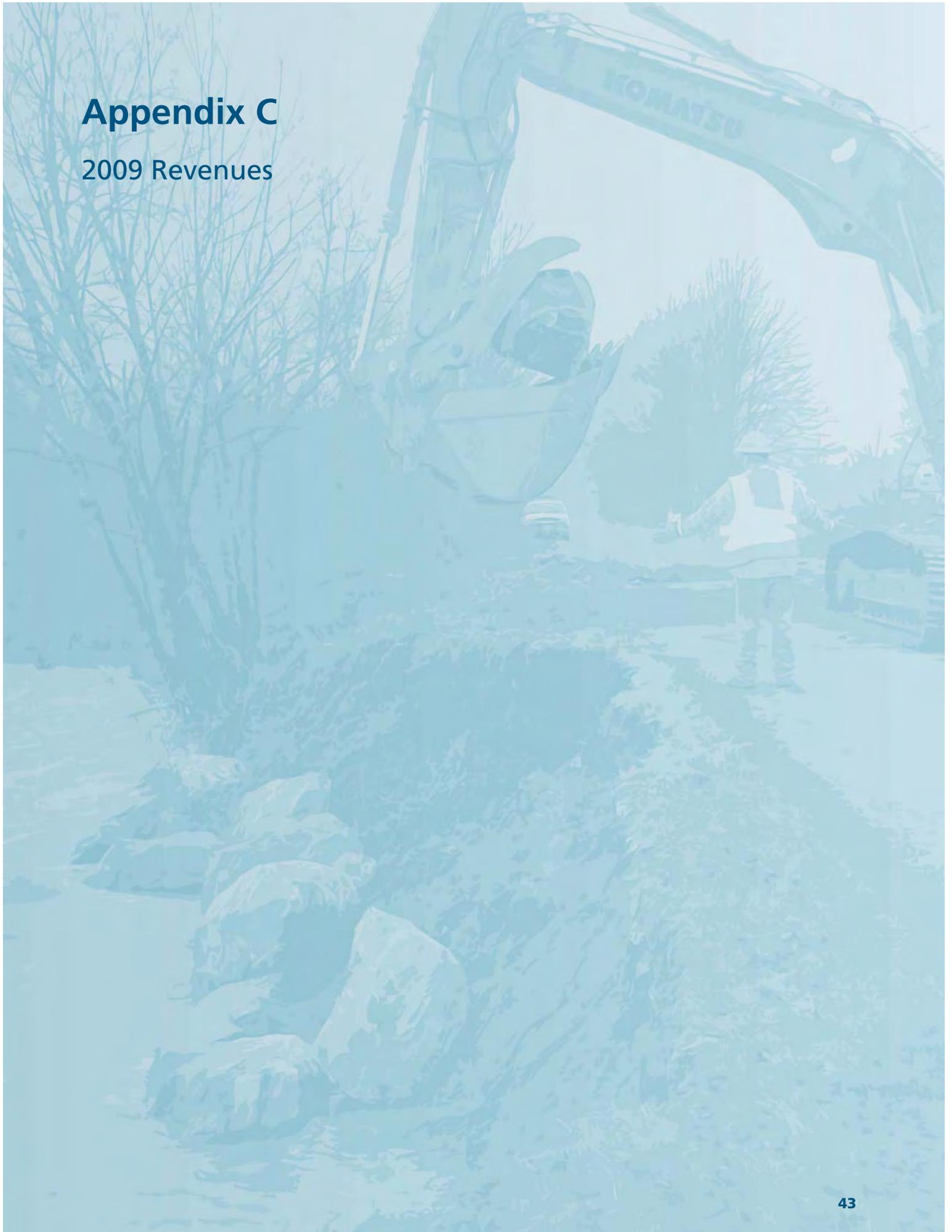
D15712	KC FLOOD CNTRL ZONE CONST	\$22,213.86
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Total Capital Expenditures: \$19,034,655.03

Grand Total All Expenditures \$24,917,097.50

Appendix C

2009 Revenues



2009 Revenues

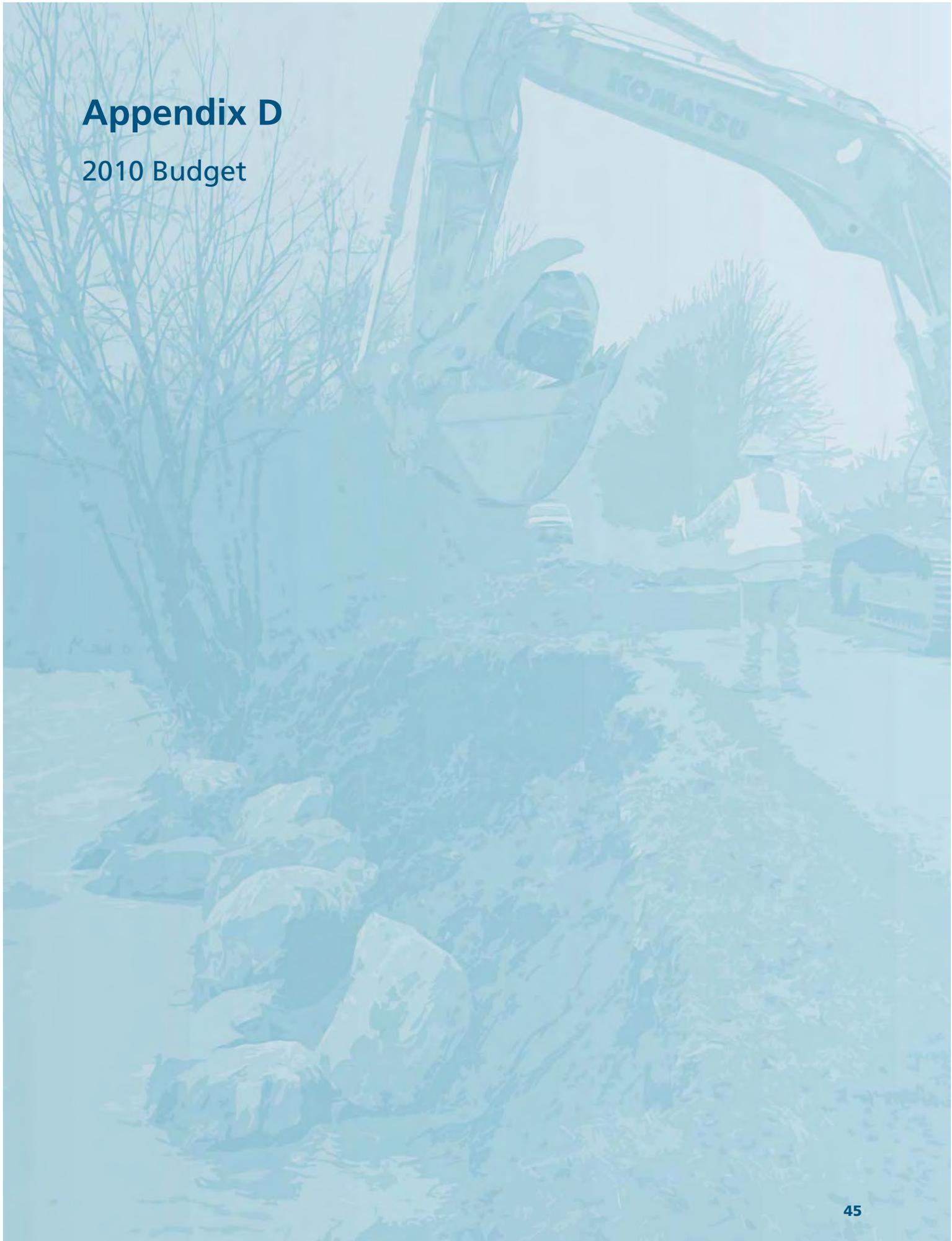
Flood District	
Flood District Levy	\$34,748,473
Interest Earnings	\$469,154
Fund Balance from GRFCZD ¹	\$18,598
Miscellaneous Revenue ²	\$235,304
King County	
Delinquent River Improvement Fund Levy ³	\$44,900
Inter-County River Improvement ⁴	\$60,943
Grants ⁵	\$1,754,006
Total Revenue	\$37,331,379

Notes

- 1) Remaining levy revenue from the now defunct Green River Flood Control Zone District
- 2) Primarily advalorem tax refunds, rental income from a King County owned mobile home park, leasehold excise tax, and state forest timbe sales.
- 3) Remaining collections from the old River Improvement Fund levy
- 4) Revenue arising from the ICRIF agreement between Pierce and King Counties.
- 5) Grants are primarily from FEMA, the King County Agricultural District, and the Washington State Recreation and Conservation Office.

Appendix D

2010 Budget



2010 Budget ¹

District Administration		
District Administration		\$463,500
Operating Budget		
Annual Maintenance, Facility Assessments		\$954,640
Flood Hazard Planning, Grants, Outreach		\$546,700
Flood Hazard Studies, Maps, Technical Services		\$1,577,639
Flood Preparation, Flood Warning Center, Post Flood Activities		\$343,229
Program Management, Supervision, Finance, Budget		\$2,064,383
Program Implementation		\$1,667,281
Total Operating Budget		\$7,153,872
Capital Budget		
FL0000 - SF Skykomish / Miller Rivers		
FL0001	Miller River Home Buyout	\$13,985
FL0002	Miller River Road Protection	\$103,953
FL0004	Timber Lane Village Home Buyouts	\$99,239
FL0005	S.F. Skykomish River Repetitive Loss Mitigation	\$457,290
FL0007	McKnight Repair	\$57,479
FL0000 Total		\$731,946
FL1000 - Upper Snoqualmie River		
FL1002	North Bend Area Residential Flood Mitigation	\$1,842,738
FL1003	South Fork Levee System Improvements	\$1,005,091
FL1005	Upper Snoqualmie River Flood Damage Repairs	\$31,779
FL1017	Kimball Creek and Snoqualmie Basin	\$230,098
FL1018	City of Snoqualmie Natural Area Acquisitions	\$236,928
FL1019	Middle Fork Levee System Capacity Improvements	\$1,001,213
FL1023	Upper Snoqualmie Residential Flood Mitigation	\$3,503,601
FL1024	Mason Thorson Ext Repair	\$36,375
FL1029	Vallcudra Repair	\$47,380
FL1030	Allen Repair	\$57,056
FL1000 Total		\$7,992,259

1) At time of publication the budget was still pending Board of Supervisors adoption on April 12th, 2010. The resulting actions will revise the capital and operating budgets to include carryover amounts from 2009.

FL2000 - Lower Snoqualmie River

FL2001	Aldair & Fall City Reach Flood Mitigation	\$2,301,916
FL2002	Lower Snoqualmie River Flood Damage Repairs	\$586,893
FL2012	McElhoe/Person Levee	\$310,386
FL2013	Tolt Pipeline Protection	\$153,597
FL2014	Lower Snoqualmie River Repetitive Loss Mitigation	\$1,539,296
FL2015	McElhoe-Pearson Repair	\$50,000
FL2018	Farm/Flood Task Force Implementation	\$96,883
FL2020	Lower Snoqualmie Resl Flood Mitigation	\$600,000

FL2000 Total \$5,638,971

FL3000 - Tolt River

FL3001	Tolt River Flood Damage Repairs	\$163,987
FL3002	Tolt River Supplemental Study	\$269,308
FL3005	San Souci Neighborhood Buyout	\$1,258,239
FL3009	Tolt River Mile 1.1 Levee Setback	\$1,407,004
	Tolt River Mouth to SR 203 Floodplain Reconnection	
FL3010	Project	\$8,587
FL3012	Frew Emergency Repair	\$2,072

FL3000 Total \$3,109,197

FL4000 - Raging River

	Alpine Manor Mobile Home Park Neighborhood	
FL4001	Buyout	\$1,458,290
FL4002	Raging River Flood Damage Repairs	\$1,726
FL4021	Preston-Fall City Upper Repair	\$402,002

FL4000 Total \$1,862,018

FL6000 - Issaquah Creek

FL6001	Issaquah Creek Streambank Stabilization	\$88,865
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FL6000 Total \$88,865

FL7000 - Cedar River

FL7001	Cedar Grove Mobile Home Park Acquisition	\$509,596
FL7002	Cedar Rapids Levee Setback	\$10,000
FL7003	Cedar River Flood Damage Repairs	\$813,548
FL7004	Cedar River Repetitive Loss Mitigation	\$879,063
FL7005	Elliott Bridge Levee Setback and Acquisition	\$528,010
	Rainbow Bend Levee Setback and Floodplain	
FL7006	Reconnection	\$1,210,391
FL7014	Dorre Don Meanders- Phase 1	\$242,209
FL7015	Herzman Levee Setback & Floodplain Reconnection	\$286,505
FL7016	Jan Road-Rutledge Johnson Levee Setbacks	\$267,896
FL7018	Cedar River Gravel Removal	\$352,791
FL7026	Belmondo Emergency Repair	\$1,649
FL7027	Cedar Rapids Repair	\$979,703
FL7034	Byers Curve Repair	\$30,000
FL7037	Rhode Levee Setback and Home Buyouts	\$242,998
FL7038	Herzman Repair	\$450,000
FL7040	Cedar Pre-Construction Strategic Acquisition	\$500,000
FL7043	Cedar River Trail 2B FEMA	\$200,000
FL7044	Belmondo Rvtmnt Repair FEMA PW1653	\$950,000
FL7000 Total		\$8,454,359

FL8000 - Green River

FL8011	Kent Shops-Narita	\$100,000
FL8027	Stoneway Lower Repair	\$506,429
FL8029	Horseshoe Bend Repair	\$60,000
FL8030	Ratolo Repair	\$25,000
FL8031	Gateway Lower/Codiga Repair	\$150,000
FL8037	Russell Rd Upper	\$164,000
FL8041	Horseshoe Bend Acquisition & Reconnection	\$1,004,894
FL8043	Dykstra Lowspot Repair	\$7,463
FL8045	Green Flood Emergency Preparation	\$5,307,126
FL8017	Briscoe Reach Design	\$2,984,000
FL8021	Reddington Reach Design	\$1,550,000
FL8058	Green Pre-Construction Acquisition	\$5,400,000
FL8059	Tukwila 205 - Lily Point Reimbursement	\$1,383,000
FL8038	PL84-99 Mitigation Site	\$2,500,000
FL8000 Total		\$21,141,912

FL9000 - White River

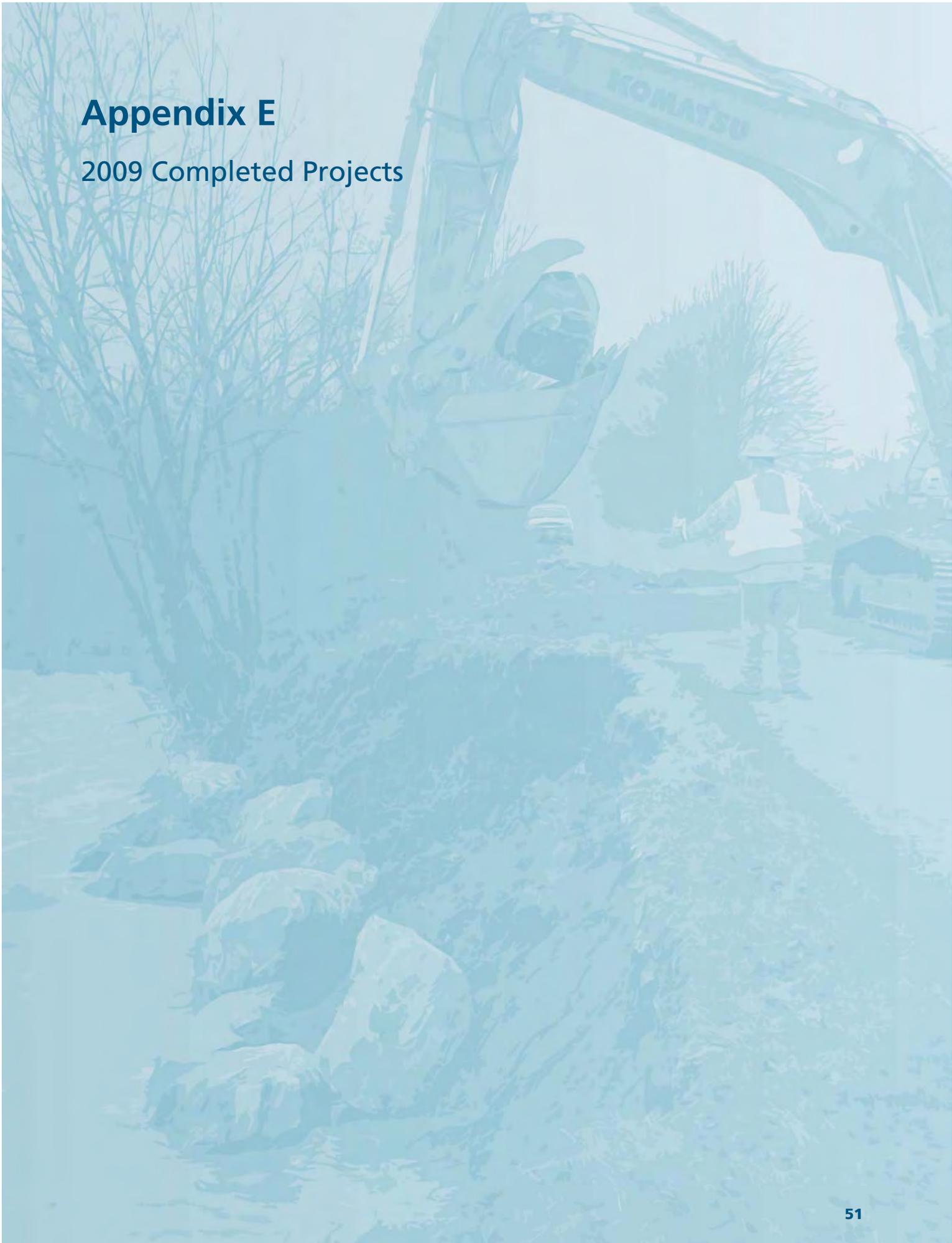
	County line to A-Street Flood Conveyance	
FL9001	Improvement	\$2,311,439
	White River Flood Damage Repair at Stuck River	
FL9003	Drive	\$1,438
FL9004	White-Greenwater Acquisition	\$801,721
FL9002	Red Creek Acquisitions	\$939
FL9007	Pacific Right Bank Acquisition and Setback Berm	\$2,210,866
FL9000 Total		\$5,326,403

FLC000 - Seattle Projects

FL8002	Alaskan Way Seawall Replacement Feasibility and Design	\$1,829,480
FLC000 Total		\$1,829,480
FLM000	Flood CIP Monitoring/Maintenance	\$410,407
FLS000	Subregional Opportunity Fund	\$9,238,661
FLX000 - Countywide Miscellaneous		
FLX200	Flood Emergency Contingency	\$250,000
FLX012	Stockpile Chargeback Projects	\$10,026
FLX000 Total		\$260,026
Capital Budget Total		\$66,084,504
2010 Budget Grand Total		\$73,701,876

Appendix E

2009 Completed Projects

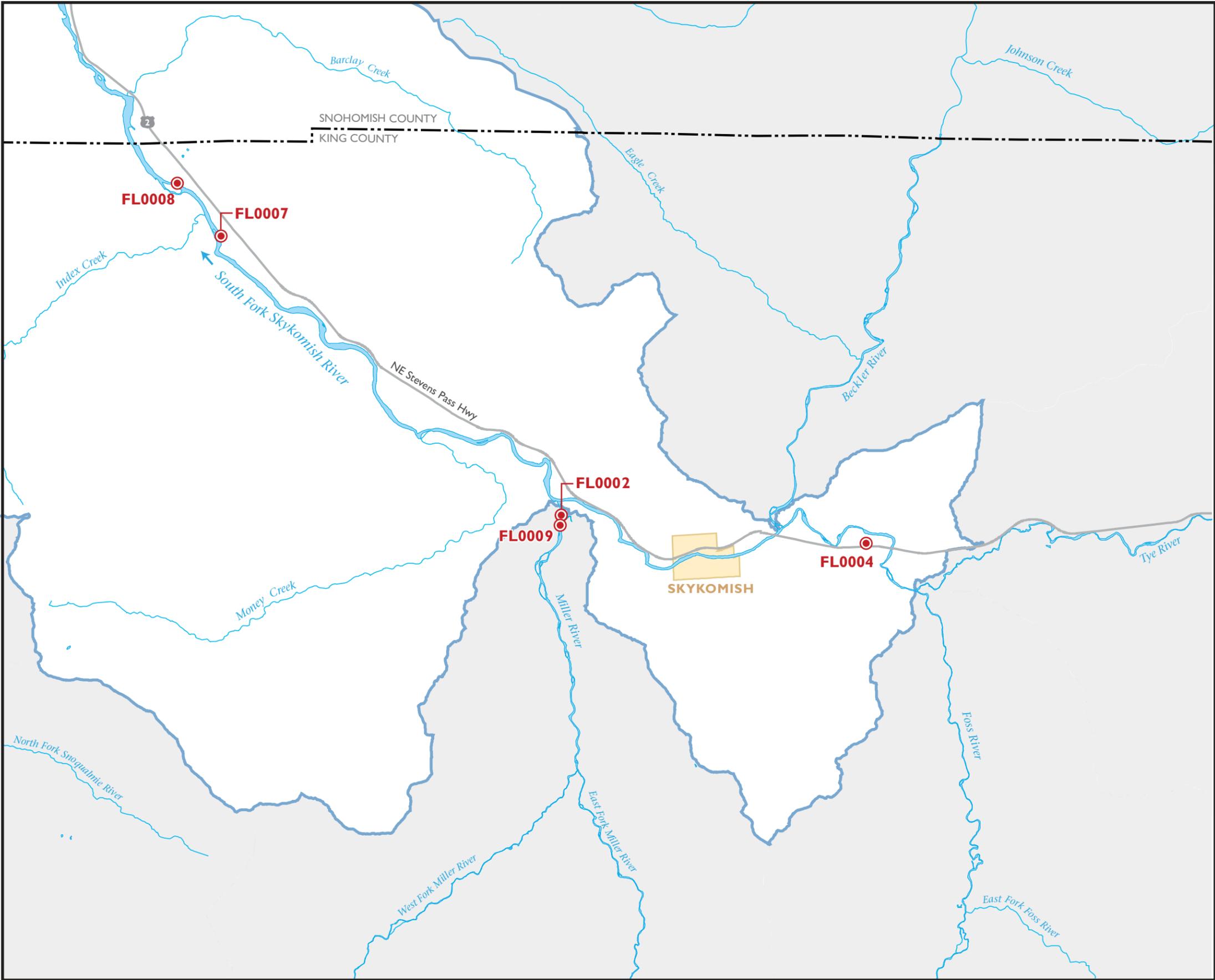


2009 Completed Projects

Item	Parent	Project	Name	River Basin
1	FL1000	FL1014	Riverbend Repair	Upper Snoqualmie
2	FL1000	FL1015	Si View Park	Upper Snoqualmie
3	FL1000	FL1024	Mason Thorson Ext Repair	Upper Snoqualmie
4	FL1000	FL1027	Mason Thorson Ells Repair	Upper Snoqualmie
5	FL3000	FL3003	Tolt River Road Shoulder Protection	Tolt
6	FL3000	FL3010	Tolt River Mouth to SR 203 Floodplain Reconnection Project	Tolt
7	FL3000	FL3011	Hwy to RR Bridge Emergency Repair	Tolt
8	FL3000	FL3012	Frew Emergency Repair	Tolt
9	FL4000	FL4017	Preston Fall-City Lowest Repair	Raging
10	FL4000	FL4018	Bridge to Bridge L Repair	Raging
11	FL4000	FL4019	Bridge to Bridge R Repair	Raging
12	FL4000	FL4020	Bridge to Mouth R 2009 Repair	Raging
13	FL7000	FL7026	Belmondo Emergency Repair	Cedar
14	FL7000	FL7028	Cedar River Trail 1 Repair	Cedar
15	FL7000	FL7029	Cedar River Trail 3 Repair	Cedar
16	FL7000	FL7030	Orchard Grove Repair	Cedar
17	FL7000	FL7031	Petorak-Wadhams Repair	Cedar
18	FL7000	FL7032	Rhode Levee Repair	Cedar
19	FL7000	FL7033	Jan Road Repair	Cedar
20	FL7000	FL7035	Rainbow Bend Repair	Cedar
21	FL7000	FL7036	Lower Dorre Don Repair	Cedar
22	FL7000	FL7041	CRT at Orchard Grove	Cedar
23	FL8000	FL8026	42nd Ave South Emergency Repair	Green
24	FL8000	FL8027	Stoneway Lower Emergency Repair	Green
25	FL8000	FL8029	Horseshoe Bend Repair	Green
26	FL8000	FL8043	Dykstra Low Spot Repair	Green

SOUTH FORK SKYKOMISH RIVER

2009 FLOOD CONTROL DISTRICT PROJECTS



- **FL0001** New Flood Control District Project and Number
- **FL0001** Mutli-year Flood Control District Project and Number
- River
- Road
- Watershed Boundary
- County Boundary
- Waterbody
- Incorporated Area

Notes:
 1. Overlapping points have been slightly offset for greater clarity.
 2. Only larger water bodies are shown.
 3. The information included on this map has been compiled from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

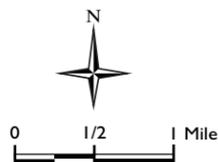
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Produced by: King County Department of Natural Resources and Parks, GIS and Visual Communications & Web Unit

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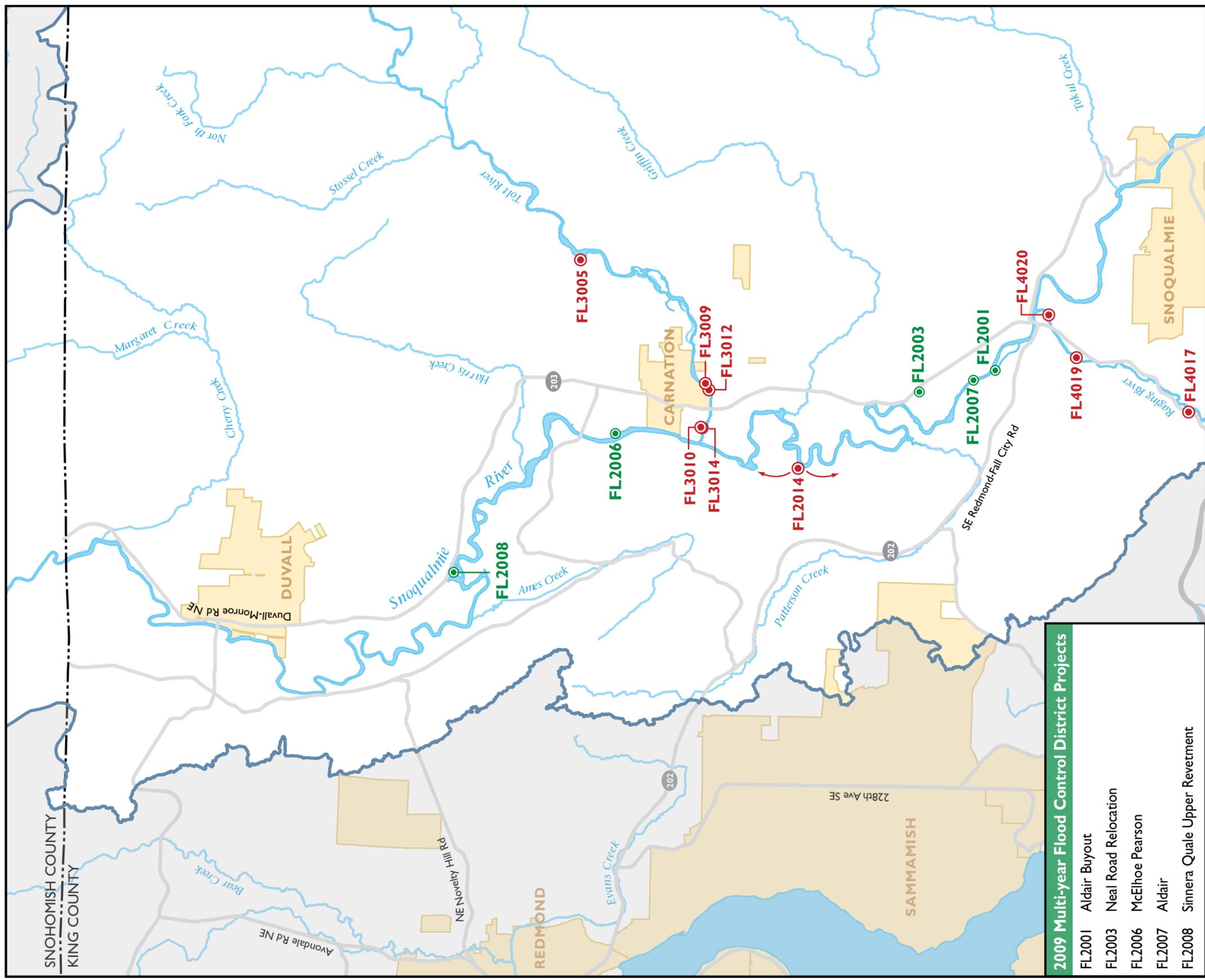


King County
 Department of Natural Resources and Parks
Water and Land Resources Division



March 2010

2009 New Flood Control District Projects	
FL0002	Miller River Road Protection
FL0004	Timber Lane Village Home Buyouts
FL0007	McKnight Repair
FL0008	NE 196th and 635th NE Repair
FL0009	Miller River Curve



2009 Multi-year Flood Control District Projects	
FL2001	Aldair Buyout
FL2003	Neal Road Relocation
FL2006	McElhoo Pearson
FL2007	Aldair
FL2008	Sinnerra Quale Upper Revetment

LOWER SNOQUALMIE RIVER

2009 FLOOD CONTROL DISTRICT PROJECTS

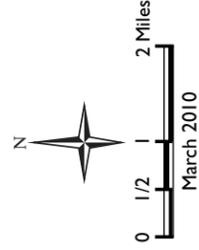
- **FL0001** New Flood Control District Project and Number
- **FL0001** Multi-year Flood Control District Project and Number
- River
- Road
- Watershed Boundary
- County Boundary
- Waterbody
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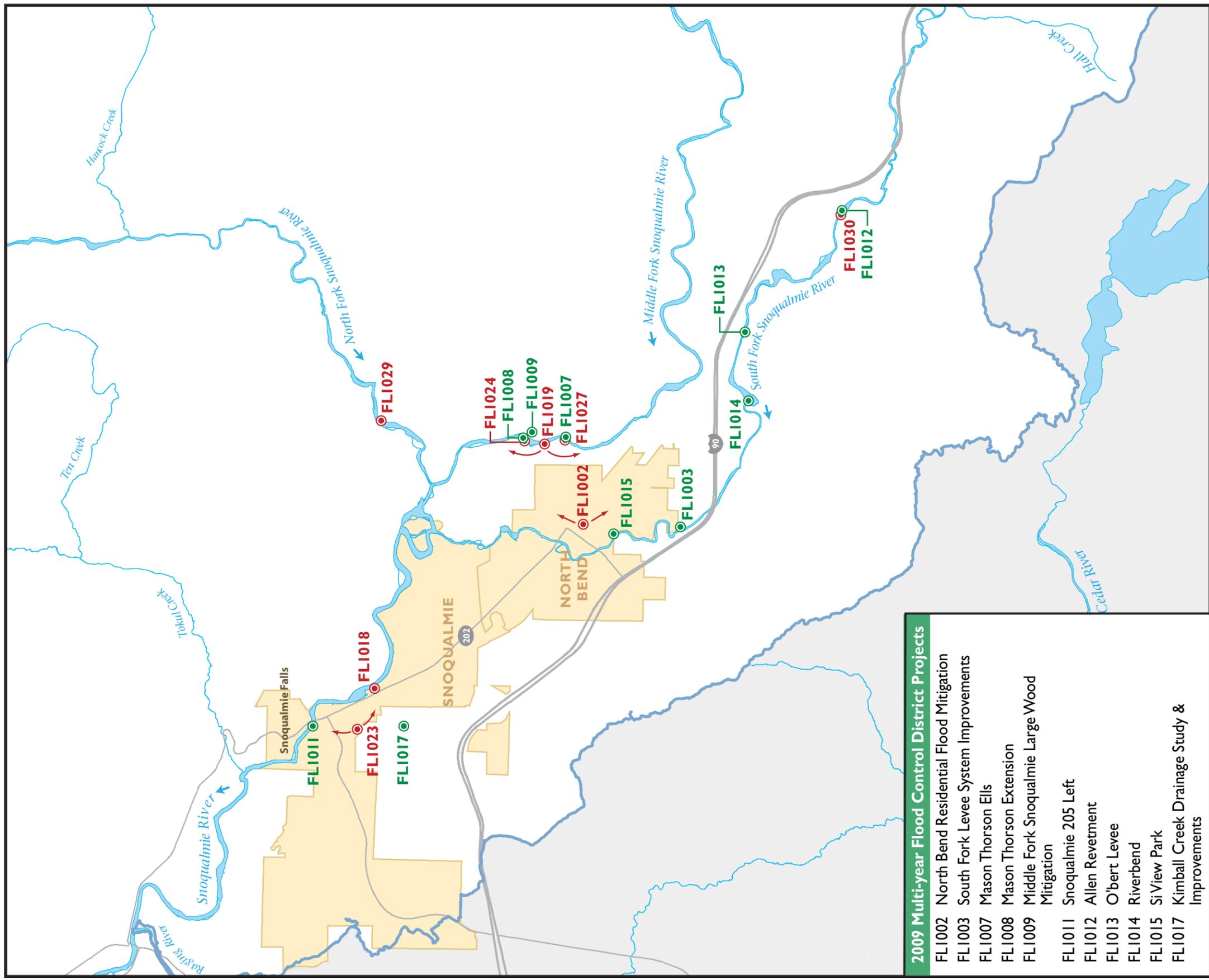
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King County datasets.

Produced by:
DNRP GIS, Visual Communications and Web Unit

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2009 New Flood Control District Projects	
FL2014	Lower Snoqualmie River Repetitive Loss Mitigation
FL3005	San Souci Neighborhood Buyout
FL3009	Tolt River Mile 1.1 Levee Setback
FL3010	Tolt River Mouth to SR 203 Floodplain Reconnection Project
FL3012	Frew Emergency Repair
FL4017	Preston Fall-City Lowest Repair
FL4019	Bridge to Bridge R Repair
FL4020	Bridge to Mouth R 2009 Repair



UPPER SNOQUALMIE RIVER
2009 FLOOD CONTROL DISTRICT PROJECTS

FL0001 New Flood Control District Project and Number

FL0001 Multi-year Flood Control District Project and Number

River

Road

Watershed Boundary

County Boundary

Waterbody

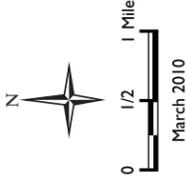
Incorporated Area

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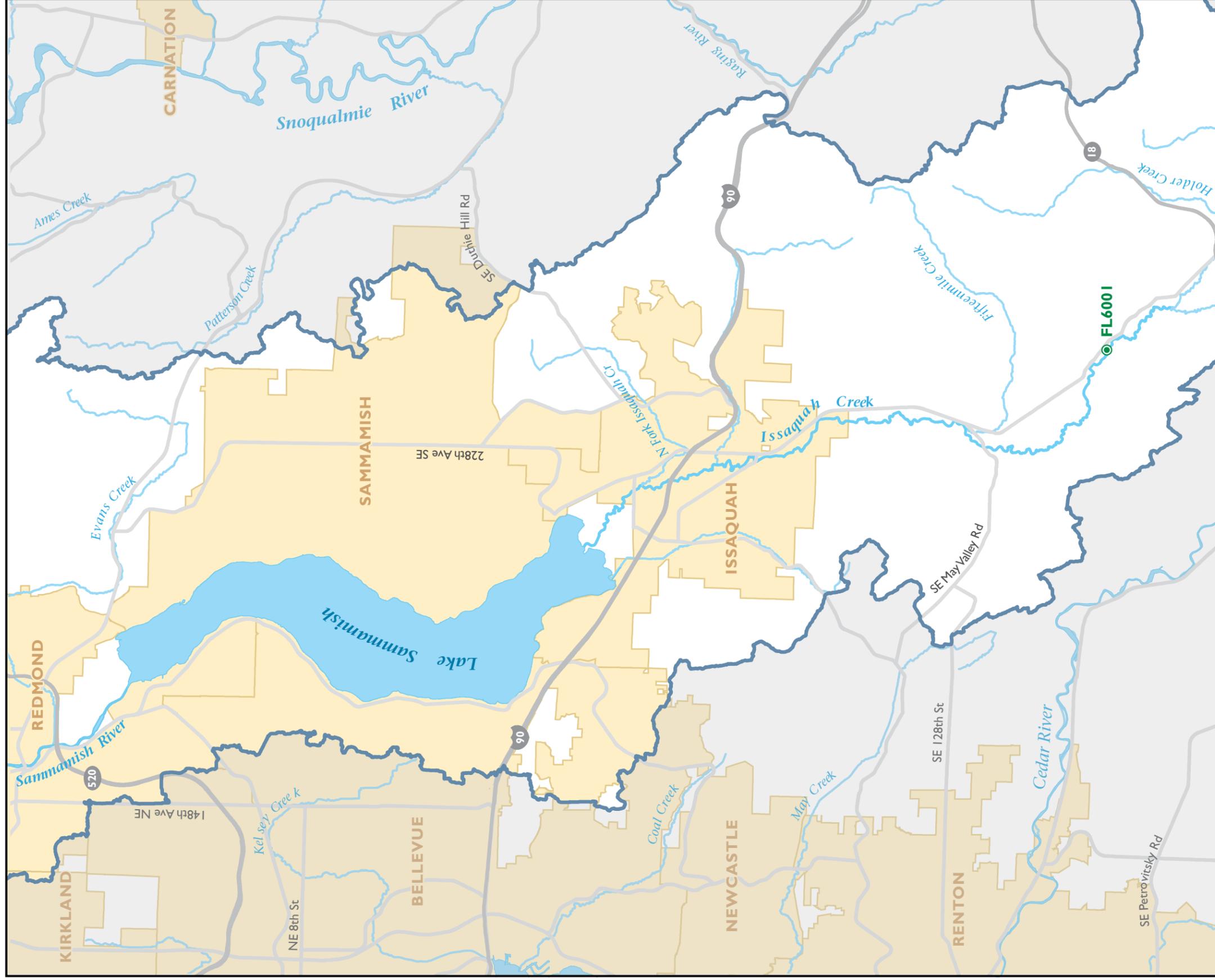
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Produced by:
 King County Department of Natural Resources and Parks, GIS and Visual Communications & Web Unit

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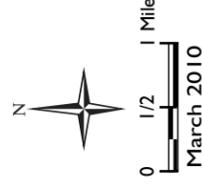
2009 New Flood Control District Projects	
FLI018	City of Snoqualmie Natural Area Acquisitions
FLI019	Middle Fork Levee System Capacity Improvements
FLI023	Upper Snoqualmie Residential Flood Mitigation
FLI024	Mason Thorson Ext Repair
FLI027	Mason Thorson Ells Repair
FLI029	Vallcoda Repair
FLI030	Allen Repair



SAMMAMISH RIVER

2009 FLOOD CONTROL DISTRICT PROJECTS

-  **FL000 I** New Flood Control District Project and Number
-  **FL000 I** Multi-year Flood Control District Project and Number
-  River
-  Road
-  Watershed Boundary
-  County Boundary
-  Waterbody
-  Incorporated Area



Notes:

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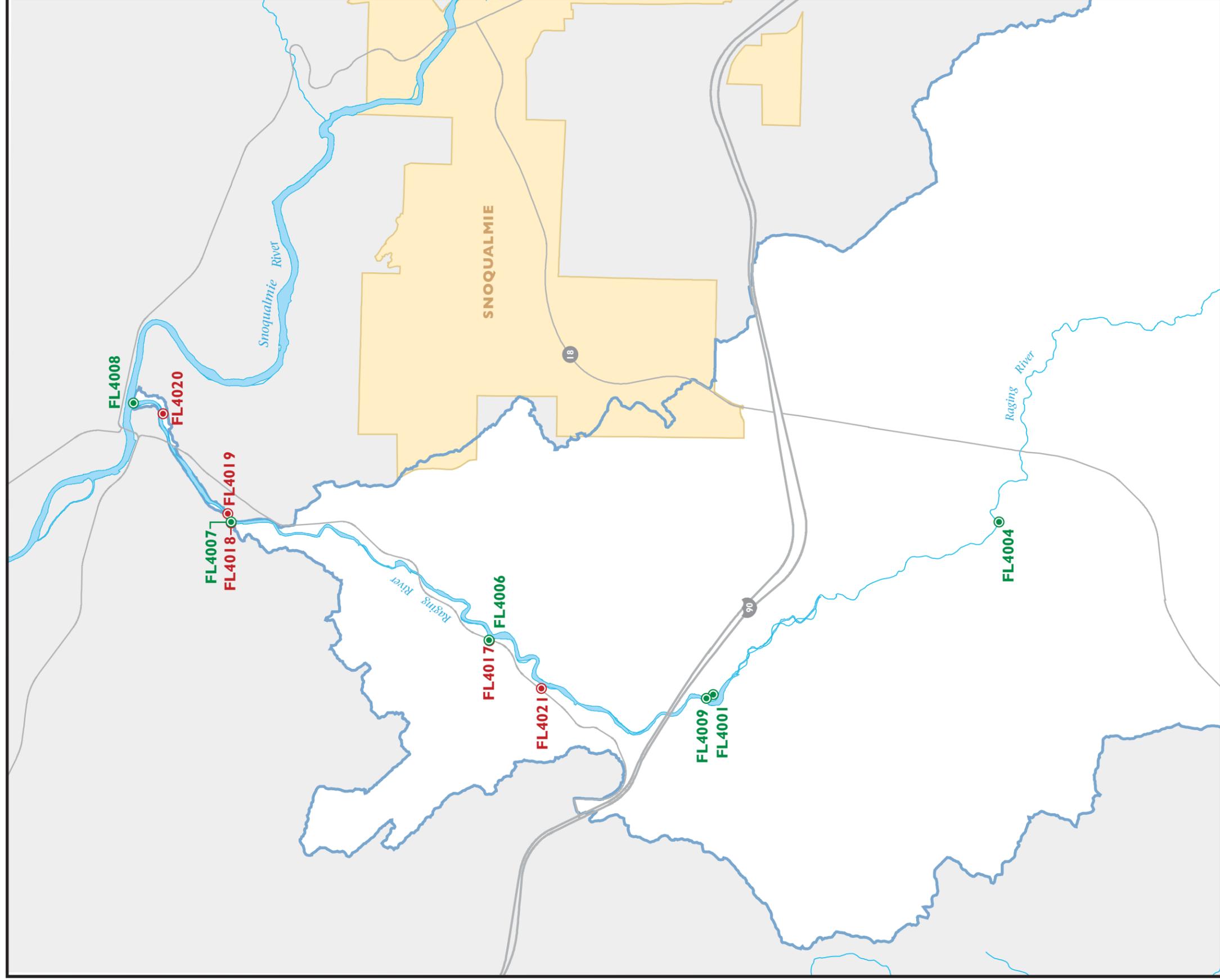
Data Sources:
King County datasets.

Produced by:
DNRP GIS, Visual Communications and Web Unit

File Name:
1003_FCDproj\SAM\M09.ai wgb

2009 Multi-year Flood Control District Projects

FL600 I Issaquah Creek Streambank Stabilization



RAGING RIVER

2009 FLOOD CONTROL DISTRICT PROJECTS

- **FL0001** New Flood Control District Project and Number
- **FL0001** Multi-year Flood Control District Project and Number
- River
- Road
- Watershed Boundary
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Data Sources: King County datasets.

Produced By: King County Department of Natural Resources and Parks, GIS and Visual Communications & Web Unit

File Name: 1003_FCDproj5RAGING09.ai vgab

King County
 Department of
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Water and Land Resources
 Division

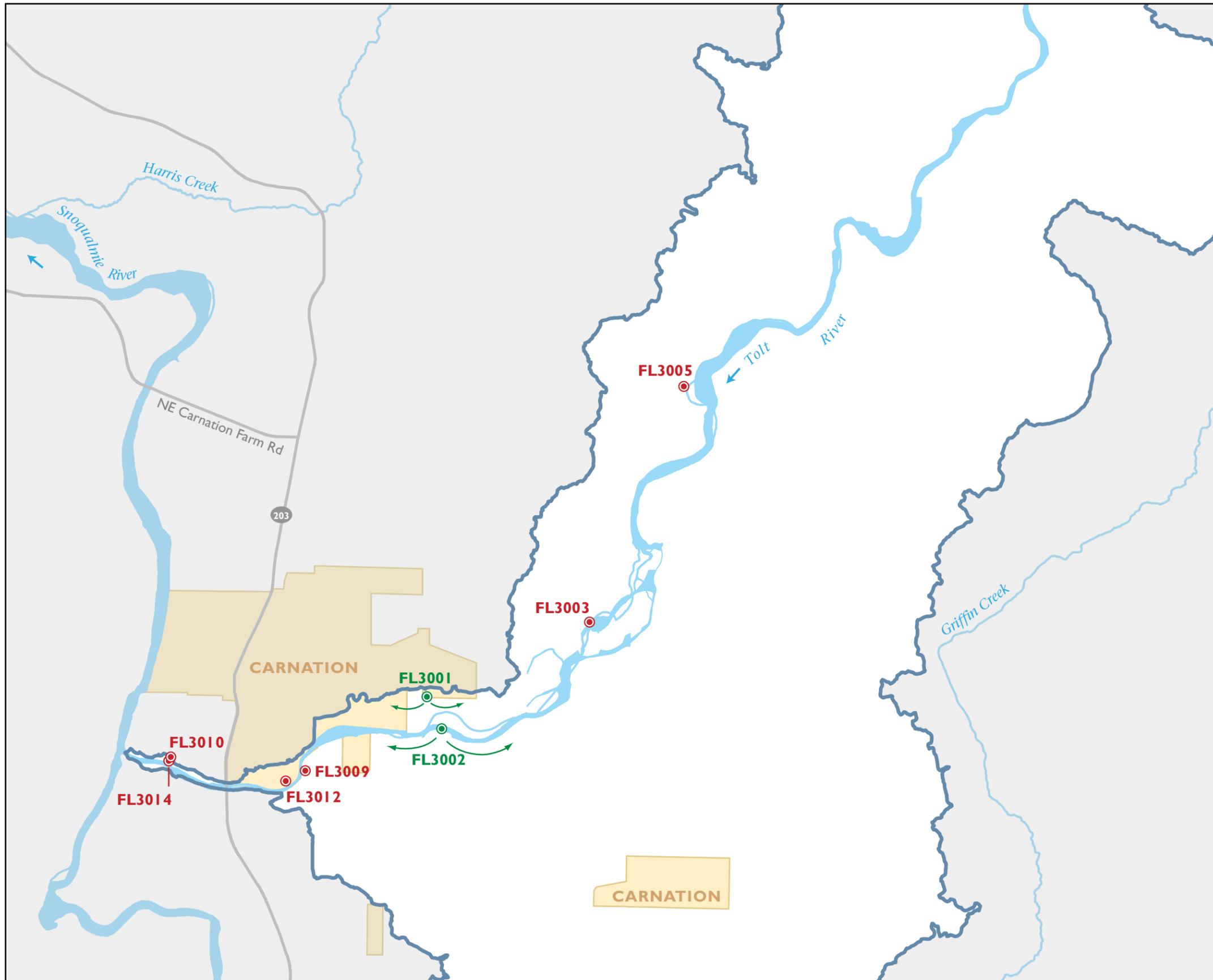
March 2010

2009 New Flood Control District Projects

- FL4017 Preston Fall-City Lowest Repair
- FL4018 Bridge to Bridge L Repair
- FL4019 Bridge to Bridge R Repair
- FL4020 Bridge to Mouth R 2009 Repair
- FL4021 Preston-Fall City Upper Repair

2009 Multi-year Flood Control District Projects

- FL4001 Alpine Manor Mobile Home Park Neighborhood Buyout
- FL4004 Arruda Revetment
- FL4006 Preston Fall City Lowest Revetment
- FL4007 Raging Bridge to Bridge Left
- FL4008 Raging Bridge to Mouth Right
- FL4009 Waring Revetment



TOLT RIVER

2009 FLOOD CONTROL DISTRICT PROJECTS

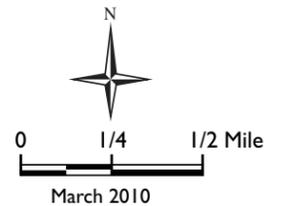
- **FL0001** New Flood Control District Project and Number
- **FL0001** Multi-year Flood Control District Project and Number
- River
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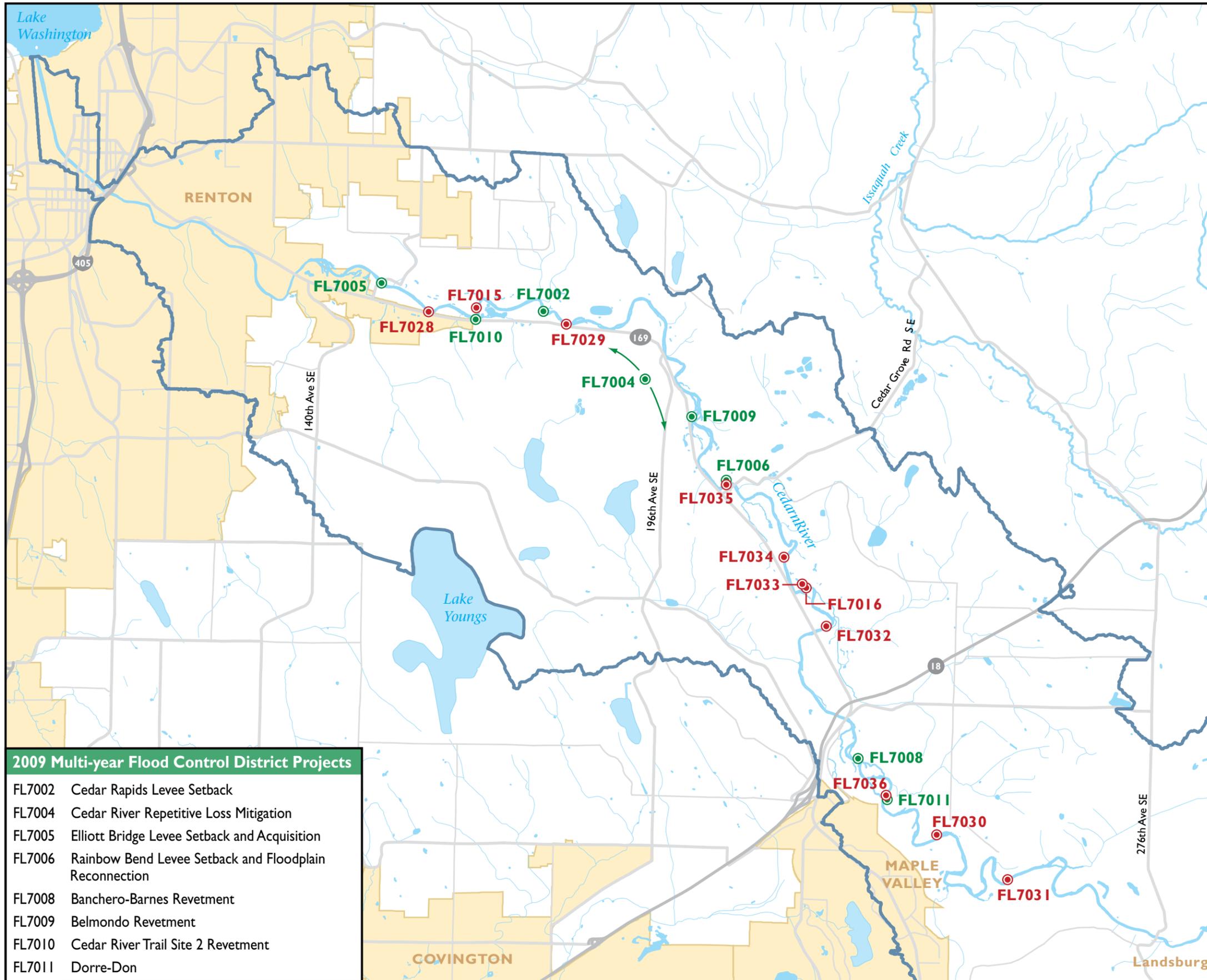
Data Sources:

King County datasets
 File: 1003_FCDproj6TOLT09.ai wgab
 Produced by: DNRP GIS, Visual Communications & Web Unit.



2009 New Flood Control District Projects	
FL3003	Tolt River Road Shoulder Protection
FL3005	San Souci Neighborhood Buyout
FL3009	Tolt River Mile 1.1 Levee Setback
FL3010	Tolt River Mouth to SR 203 Floodplain Reconnection Project
FL3012	Frew Emergency Repair
FL3014	Tolt River Levee Right Repair

2009 Multi-year Flood Control District Projects	
FL3001	Tolt River Flood Damage Repairs
FL3002	Tolt River Supplemental Study



2009 Multi-year Flood Control District Projects	
FL7002	Cedar Rapids Levee Setback
FL7004	Cedar River Repetitive Loss Mitigation
FL7005	Elliott Bridge Levee Setback and Acquisition
FL7006	Rainbow Bend Levee Setback and Floodplain Reconnection
FL7008	Banchero-Barnes Revetment
FL7009	Belmondo Revetment
FL7010	Cedar River Trail Site 2 Revetment
FL7011	Dorre-Don

CEDAR RIVER 2009 FLOOD CONTROL DISTRICT PROJECTS

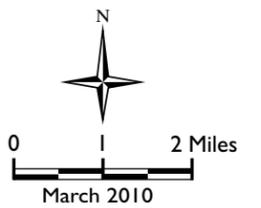
- **FL0001** New Flood Control District Project and Number
- **FL0001** Multi-year Flood Control District Project and Number
- River
- Road
- Watershed Boundary
- County Boundary
- Waterbody
- Incorporated Area

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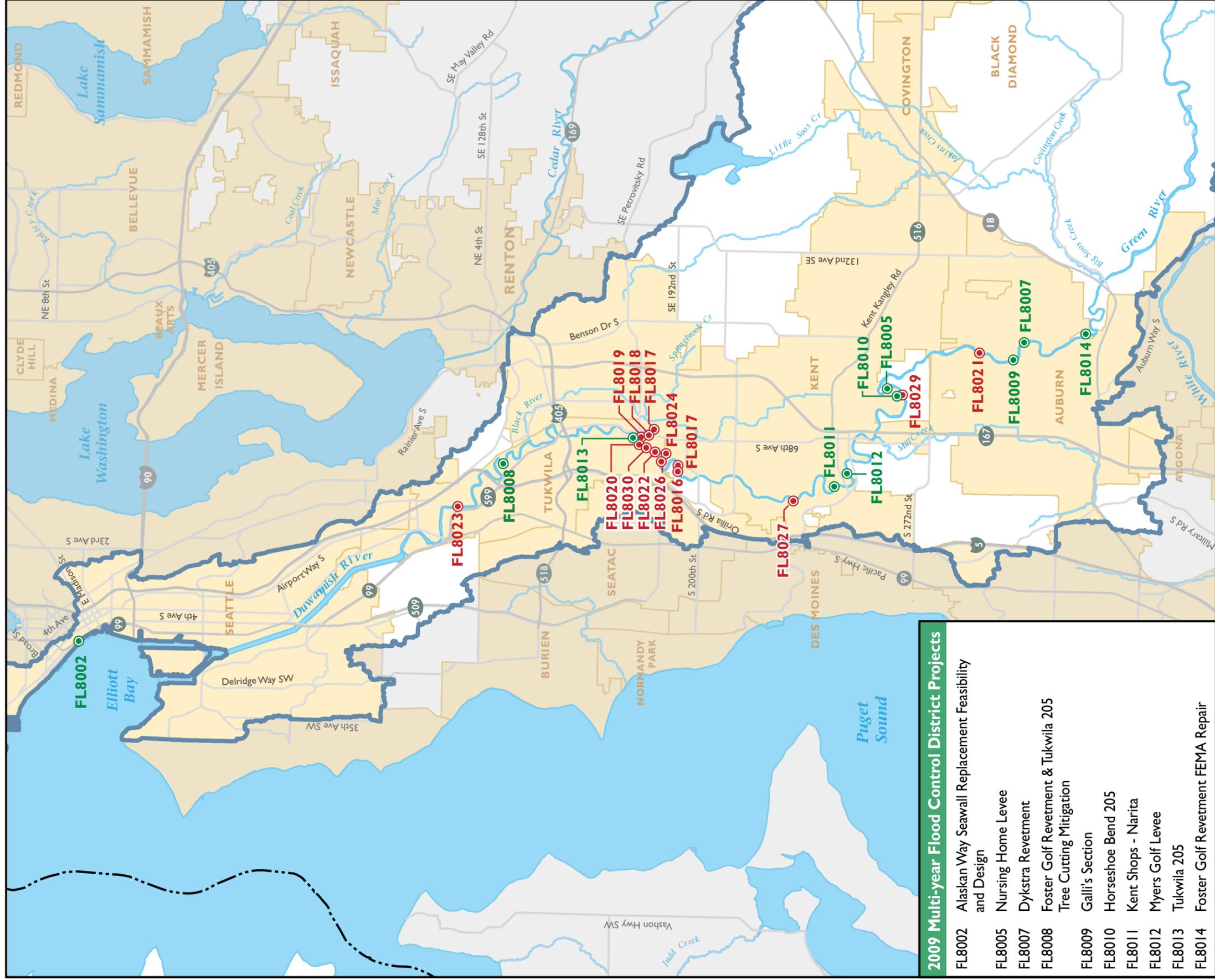
Data Sources:
 King County datasets.

File Name: I003_FCDproj7CEDAR09.ai wgab

King County
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2009 New Flood Control District Projects	
FL7015	Herzman Levee Setback & Floodplain Reconnection
FL7016	Jan Road-Rutledge Johnson Levee Setbacks
FL7028	Cedar River Trail 1 Repair
FL7029	Cedar River Trail 3 Repair
FL7030	Orchard Grove Repair
FL7031	Petorak-Wadhams Repair
FL7032	Rhode Levee Repair
FL7033	Jan Road Repair
FL7034	Byers Curve Repair
FL7035	Rainbow Bend Repair
FL7036	Lower Dorre Don Repair



2009 Multi-year Flood Control District Projects

- FL8002 Alaskan Way Seawall Replacement Feasibility and Design
- FL8005 Nursing Home Levee
- FL8007 Dykstra Revetment
- FL8008 Foster Golf Revetment & Tukwila 205 Tree Cutting Mitigation
- FL8009 Galli's Section
- FL8010 Horseshoe Bend 205
- FL8011 Kent Shops - Narita
- FL8012 Myers Golf Levee
- FL8013 Tukwila 205
- FL8014 Foster Golf Revetment FEMA Repair

2009 New Flood Control District Projects

- FL8016 Briscoe Levee #1-#3, #5-#8
- FL8017 Briscoe Reach Design
- FL8017 Desimone Levee #1
- FL8018 Desimone Levee #2
- FL8019 Desimone Levee #3
- FL8020 Desimone Levee #4
- FL8021 Reddington Reach Design
- FL8021 Riverside Estates/Reddington
- FL8022 Segale Levee #2 & #3
- FL8023 42nd Ave South Repair
- FL8024 South Park - Duwamish Backwater Inundation at 4th and Trenton Storm Drain
- FL8026 Segale Levee #4
- FL8027 Stoneway Lower Repair
- FL8029 Horseshoe Bend Repair
- FL8030 Ratolo Repair

GREEN RIVER

2009 FLOOD CONTROL DISTRICT PROJECTS

- **FL0001** New Flood Control District Project and Number
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- Watershed Boundary
- County Boundary
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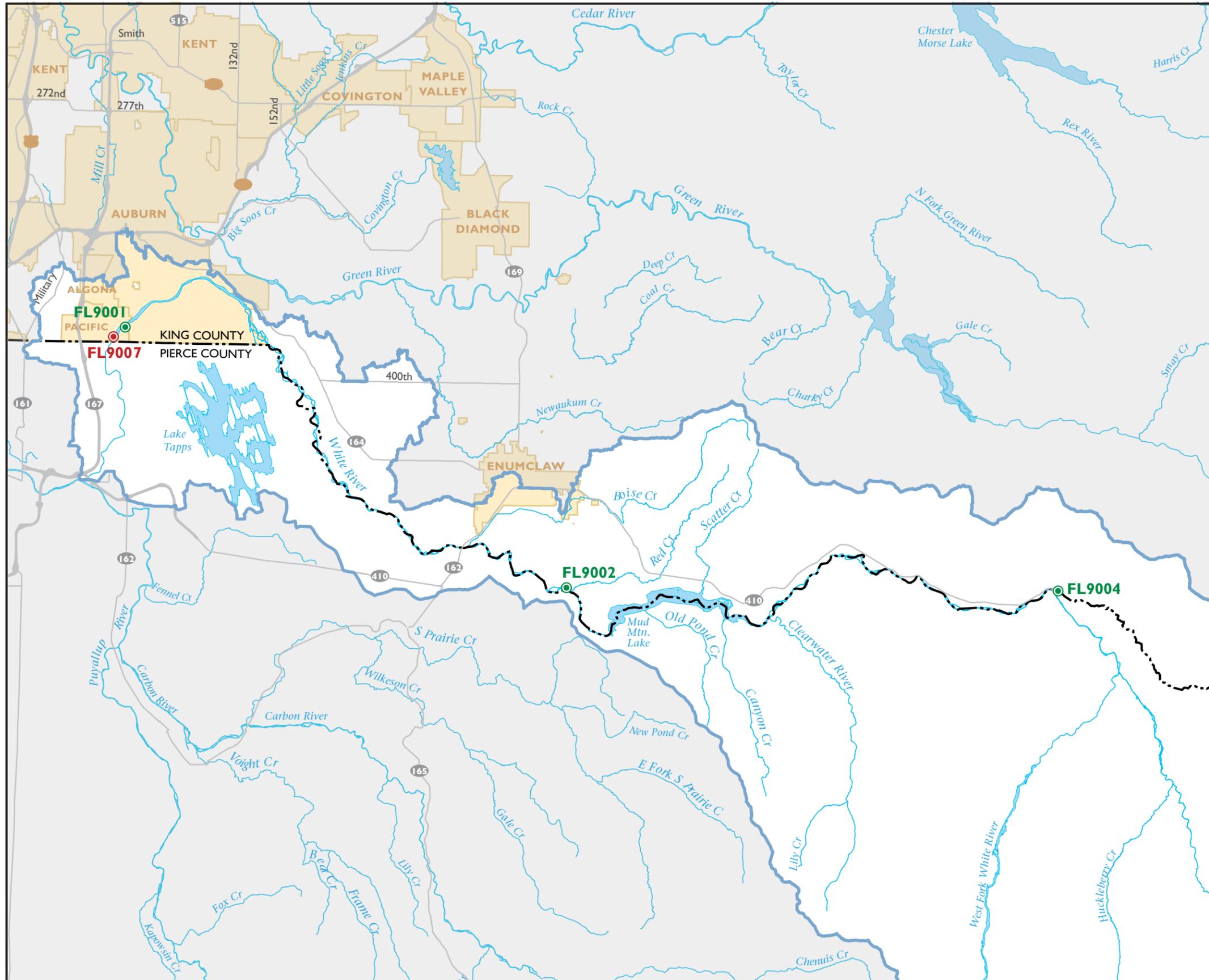
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File Name:
 1003_FCDprojGREEN09.ai wgab

March 2010
King County
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Water and Land Resources
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2009 New Flood Control District Projects

- FL8016 Briscoe Levee #1-#3, #5-#8
- FL8017 Briscoe Reach Design
- FL8017 Desimone Levee #1
- FL8018 Desimone Levee #2
- FL8019 Desimone Levee #3
- FL8020 Desimone Levee #4
- FL8021 Reddington Reach Design
- FL8021 Riverside Estates/Reddington
- FL8022 Segale Levee #2 & #3
- FL8023 42nd Ave South Repair
- FL8024 South Park - Duwamish Backwater Inundation at 4th and Trenton Storm Drain
- FL8026 Segale Levee #4
- FL8027 Stoneway Lower Repair
- FL8029 Horseshoe Bend Repair
- FL8030 Ratolo Repair



WHITE RIVER

2009 FLOOD CONTROL DISTRICT PROJECTS

- **FL0001** New Flood Control District Project and Number
- **FL0001** Multi-year Flood Control District Project and Number
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Data Sources:
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King County
Department of Natural Resources and Parks
Water and Land Resources Division



2009 New Flood Control District Projects

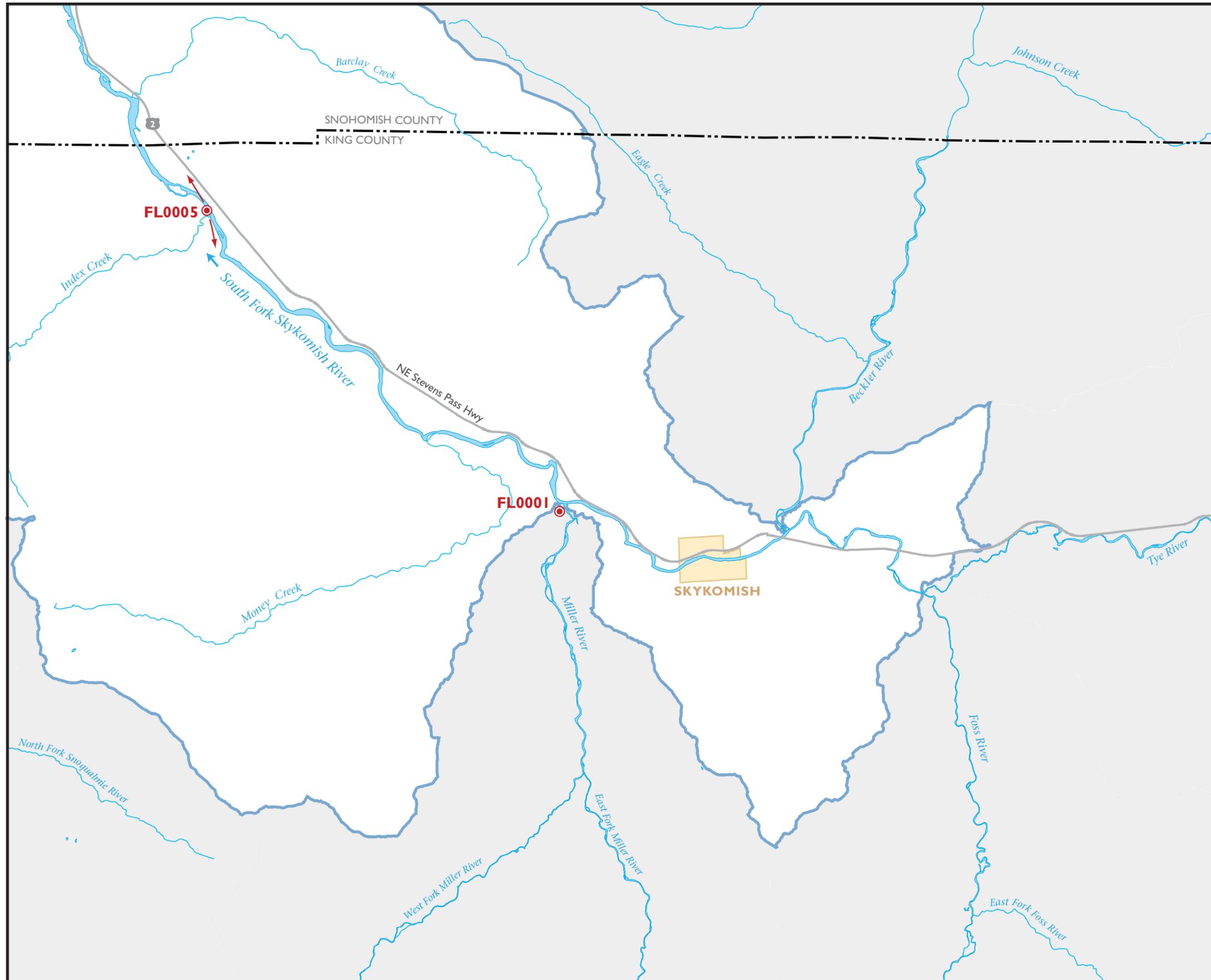
FL9007 Pacific Right Bank Acquisition and Setback Berm

2009 Multi-year Flood Control District Projects

FL9001 Countyline to A-Street Flood Conveyance Improvement

FL9002 Red Creek Acquisitions

FL9004 White-Greenwater Acquisition



SOUTH FORK SKYKOMISH RIVER

2010 FLOOD CONTROL DISTRICT PROJECTS

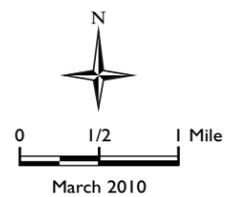
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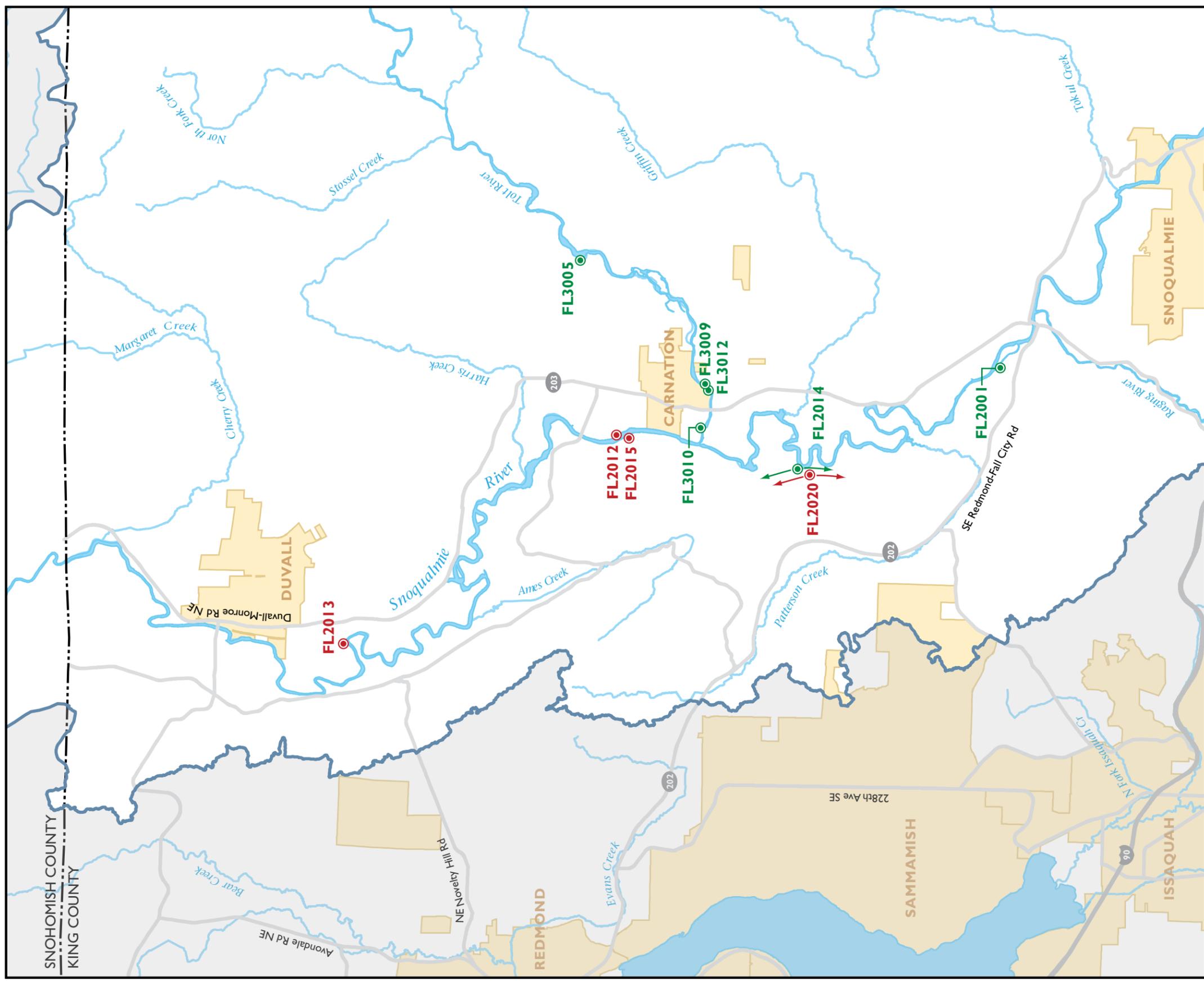
Data Sources:
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File Name: I003FCDproj\SKY10.ai wgab



2010 New Flood Control District Projects	
FL0001	Miller River Home Buyout
FL0005	S.F. Skykomish River Repetitive Loss Mitigation



LOWER SNOQUALMIE RIVER

2010 FLOOD CONTROL DISTRICT PROJECTS

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Data Sources:
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File Name:
I003_FCDproj2SNOQL010.ai wgab



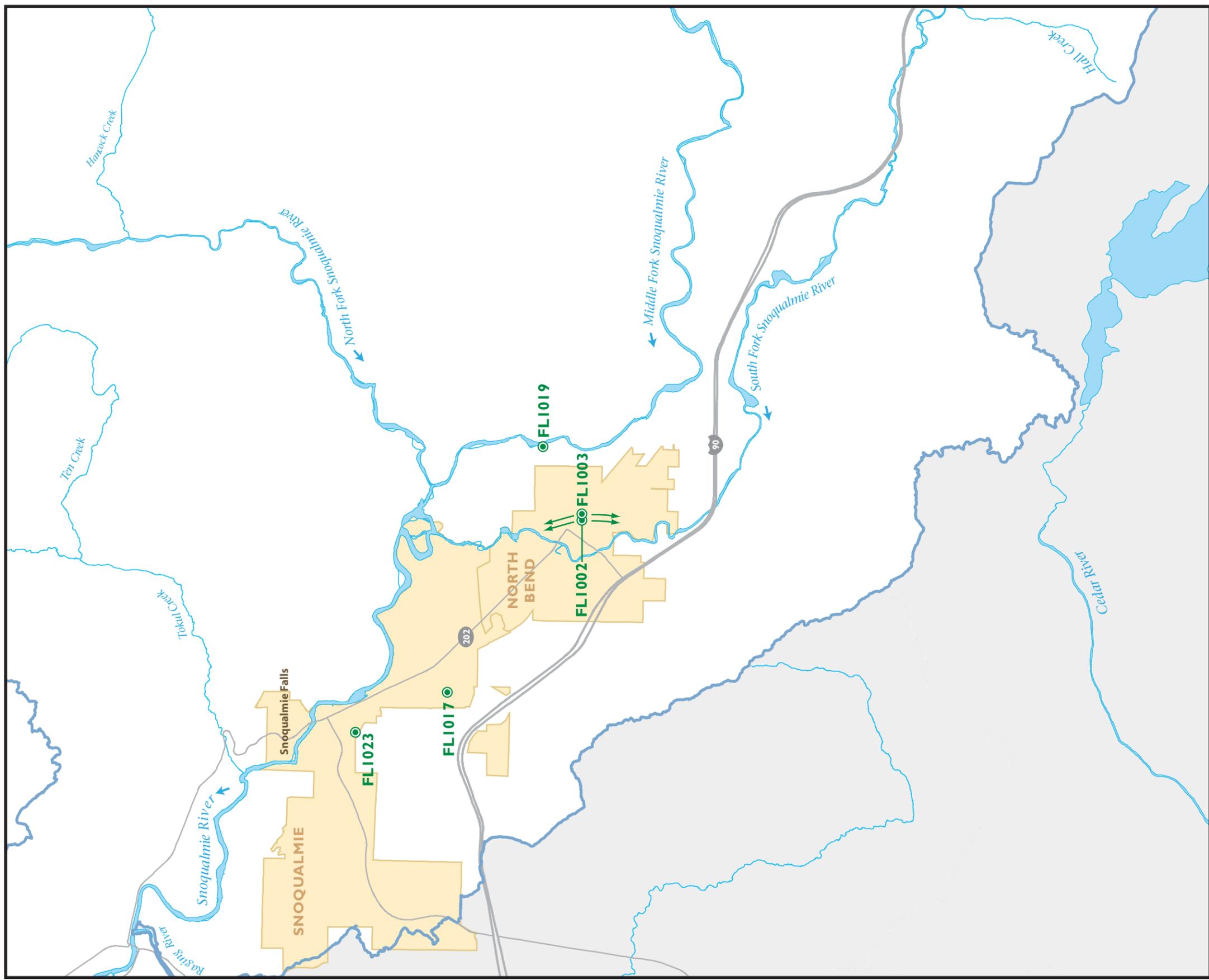
March 2010

2010 New Flood Control District Projects

- FL2012 McElhoe/Person Levee
- FL2013 Tolt Pipeline Protection
- FL2015 McElhoe-Pearson Repair
- FL2020 Lower Snoqualmie Residential Flood Mitigation

2010 Multi-year Flood Control District Projects

- FL2001 Aldair & Fall City Reach Mitigation
- FL2014 Lower Snoqualmie River Repetitive Loss Mitigation
- FL3005 San Souci Neighborhood Buyout
- FL3009 Tolt River Mile 1.1 Levee Setback
- FL3010 Tolt River Mouth To Sr 203 Floodplain Reconnection Project



UPPER SNOQUALMIE RIVER 2010 FLOOD CONTROL DISTRICT PROJECTS

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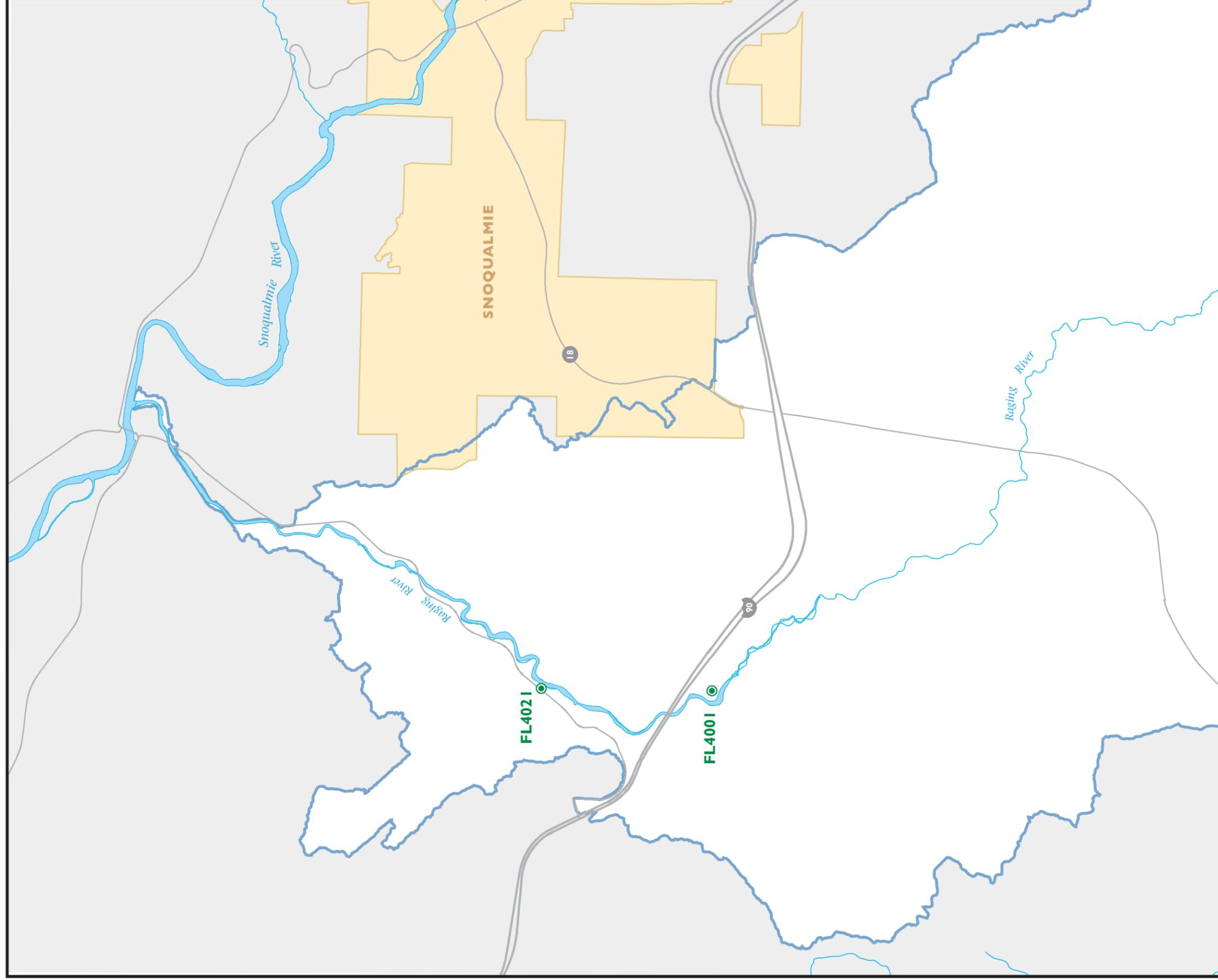
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March 2010

2010 Multi-year Flood Control District Projects

FLI002	North Bend Area Residential Flood Mitigation
FLI003	South Fork System Improvements
FLI017	Kimball Creek and Snoqualmie Basin
FLI019	Middle Fork Levee System Capacity Improvements
FLI023	Upper Snoqualmie Residential Flood Mitigation



RAGING RIVER 2010 FLOOD CONTROL DISTRICT PROJECTS

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File Name: 1003_FCDproj5RAGING10.ai vgab

King County
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 Water and Land Resources
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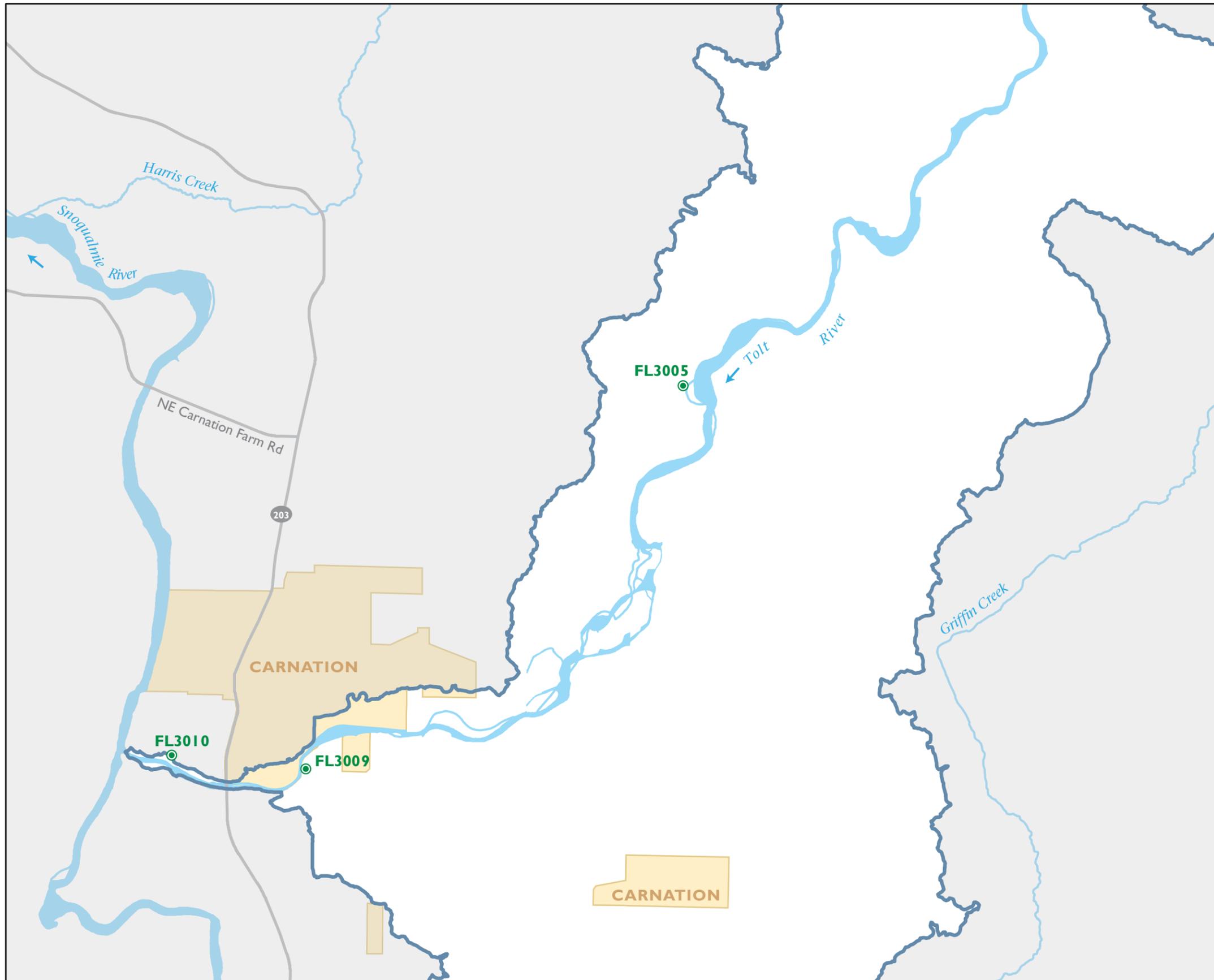
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0 1/4 1/2 Mile

March 2010

2010 Multi-year Flood Control District Projects

- FL4001 Alpine Manor Mobile Home Park Neighborhood Buyout
- FL4021 Preston-Fall City Upper Repair



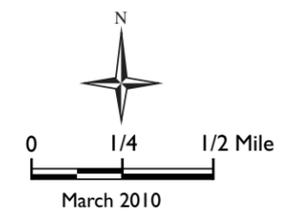
TOLT RIVER

2010 FLOOD CONTROL DISTRICT PROJECTS

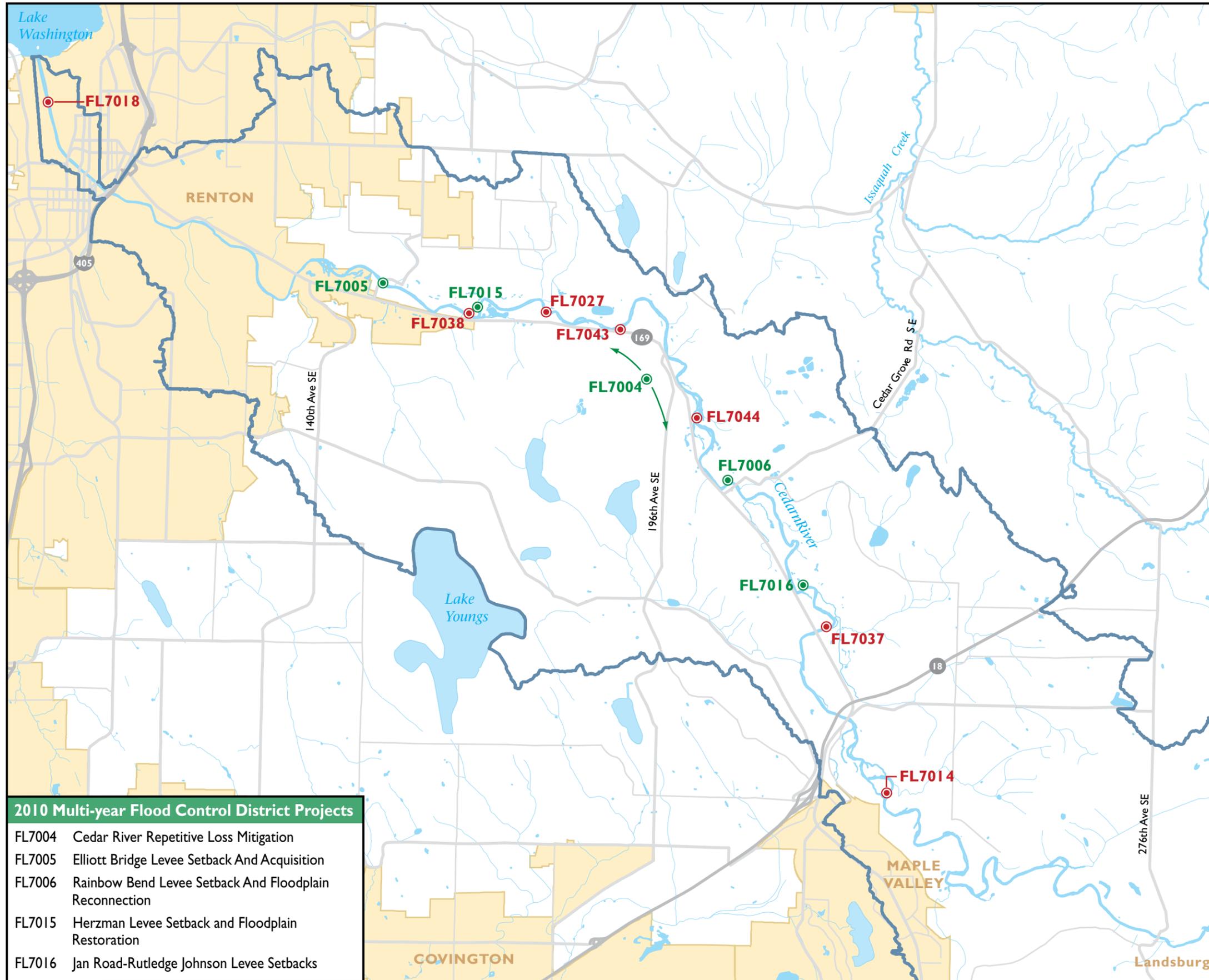
- **FL0001** New Flood Control District Project and Number
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Data Sources:
 King County datasets
 File: 1003_FCDproj6TOLT10.ai wgab
 Produced by: DNRP GIS, Visual Communications & Web Unit.



2010 Multi-year Flood Control District Projects	
FL3005	San Souci Neighborhood Buyout
FL3009	Tolt River Mile 1.1 Levee Setback
FL3010	Tolt River Mouth to SR 203 Floodplain Reconnection Project



CEDAR RIVER 2010 FLOOD CONTROL DISTRICT PROJECTS

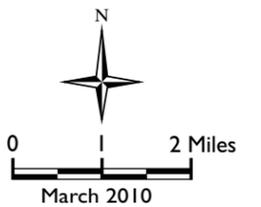
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Data Sources:
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File Name: I003_FCDproj7CEDAR10.ai wgab

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**Water and Land Resources
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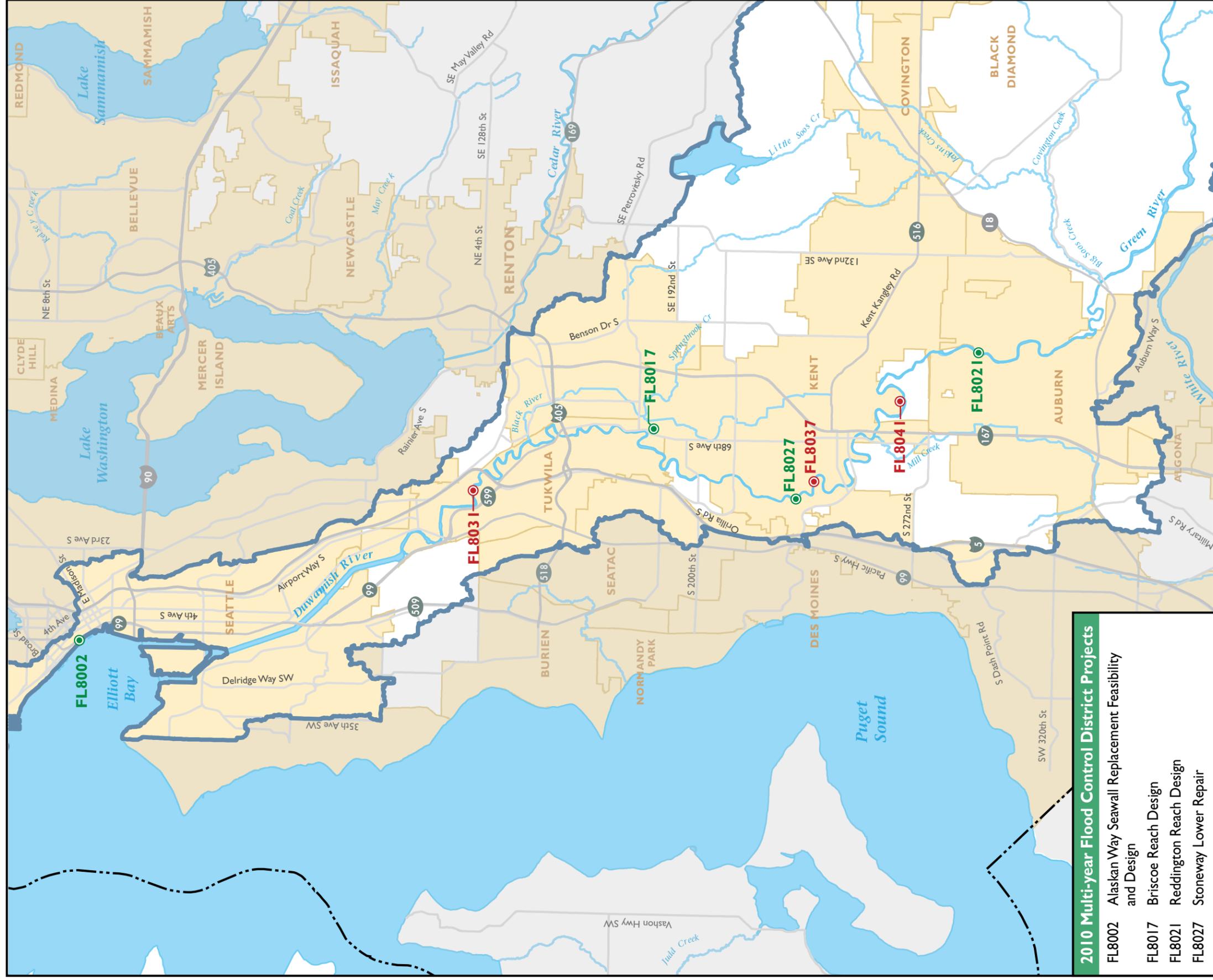


2010 Multi-year Flood Control District Projects

- FL7004 Cedar River Repetitive Loss Mitigation
- FL7005 Elliott Bridge Levee Setback And Acquisition
- FL7006 Rainbow Bend Levee Setback And Floodplain Reconnection
- FL7015 Herzman Levee Setback and Floodplain Restoration
- FL7016 Jan Road-Rutledge Johnson Levee Setbacks

2010 New Flood Control District Projects

- FL7014 Dorre Don Meanders- Phase I
- FL7018 Cedar River Gravel Removal
- FL7027 Cedar Rapids Repair
- FL7037 Rhode Levee Setback And Home Buyouts
- FL7038 Herzman Repair
- FL7043 Cedar River Trail 2B
- FL7044 Belmondo Revetment Repair



2010 Multi-year Flood Control District Projects

- FL8002 Alaskan Way Seawall Replacement Feasibility and Design
- FL8017 Briscoe Reach Design
- FL8021 Reddington Reach Design
- FL8027 Stoneway Lower Repair

GREEN RIVER

2010 FLOOD CONTROL DISTRICT PROJECTS

- **FL0001** New Flood Control District Project and Number
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Data Sources:
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Produced by:
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File Name:
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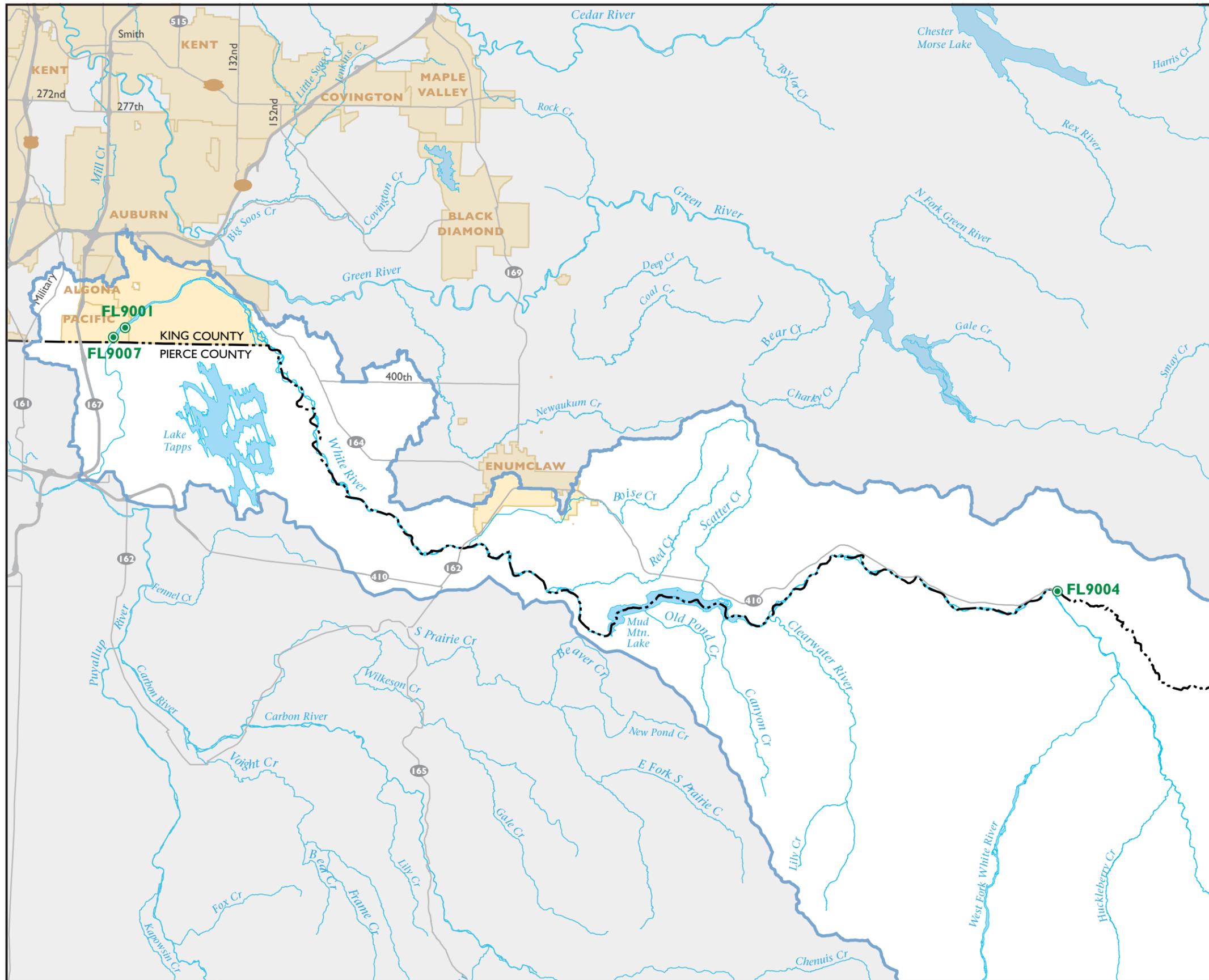
King County
Department of
Natural Resources and Parks
Water and Land Resources
Division

0 1 2 Miles

March 2010

2010 New Flood Control District Projects

- FL8031 Gateway Lower/Codiga Repair
- FL8037 Russell Rd Upper
- FL8041 Horseshoe Bend Acquisition & Reconnection



WHITE RIVER 2010 FLOOD CONTROL DISTRICT PROJECTS

- **FL0001** New Flood Control District Project and Number
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Data Sources:
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Produced by: King County Department of Natural Resources and Parks,
GIS and Visual Communications & Web Unit

File Name: I003_FCDproj9WHITE10.ai wgab

King County
Department of
Natural Resources and Parks
Water and Land Resources Division



2010 Multi-year Flood Control District Projects	
FL9001	Countyline to A-Street Flood Conveyance Improvement
FL9004	White-Greenwater Acquisition
FL9007	Pacific Right Bank Acquisition and Setback Berm