KING COUNTY WATER DISTRICT NO. 90
KING COUNTY, WASHINGTON

RESOLUTION NO. 1149

A RESOLUTION of the Board of Commissioners of King County Water District No. 90, King County, Washington, authorizing adoption of the 2025-2030 King County Regional Hazard Mitigation Plan, with District Annex.

WHEREAS, all of King County has exposure to natural hazards that increase the risk to life, property, environment, and the County's economy; and

WHEREAS, pro-active mitigation of known hazards before a disaster event can reduce or eliminate long-term risk to life and property; and

WHEREAS, State and Federal laws establish requirements for pre- and post-disaster hazard mitigation programs; and

WHEREAS, a coalition of King County, Cities, Towns, and Special Purpose Districts with like planning objectives has been formed to pool resources and create consistent mitigation strategies within the King County planning area; and

WHEREAS, the coalition has completed a planning process that engages the public, assesses the risk and vulnerability to the impacts of natural hazards, develops a mitigation strategy consistent with a set of uniform goals and objectives, and creates a plan for implementing, evaluating and revising this strategy, with the last plan completed in 2020; and

WEHEREAS, the District has completed an Annex to the plan to address the particular needs of the District.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of King County Water District No. 90, King County, Washington, as follows:

SECTION 1: That the District adopts in its entirety the 2025 King County Regional Hazard Mitigation Plan (RHMP), plus the District's Annex to the RHMP.

SECTION 2: That the District will use the adopted and approved portions of the RHMP to guide pre- and post-disaster mitigation of the hazards identified.

SECTION 3: That the District will coordinate the strategies identified in the RHMP with other planning programs and mechanisms under its jurisdictional authority.

SECTION 4: That the District will continue its support of the Steering Committee and continue to participate in the planning partnership set forth in the RHMP.

SECTION 5: That the District will help to promote and support the mitigation successes of all RHMP planning partners.

ADOPTED by the Board of Commissioners of King County Water District No. 90, King County, Washington, at a regular open public meeting thereof on the 4th day of March, 2025.

3-4-25
Sam Amira, President

3-4-25
Al Materi, Vice-President

3-4-2025
Pete Eberle, Secretary

King County Water District No. 90 Plan Annex

Introduction

King County Water District No. 90 (the District) is located between the cities of Renton and Issaquah, Washington, with Cougar Mountain to the north and the Cedar River to the south. The District was incorporated in 1952 with a service area of approximately five square miles and served the rural area outside of the Renton city limits. At the present time, the District, located in both unincorporated King County and the City of Renton, covers an area of 15.5 square miles and ranges in elevation between 300 to 1,400 feet. The District currently provides all domestic and fire protection needs to a population of approximately 20,000 customers or 7,980 households, 112 Irrigation only accounts, 25 Fire Suppression accounts, and 62 Commercial Accounts, including nine schools in the Renton and Issaquah School Districts, and serves Fire Stations for Renton Regional Fire Authority and Eastside Fire and Rescue.

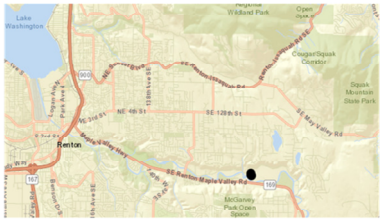
Water District No. 90 has been a rapidly growing suburban "bedroom community" of the City of Seattle with a diverse economic community. Since 2008, after the Great Recession, growth in the area declined significantly. By area, the District is currently comprised of about 60% urban (City of Renton) and 40% rural (Unincorporated King County). A Board of Commissioners governs the District with three members. The Board of Commissioners will assume responsibility for the adoption of this plan; the General Manager will oversee its implementation.

In the past ten years (2014-2023), the District has invested approximately $15.5 million in Capital Projects to improve the system. In order to reduce the impact to our service community resulting from a disaster, the District maintains design standards, preventative maintenance and operational procedures, and emergency training programs. Funding for the District comes primarily through rates, grants, and loans.

In March 2024, the District received a FEMA Bric grant of nearly $2.9 million for the relocation of the District's well field and water treatment plant. The project also includes a permanent intertie agreement with the City of Renton for emergencies.

King County Water District No. 90 - District Profile

- Special Purpose Water District
- Residential Customers Households: 7,980
- Commercial/Fire/Irrigation Customers: 199
- Estimated Population: 20,000
- Area Served: 15.5 Sq. miles
- # of Miles of Main: 135
- Elevation: 300 to 1,400 feet
- 8 Pump Stations
- 8 Storage Tanks
- 22 Pressure Reducing Stations
- 2 Wells & Water Treatment Plant
- 15 Staff Members
- 3 Elected Commissioners



King County
Water District No. 90

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Development Trends

State of Washington Changes to Middle Housing and Accessory Dwelling Units (ADU's): In 2023, the Washington State Legislature passed E2SHB 1110, which substantially changes the way many cities in Washington are planning for housing. "Middle housing" is defined in the bill as "buildings that are compatible in scale, form, and character with single-family houses and contain two or more attached, stacked, or clustered homes including duplexes, triplexes, fourplexes, fiveplexes, sixplexes, townhouses, stacked flats, courtyard apartments, and cottage housing." Density measured in "dwelling units per acre" has traditionally been the way that zoning ordinances have regulated residential land use. However, E2SHB 1110 focuses on the minimum number of dwelling units on a lot in a house-scale building or buildings. HB 1337, also passed in 2023, requires jurisdictions to allow two ADUs per lot within urban growth areas (UGAs). Allowing more ADUs encourages housing construction and increases the overall supply and variety of housing options, helping address the challenges posed statewide by insufficient housing. Local jurisdictions, like the District, need to review and amend comprehensive plan policies and development regulations to consider these law changes. The impact on the District could be increased population densities within the Urban Growth Boundary.

Urban Growth Boundary (UGA): The Growth Management Act (GMA) is a series of state statutes, first adopted in 1990. It requires fast-growing cities and counties to develop a comprehensive plan to manage their population growth. The comprehensive plan is the centerpiece of local planning and articulates a series of goals, objectives, policies, actions, and standards that are intended to guide day-to-day decisions by elected officials and local government staff. Part of a county's long-range planning process involves identifying UGAs, areas where "urban growth shall be encouraged and outside of which growth can occur only if it is not urban in nature" (RCW 36.70A.110). Counties are responsible for designating, expanding, and reducing UGA boundaries, although they must consult with the cities in their determinations.

The Urban Growth Boundary nearly splits the District in half. Staff watches for changes in the Urban Growth Boundary line so that necessary infrastructure matches the anticipated growth. In recent years, there have been instances in the State where the Urban Growth Areas have been reduced after infrastructure has been installed. This would be a costly and wasteful situation that the District seeks to avoid.

Puget Sound Regional Council Vision 2050: VISION 2050 is a multicounty planning policy adopted under the state's GMA. Multicounty planning policies address regionwide issues within a collaborative planning framework. Vision 2050 forecasts a population growth of 1.8 million by 2050. The region is also projected to need 2.4 million additional housing units. Vision 2050's policy MPP-PS-19 applies to the District; "Support efforts to increase the resilience of public services, utilities, and infrastructure by preparing for disasters and other impacts and coordinated planning for system recovery." The increase in housing needs throughout the region has led to an increase in unhoused people. The District has experienced homeless encampments near pump stations and in open spaces. In June 2021, when temperatures hit 110 degrees Fahrenheit in the region, a homeless encampment contributed to large brush fires that threatened the entire District.

King County: Under the Revised Code of Washington 43.20.310, larger water systems that serve more than 1,000 connections will be required to address the impacts of climate change in future water system plans. These large water systems must include a climate resilience element in plans initiated after June 30, 2025. This new plan element must 1) determine the types of extreme weather events that would significantly challenge the system and build scenarios to identify potential impact, 2) identify critical assets and steps necessary to protect the system from weather events, and 3) describe the costs and benefits of the system's risk reduction strategies and capital project needs.

King County's 2024 Comprehensive Plan Update, Appendix D1, anticipates an additional 170 housing units in the East Renton Potential Annexation Area in the next 20 years. These policies impact the District through increased density within the City of Renton boundaries. This could mean more people are impacted in a smaller area after a disaster.

King County Green Space: King County's 2022 Open Space Plan provides a framework guiding King County in expanding, planning, developing, stewarding, maintaining, and managing its complex system of 205 parks, 175 miles of regional trails, and 32,000 acres of open space. The District is bounded by park and green space along the north and east boundaries (Cougar Mountain Regional Wildland Park and Cougar/Squak Corridor), creating a significant Wildlife Urban Interface (WUI). This interface, along with climate change potentially leading to drier, hotter, and longer summers and longer fire seasons coupled with a history of poor land management practices, has increased the risk of brushfires and wildfires developing within the District.

City of Renton: The City covers about 60% of the District's service area. The City of Renton's 2024 Comprehensive Plan zones this area as Residential Low-Density or R-4: Residential 4 DU/Acre. Relevant policy goals include Policy LU-2: Support compact urban development to improve health outcomes, support transit use, maximize land use efficiency, and maximize public investment in infrastructure and services. Policy LU-8: Support annexation where infrastructure and services allow for urban densities, service providers would be consolidated, and/or it would facilitate the efficient delivery of services. In addition, Policy UT-7: Non-city utility systems should be constructed to minimize negative impacts on existing development and should not interfere with the operation, maintenance, and future replacement of City utilities. City development regulations should not impair the ability of utility providers to serve customers adequately. The City of Renton's policies are consistent with the District's goals of constructing safe and efficient water main extension projects that minimize the risk to residents from natural and man-made disasters.

Growth Trends in the District: New development has decreased after an extended season of historic growth at the District. From 2001 to 2015, the District added, on average, 164 new services per year. The average revenue collected during this period was $600,000 per year for General Facility Charges (system buy-in fees). Since 2017, new development in the District has declined significantly to an average of 28 new services per year. This has, in turn, slowed the District's water main replacement program as capital funding becomes more dependent on water rates.

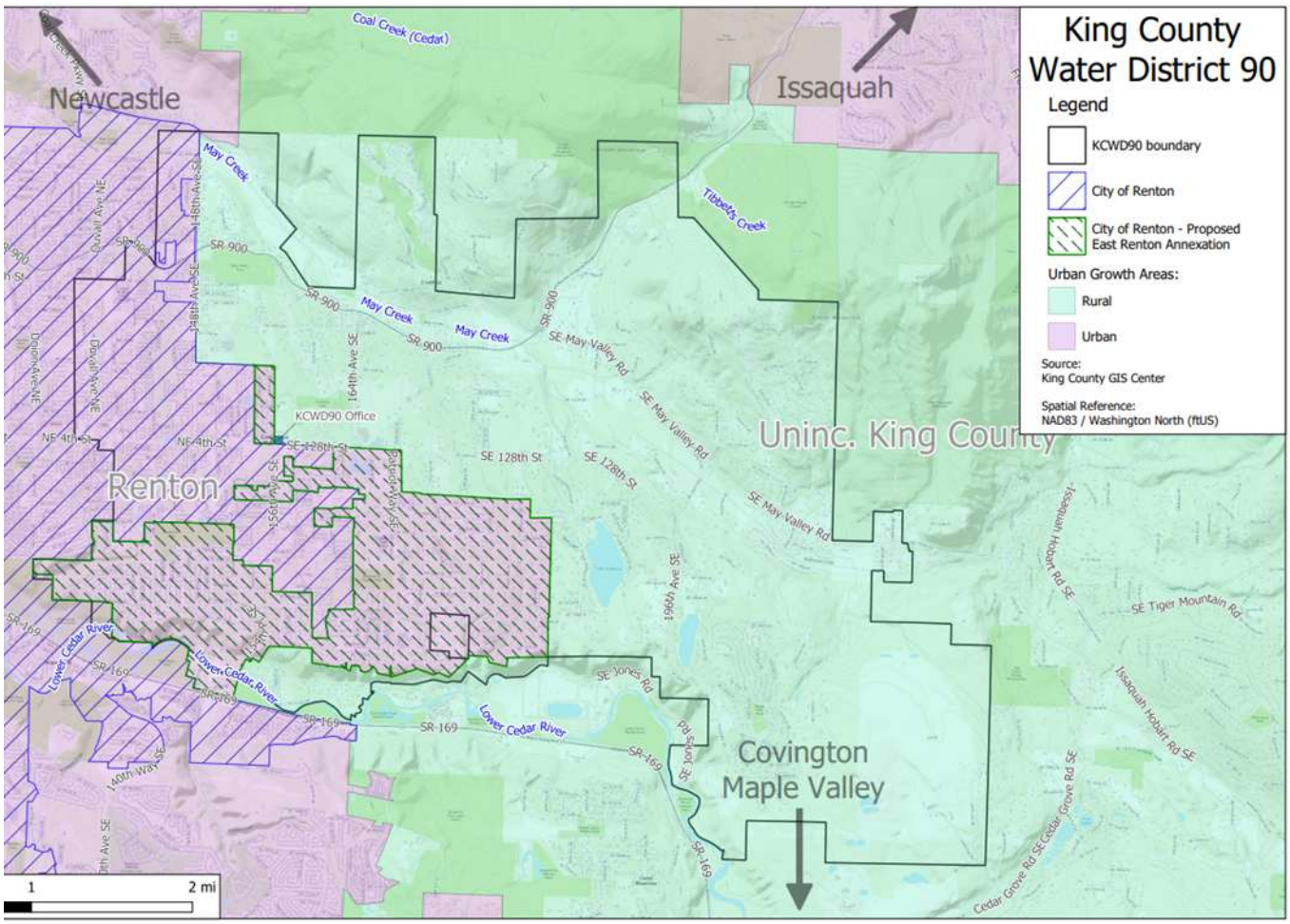


Figure 1: City of Renton and King County Water District No. 90 Boundaries

DISTRICT SUMMARY AND UPDATES SINCE THE LAST PLAN

Water Main Replacement: On average, the District plans to replace approximately one mile of water main, at an average cost of about $1.0 to $2.0 million per year. The District also spends an additional $0.5 to $1.0 million annually on other system upgrades and improvements. The current trend in construction costs will make replacing one mile of main per year more difficult. The estimated construction cost per linear foot in 2024 is between $550 and $750 (construction costs only), depending on the type of main and how it must be replaced. Since the last Hazard Vulnerability Plan update in 2020, the District has changed construction materials and methods from primarily ductile iron (DI) pipe to high-density polyethylene (HPDE) pipe and from open-cut to pipe-bursting whenever possible. HDPE pipes have significantly better earthquake resistance than DI pipes. The new construction method reduces road restoration and engineering costs. This has allowed the District to achieve a cost of $306 per linear foot on our recent water main replacement project "Renton Suburban Tracts." The best way for the District to prepare for potential natural disasters is to continue replacing old water mains, especially asbestos cement (AC) and steel water mains that tend to fail catastrophically with any ground movement. As of this plan update, the District has about 2.5 miles of steel and 15.5 miles of AC water main to be replaced. In 2023-24, the District was able to replace 4 miles of steel and AC water main with HDPE.

Production Wells : The District has a water right of 450 gallons per minute (GPM). Currently, the District is only able to produce 155 GPM. Since installing our wells, starting in 2001, the District has not been able to fully utilize its water rights. Since the last plan update, the District has worked diligently to move its wellfield (WF) to a safer location, out of the flood and landslide risk areas, adjacent to the District headquarters. The production well

relocation project was developed from the District's 2020 Hazard Vulnerability Plan and is funded with a FEMA Building Resilience in Community (BRIC) grant. In 2024, the District received a FEMA BRIC grant of almost $2.9 Million to relocate the WF, build a new Water Treatment Plant (WTP), and create a permanent intertie with the City of Renton. A test well was drilled in 2022, and Production Well No. 4 is planned to be drilled in 2025. The goals of this production well relocation are to install the production well outside the flood plain and high landslide-risk area and to maximize the District's water rights to provide water services to its customers. This will therefore provide the District more options to mitigate water shortages or disruptions in an event of a major earthquake or another natural disaster that may prevent the District from receiving water from the Seattle Public Utilities (SPU) intertie which provides District's 94.5% of District's water.

Supply Source: The District's primary water supply, which currently provides 94.5% of our water, comes from the SPU intertie. The District's WF provides the remaining 5.5% of the supply and acts as the District's emergency water supply. The District's long-term goal is for the WF to provide 25% of the total water. However, this target has not been achieved due to declining production in the District's existing WF. The District has one connection to SPU's transmission main through its intertie. If this primary source were disrupted due to a natural disaster, the District would rely entirely on its own WF as the emergency water source. To provide potable water for our customers following a major emergency, the District must be able to fully utilize the maximum amount of the District's water rights of 450 gpm. An additional well (or wells) will need to be added to achieve this goal. Beginning in 2025, the District is developing a long-term partnership with the City of Renton to allow the District to receive 1,250 gpm under emergency conditions. Several intertie locations have been identified, and a portable intertie and mobile pump trailer have been developed to help the District mitigate water shortages during emergencies.

OTHER RELATED TRENDS

Climate Change: Under the Revised Code of Washington 43.20.310, larger water systems that serve more than 1,000 connections will be required to address the impacts of climate change in future water system plans. These large water systems must include a climate resilience element in plans initiated after June 30, 2025. This new plan element must 1) determine the types of extreme weather events that would significantly challenge the system and build scenarios to identify potential impact, 2) identify critical assets and steps necessary to protect the system from weather events on the system operations, and 3) describe the costs and benefits of the system's risk reduction strategies and capital project needs. The District will be updating its Comprehensive Plan in 2026. Climate-related strategies outlined in this Plan will become the building blocks for the District's Comprehensive Plan update.

Washington state has already experienced significant impacts from climate change. The impacts that are expected to affect the District directly include:

- **Warming temperatures**: The Pacific Northwest has warmed by about 1.3°F over the past century.
- **Rising sea levels**: Sea levels have risen along most of Washington's coast.
- **Decreased snowpack**: Glaciers are melting, and the snowpack is melting earlier in the year.
- **Earlier peak stream flows**: Peak stream flows occur earlier in many rivers.
- **More extreme weather events**: Droughts, floods, wildfires, and heat waves occur more often.
- **Warmer streams**: Streams will be warmer in the coming decades.
- **More wildfires**: Wildfires may be more common in the coming decades.
- **Changes to forest ecosystems**: Climate change is expected to transform Washington's forests by affecting the establishment, growth, and distribution of forest plant species.
- **Health impacts**: Wildfire smoke can make breathing harder and may worsen other chronic health conditions.

These anticipated climate change impacts could affect the District's source from SPU, increase rates due to salmon recovery and mitigation requirements, decrease water available from snowpack, and increase flooding, droughts, wildfires, and heatwaves. All of these factors need to be considered when planning for future resiliency.

Understanding of Local Seismic Activity: The Amount of information and mapping available related to the seismic activity of the Pacific Northwest has grown significantly in recent years. The end result is a better understanding of the possible impacts of a Cascadia Subduction Zone earthquake, which would most likely be very deep and offshore of the Washington coast. Although this quake could be very large (i.e. 9.0) it is less likely to have a damaging impact than a local fault quake, such as a quake with the Seattle or Tacoma fault lines. The Seattle fault line extends into the District boundaries along May Valley Road. An earthquake along this fault would likely be shallower and cause more ground movement even at a lower number on the Richter scale. Based on local indigenous oral traditions and geologic evidence, the last large (estimated 9.0) earthquake along the Seattle Fault occurred in 923-924AD. In the past, utilities have told customers to be prepared to be without water for at least 3 days. However, recent information has indicated that customers should have emergency preparedness supplies, including water, for 1 to 3 weeks. Depending on the size of an earthquake event, SPU estimates that wholesalers could be without water for as long as 6 months.

Jurisdiction Risk Summary

Hazard Risk and Vulnerability Summary

Hazard	Risk Summary	Vulnerability Summary	Impact Summary
Avalanche	The District's highest elevation is less than 2,000 feet above sea level. It is, therefore, highly unlikely that an avalanche would impact the District.	N/A	N/A
Earthquake	Earthquake risk within District boundaries is very high. The entire District is located in the Seismic Design Category of "D2," meaning the area "could experience extreme shaking. Damage is expected to be slight in specially designed structures, considerable in ordinary buildings with partial collapse, and greater in poorly built structures." The District is split by the Seattle Fault line that runs from the middle of Lake Washington, west to east, through the District, following SE May Valley Road for 7 miles. A Seattle Fault quake could be as massive as 7.5 on the	All of the District's assets could be impacted by intense shaking. Aside from the District's mains, especially those at or near the Seattle Fault (along SE May Valley Road), the most significant risk to the District are main breaks and pipe connections, gaskets, and/or fittings that are likely to "pull apart" or separate from the shaking. When this happens, the District will depressurize very quickly. The District's WF and WTP are the District's secondary (emergency) source of water, with a goal of providing about 25% of overall water production. The District's existing WF and WTP sit in a flood plain at the bottom of a 300-foot cliff. An	A significant earthquake will most likely cause a large number of main leaks throughout the District. It may also cause the District to lose connection with the District's primary source of water supply from SPU, as well as the District's secondary source of supply from the District's WF. In response to the District's 2020 Hazard Vulnerability Plan update a number of improvements were made to increase the Districts resilience after an earthquake. Those improvements include: 1) moving the District WF and WTP to a more secure location to minimize the risk from earthquakes, landslides, liquefaction, and flooding. The project was funded by FEMA in March of 2024. 2) Updated construction materials and methods to be more earthquake

	Richter Scale. An earthquake on the Seattle Fault would be relatively shallow (0-30 km near the earth's surface) and include intense shaking, especially near the epicenter. The last large (9.0) earthquake on the Seattle fault is estimated to have occurred about 1,100 years ago. In addition, the District could have a deep quake in the Cascadia Subduction Zone off the Washington coast that could cause shaking of the entire region. Japan experienced a similar earthquake (M9.0) in 2011. Although the size of this quake could be more significant, it is estimated that the earthquake will be deeper and further out to sea and will not have as much of an impact on the District as a smaller Seattle Fault quake could have.	earthquake could cause damage to this location directly (i.e., well casing shift) or indirectly (flood or landslide) or could damage the transmission main traveling from the WTP to the top of the cliff (about 635 feet). After the 2001 Nisqually Earthquake, the District experienced a landslide caused by water line failure and related mudslides. The District's primary water source (currently 94.5%) is received from SPU. It is fed by a single transmission main traveling from the Cedar River through the City of Renton. SPU's transmission main travels through known liquefaction areas in the City of Renton's downtown area. This liquefaction zone dramatically increases the risk of the District losing its primary water supply after an earthquake.	resistant (i.e. HDPE pipe and restrained joints.) 3) Added "Shake Alert" earthquake early warning system. 4) Seismically retrofitting Pump Stations (PS) 4, 5 & 6. FEMA funded this project in April of 2024. Moving forward, the District may also seek to harden reservoirs against earthquake damage, starting with an automatic seismic shutdown valve for our second-largest reservoir (Res 2) (Strategy #2). Along May Valley Road, the District is working to identify strategic locations along the Seattle fault that may benefit from adding additional valves, hydrants, and flexible (HDPE) water mains to provide more options for isolating leaks caused by earthquakes. (Strategy #5) Seismic valves could be added to Reservoirs 4, 5, 6, and 7 to prevent them from draining after a seismic event. The District plans to expand the Shake Alert (PS 4-8) system to automatically shut down pumps before or during an event. (Strategy #6 & #7). In the long term, the District would like to replace about 4 miles of 12" CI transmission water main from PS 1 to SE 128th Way with more resilient HDPE. (Strategy #8) Additionally, the District plans to replace AC water main first as most susceptible to leaks. (Strategy #9)
Flood	According to the 2024 KC Flood Management Plan; "Flooding is the costliest and most frequent natural disaster in King County." There are two sizeable flood-prone areas in the District. The first is a flood zone that stretches along a 4.0-mile section of	The District's existing WF is located in the 100-year flood plain along the Cedar River. Water from the WF is required to operate the WTP. If the WF is inoperable, so is the WTP. The WF and WTP are the District's secondary (emergency) source and aim	In response to the District's 2020 Hazard Vulnerability Plan update, the District created a project to move the District WF and WTP to a more secure location to minimize the risk from earthquakes, landslides, liquefaction, and flooding. Moving forward, the District will work with the State to assist in

	SE Jones Road, running east/west, following the Cedar River. The District has a water main along 1.8 miles of this stretch of road. In recent years, King Conservation District has purchased and removed several houses due to repeated flooding. The District currently serves about 45 residential customers along SE Jones Road. The Second is along SE May Valley Road, adjacent to May Valley Creek. Potential flooding in this area is from 164th Ave SE (on the west) to SR 900 (on the east). The District serves over 100 homes situated adjacent to SE May Valley Road. (from 164th Ave SE to SE 135th Street)	to provide about 25% of the District's potable water. If the District's primary connection to SPU fails, the WF and WTP are the District's backup supply. There have been seven major flooding events along the Cedar River since 1990. The flood in November of 1990 flowed at 10,300 CFS in the Cedar River and was equivalent to the 100-year flood. At this flow level, the District's WF would be under 2-3 feet of water and would be inoperable. The most recent major flooding event along the Cedar River was in February of 2020. The river reached 9,000cfs. This is equivalent to a 50-to-100-year flood. The flooding Cedar River blocks road access from the south and east of the District (State Route 169, SE May Valley Road) and leaves access only from the west of the City of Renton.	replacing undersized culverts that can exacerbate flooding. The District also plans to communicate with King County Storm drainage employees to keep the culverts clean and flowing. Since flooding creates potential backflow events that could inundate blowoffs if they are not high enough, the District plans to add valves at higher elevations when prone to flooding. The District will also review valves available in flood-prone areas to determine if insertion valves could allow more opportunity to reduce flow after or during an event. (Strategy #13)
Landslide	The District has two distinct areas that could be impacted by a landslide. The first is a 4.0 mile stretch along SE Jones Road next to the Cedar River. The cliffside (north side) above SE Jones Road, includes about 1,100 acres of land. The top of the cliff has an average elevation above sea level of 380 feet, and the bottom is 100 feet above sea level. King County has documented 15 landslides along the north side of the Cedar River within the District's service area. The Second landslide-prone area is 2.2 miles	There are about 75 residential customers served by the District that have homes on SE Jones Road along the Cedar River that would be at risk in the event of a landslide. Also, the District's existing WF and WTP are located on SE Jones Road, along the Cedar River. The District currently purchases 94.5% of its water supply from SPU and produces 5.5% from the District's Wells and WTP. The WF provides the district with a secondary (emergency) source of potable water. If the District's primary source of water from SPU were interrupted for any reason,	The District has been impacted by two landslides from the hillside above SE Jones Road. The first was in 1997, after a landslide and flooding, took out a section of the water main (at about 151st PL SE) and buried the house below. This house and water main were abandoned. The cause of the second landslide in 2006 was an abundance of groundwater that had backed up in the area. A 465-foot section of 6-inch DI pipe, along SE 148th Street (from 157th PL SE to 160th AVE SE), was at risk of failing. The backup groundwater was able to be mitigated, and the water main remained intact. The cliffside along Jones Road has continued to recede in recent years as residential customers are

	along SE May Valley Road. The hillside above this road is not as steep as that above Jones Road; however, the elevation ranges from 400 feet above sea level to 2034 feet at the top of Squak Mountain. The District serves water to the entrance of Squak Mountain State Park. Possible landslide risk would be increased in the event of wildfire activity in the area.	the water produced from the District's WF and WTP would be the District's only source. The District is moving the WF to the District's headquarters location and out of the landslide area. Work began on this project in 2024. A landslide in the second area, the steep hills above SE May Valley Road, could impact access and water availability to the High Valley area of the District. This area only has one access point along SE 127th Street. There are approximately 200 residences in the High Valley area. Regular landslides on SR 169 along the Cedar River block the freeway. Landslides in this area could prevent employee access from the south end of the District.	losing progressively more of their yards to the cliff. The most significant risk to the District is losing the District's existing emergency water supply. However, the District is currently in the process of relocating its WF and WTP to a more secure location. Moving forward, the District plans to completely remove all remnants of the existing WF and WTP from Jones Road and adjacent to the Cedar River. Additionally, the District will prepare an inventory of areas of the District served by a single feed or a single access road to determine how to loop or duplicate if possible. (Strategy #12).
Severe Weather	Due to the impact of climate change, severe weather situations such as excessive heat, droughts, tornados, wind events, and lightning storms have become increasingly common and more severe in the Seattle region. The hottest recorded high temperatures have all occurred in the last 10 years (2014-2023). Precipitation patterns have also changed. The overall trend is that the annual rainfall is decreasing. However, this is offset by larger and wetter storms, including atmospheric rivers and bomb cyclones, that drop more precipitation over a short time, leading to flooding.	Severe weather can have a compelling impact on the District. Power and communication outages could be widespread. Roads and bridges could be blocked or washed out. Losing power to the District's PS for an extended period, especially in the more challenging to reach higher elevations, could mean that potable water is no longer supplied to these areas. This would also impact the District's ability to provide water for firefighting. Further, severe weather could negatively impact access to the District's WF and WTP. On average, Washington State experiences one Category 4 atmospheric	Without communications and access to the District's secondary supply, the District would not have an emergency water source. By adding redundant communications wherever possible, the District can harden PS, tanks, WF, and the WTP against winter storms. Also, the District has several generators (permanent and portable). In 2022, the District created a climate change policy to encourage the reduction of greenhouse gases. In 2024, the District joined the Puget Sound Emergency Radio Network (PSERN) to harden communications during severe weather events. The District adopted an excessive heat policy 2024. In 2025, the District will add AC mini-split units in PS 4 & 5 to

	King County is categorized as "DO – abnormally dry" on the US Drought Monitor as of August 2021. The overall drought trend is toward more intense and longer-lasting periods of drought. Snowpacks are declining, causing a reduction in available surface water. Earlier snowmelt means less coming into our reservoirs in early to mid-summer, creating the possibility for shortages in the fall and winter months. Wildfires have increased exponentially due to less water in the ground, trees, and air.	river (AR) every two years. These ARs often cause flooding, block access to District infrastructure, and could contaminate surface water. In 2021, King County experienced temperatures of 107 to 110 degrees for three straight days in June. A wildfire was ignited within the District's boundary during this time. It is becoming increasingly common for severe weather to include excessive heat.	offset excessive heat, and permanent generators will be installed at PS 4, 5 & 6. In the future the District seeks to have multiple distribution sites for potable water delivery. Currently, this is only available at Res1. In the future, this may also be available at the District office and possibly Res 2 (after the seismic valve is added.)
Severe Winter Weather	Since 1950, there have been 11 snowfall events that have dropped at least 10" of snow around the Seattle region. The worst of these storms was in February 2019, when over 30" of snow was dropped within the district boundaries. The District office was shut down for three days due to the area's inaccessibility. In some cases, substantial snowfall is followed by rain, which leads to flooding and landslide hazards. The District has also experienced large ice storms that take down trees, block road access, and create numerous leaks in customer service lines.	A number of the District's staff live more than 30 minutes (and up to 1 hour) south of the District's offices. Heavy snowfall events or other severe winter storms can cause district staff to be unable to make it to the District office. A lack of staff will significantly delay the District response after a storm.	The most significant impact to the District from severe winter weather would be the lack of available staff. A staff shortage would delay repairs, site access, generator transport, and road clearing. Additionally, access to various areas of our District (e.g., High Valley and Licorice Ferns), as there is only one steep and prone-to-freezing access road. Moving forward, the District will prepare an inventory of areas of the District served by a single feed to determine how to loop or duplicate if possible. (Strategy #12). Plans also include adding Generators, redundant communications, and possible solar power (backup power and pump startup).
Tsunami	Tsunamis generated in the Pacific Ocean off Washington's coast will not have as great an effect in Seattle as they will on the Pacific Coast, but low-lying areas may experience flooding. Tsunamis can	N/A	N/A

	also be generated in the Puget Sound by both landslides and earthquakes. However, due to the District's location, approximately 12 miles directly east and inland of Puget Sound, a tsunami is not anticipated to impact the District.		
Volcano	Washington State is home to five active volcanoes in the Cascade Range, the biggest of which is Mount Rainier. Seattle is too far from any volcanoes to receive damage from blasts or pyroclastic flows. Ashfall could reach Seattle, but prevailing weather patterns would typically blow ash away from Seattle to the east side of the State.	If heavy ash were to fall in Seattle, it would create public health problems, paralyze the transportation system, and destroy many mechanical objects. Also, SPU (the District's primary supplier of water (94.5%)), does not have filtration on their Cedar River Supply and will not be able to filter ash out of the water, which could disrupt the District's main supply of water.	The District would be dependent on its WF and WTP to supply emergency water to the District's customers. It would be unlikely that a Volcano would impact the District's WF directly. The District has an emergency water supply agreement with the City of Renton. Under this agreement, the District can pump a maximum of 1250 gpm into our system from Renton at PS 1. As of 2025, a project is underway to create a portal intertie that could allow for emergency water to be supplied to the District at several locations and would be the primary supply if SPU's source water is impacted.
Wildfire	The risk of wildfire has increased dramatically in the Seattle Region. Climate change has caused more fluctuation in the region's weather patterns. In recent years, the average air temperature has increased, the amount of rain in the summer has decreased, and the snowpack has melted sooner. This has resulted in a significantly drier forest, and these trends are anticipated to persist. In addition, the past 100 years of fire prevention have led to an unprecedented amount of undergrowth (fuel) ready to burn. Climate change caused an estimated 50%	The District has experienced extensive growth in the past 20 years. Much of this growth is located in the Wildlife Urban Interface (WUI). About 60% of the District's service area is located in the rural area of unincorporated King County. Second-growth forests (80-100-year-old trees) are prevalent around the residences in this area. There are two large "green spaces" abutting the District boundaries. The first is the Cougar Mountain Regional Wildland Park, which abuts the north boundary of the District and includes 3,115 acres of forested land and 38 miles of hiking trails. Second is the Squak Mountain State	The risk to the District's assets from wildfire is steadily increasing. The facilities most at risk from wildfire are the PS 4-8, and tanks in High Valley and Licorice Ferns (Reservoirs 4-7). However, wildfire is possible throughout the District's service area. In 2025, the District's Intertie Project with the City of Renton includes reviewing ways to augment the amount of available water in case of a large wildfire event. If possible, the District seeks to pump water from SPU at 2,800 gpm while receiving emergency water from the City of Renton at 1,250gpm. This would only be applicable if firefighters were attempting to fight multiple fires within the District.

	of fires between 1984 and 2005. The wildfire season is starting earlier and lasting longer than in the past. The Pacific Northwest is experiencing more frequent periods of drought, and more drought equals more wildfire risk.	Park, which abuts the District's east boundary. This State Park includes over 1,500 acres of forest lands and trails. King County has actively been expanding open space around the county. These parks significantly increase the WUI between District customers and the "green space." Additionally, the Squak Mountain State Park is one-half mile from SPU's Cedar River Watershed, a heavily wooded area of just under 80,000 acres. The risk of wildfire within the District boundaries has increased significantly in recent years due to climate change. In 2024, wildfires burned well over 2 million acres in Washington and Oregon, making it the worst wildfire season in decades. This was the highest amount of acreage burned since 2000.	The District seeks to extend its Service Area Boundaries east along SE May Valley Road from Squak Mountain Road SE to Issaquah-Hobart Road SE. Adding 1.6 miles of water main along May Vally Road would provide potable water services to about 235 existing properties currently served by wells and small Class B water systems. Customers have begun to have significant issues with wells running dry. This area is in the WUI interface and subject to higher-than-average wildfire risk. The District hopes that adding fire protection in this unserved area could address potential wildfires before they spread. The District is also seeking partnerships with King County, the City of Renton, and the Eastside Fire District to add the water main along May Valley and fire service to the parks and green spaces surrounding the District. (Strategy #4). The District has also been working with other agencies and stakeholders, including King County Parks, Washington Parks, and local fire and emergency agencies, to add water at entrances to King County and State Parks (i.e., Licorice Ferns & Squak Mt.) (Strategy #11)
Civil Disturbance	Civil Disturbance is a public disorder by a group of people involving acts of violence that cause immediate danger or damage to others or their property. Civil Disturbance can either be harmful to others or harm to property. By nature, it is both illegal and violent. Civil disturbances most often occur in dense areas where people naturally gather. Looting and arson	It is unlikely that Civil Disturbance would be widespread within the District's boundaries. The District is 98% single-family residences with no downtown or central gathering location. The primary risk to the District would be the impact to SPU if a prolonged civil disturbance disrupted the SPU's ability to function. Civil Disturbance could also impact employees and/or	If the primary water supply from SPU were impacted, the District would be dependent on its WF and WTP to supply emergency water to its customers. The District can continue to serve potable water directly to customers via our fill station at Reservoir 1 and our future fill station at the District's Headquarters site, once the new WF and WTP are installed (2025-26).

	are the most common civil disturbance events.	access to from their homes to work.	
Cyber Attack	A cyber-attack is a strike against a computer system, network, or internet-enabled application or device. Hackers use various tools to launch attacks, including malware, ransomware, exploit kits, and other methods. Cyber-attacks are geared at organizations, services, and individuals to obtain private, technical, and institutional information and other intellectual assets for vandalism or monetary gain. According to the FBI, cybercrime in the US cost Americans over $12.5 billion in 2023, marking a 22% increase from the previous year; this means the average cost of a data breach in the US is around $9.36 million, significantly higher than the global average.	Cyber-attacks on local governments are considered to be a significant and growing threat, with many municipalities experiencing frequent attacks that can lead to substantial financial damage, disruption of critical services, and exposure of sensitive citizen data, making them a prime target for hackers due to potential vulnerabilities in their IT infrastructure. A cyber-attack, such as ransomware, on the District's computer network or SCADA network would cause significant disruption and expense to the District. Without access to the system, the District could not process payments, answer customer service questions, process work orders, collect meter reads, operate telemetry remotely, and lose access to history and current information.	Since the last Plan update, the District has completed a risk assessment to identify any additional required controls and generated a plan based on that assessment. An "IT System Contingency Plan" was adopted on 8/16/2022. Additionally, the District updated its "Cyber Policy," adopted on 10/17/2023. In 2024, the District experienced a cyber-related emergency that was not a direct attack on our IT systems but an indirect attack by interrupting all our District Communications through phone line theft (copper theft). Since the theft, the District has been working on redundant communications for administration and SCADA systems. In 2025, the District is adding redundant communications to the telemetry system and replacing the telemetry server hardware and software.
Dam Failure	There are no dams located within the District boundaries. However, Dam Failure could impact the District's wholesaler, SPU. If the dam at Chester Morse Lake in the Cedar River Water Shed failed, the District could lose most or all of its water supply from SPU.	The primary source of water from SPU could be entirely or partially lost. SPU could provide a limited amount of water from its north supply on the Tolt River. If long enough, the loss of the wholesale supply would affect firefighting ability due to reduced flow.	If the primary water supply from SPU were impacted, the District would depend on its WF and WTP to supply emergency water to its customers. The District also has an agreement with the City of Renton for emergency water at 1250gpm. The District is currently in the process of relocating its WF and WTP to a more secure location with more customer accessibility to receive potable water after an emergency such as dam failure.
Hazardous Materials Incident	Hazardous materials come in the form of explosives, flammable or combustible substances, poisons, and radioactive material. Hazards can occur during production, storage,	The District uses several chemicals daily, including fluoride, chlorine, arsenic, etc. Damage to the District's WTP by earthquake, landslide, or flooding could cause a spill of hazardous	Access to certain areas of the District, particularly the existing WF and WTP, may be restricted for prolonged periods. This could result in the WF and WTP becoming non-operational. Chemical spills on the roadway

	transportation, use, or disposal. Hazardous Materials incidents could also happen on any roadways throughout the District as chemicals are transported on local roads.	materials. Also, a hazardous materials incident could be caused if a chemical supply truck accident occurred during chemical delivery or transportation.	could block access to part of the District for some time. The District is currently working to move the WF & WTP to a more secure location.
Public Health Emergency	A public health emergency is an emergency need for healthcare services to respond to a disaster, significant outbreak, infectious disease bioterrorist attack, or other significant or catastrophic event. Recent examples include flooding, severe weather, and the 2019 Covid outbreak.	The District's most significant vulnerability is the impact on available staff. During the 2019 Covid Outbreak, the District had to figure out how to serve customers while maintaining employee and customer separation. Office staff were set up to work independently from home; most meetings became virtual, and more documentation became paperless. Field staff worked independently rather than in teams whenever possible. Meal and break times were taken in isolated locations. All measures were implemented to keep employees isolated and safe from illness transmission. Additionally, a Public Health emergency could create a water quality issue. Outbreaks can be caused by water contaminated with pathogens, chemicals, or toxins, which can be spread through ingestion, contact with, or breathing contaminated water. In addition, on-site storage of chemicals, gas, and/or diesel could lead to water quality or public health emergencies. Proper storage, strapping, and containment are required.	A public health emergency could impact the ability of District staff to perform their work. Measures to isolate employees from each other and from customers can be put into place to minimize interactions and the risk of spread. Since potable water is an essential government function, it is assumed that District employees would have to continue to do their jobs to provide potable water to its customers. A water quality event leading to customers becoming sick or a boil water notice could negatively impact the District's reputation and the trust that customers have in the District to provide them with safe water. A significant outbreak event could require a secondary (emergency) water supply to District customers.
Structure Fire	A Structure fire is a fire involving the structural components of various types of residential,	All significant District structures would be at risk. The District's buildings, including the	Loss of any of the District's buildings potentially impacts the District's ability to supply potable water to its customers. Damage

	commercial, or industrial buildings. Between 2012 and 2016, on average, there were 88,850 structural fires per year. About seven people per day die in the United States from structural fires.	Administration, Operations, WTP, and eight pump stations, are mostly at risk of damage from structural fire.	could be either in an area of the District (i.e., a PS fire) or to the entire District (i.e., Administration and Operations buildings). Damage to one of the District's main buildings would require operating out of a temporary location for an extended period. The District's future shop and water treatment plant sites will provide an additional location from which to operate if a structural fire impacts any of the existing office buildings.
Terrorism	Terrorism is the unlawful use of violence and intimidation, especially against civilians, in pursuit of political aims. Unlike other hazards, successful terrorist attacks reduce everyone's quality of life. They demoralize the population, and they restrict normal activities and interactions. Drinking water supply systems are vulnerable targets for terrorism. A spokesman for al-Qaeda has told an Arabic-language news magazine that the terror group will try to use poisons to attack the United States, explicitly threatening to contaminate the nation's water supply. (The Washington Times, 2003 al-Qaeda warns of threat to the water supply.)	A drinking water contamination incident or the denial of drinking water services would have far-reaching public health, economic, environmental, and psychological impacts. Other critical services such as fire protection, healthcare, and heating and cooling processes would also be disrupted by the interruption or cessation of drinking water service, resulting in significant consequences to the national or regional economies. According to the FBI, "With regard to contamination by biological agents, the nation's water supply may seem to be a logical target for a terrorist attack. In reality, targeting the water supply may prove difficult. In order to be successful, a terrorist would have to have large amounts of agent, and some knowledge of the water supply network and access to critical locations within the network.	Physical damage has consequences mainly related to the interruption of service and may also cause enormous economic harms. Vulnerable characteristics of water systems include their physical attributes, e.g., reservoirs, tanks, and pump stations. In addition to physical attributes, a water utility's SCADA could be vulnerable to cyber-attacks, for example, turning pumps on or off, filling, or emptying tanks inappropriately, or causing Water Hammer events (Clark & Hakim, 2014). The cutting of phone lines in March of 2024, for copper resale caused loss of District's telemetry communications at all satellite sites. Although this was due to copper theft, the impact on the District was similar to vandalism or a terrorist attack as it cut off all communications with the District's WF, WTP, pumps, and reservoirs. In the future the District plans to add Intrusion Alarms on all reservoirs (4,5,6 & 7). Cameras at all sites. Additionally, some temporary generators are permanent.

Earthquake & Liquefaction Risk

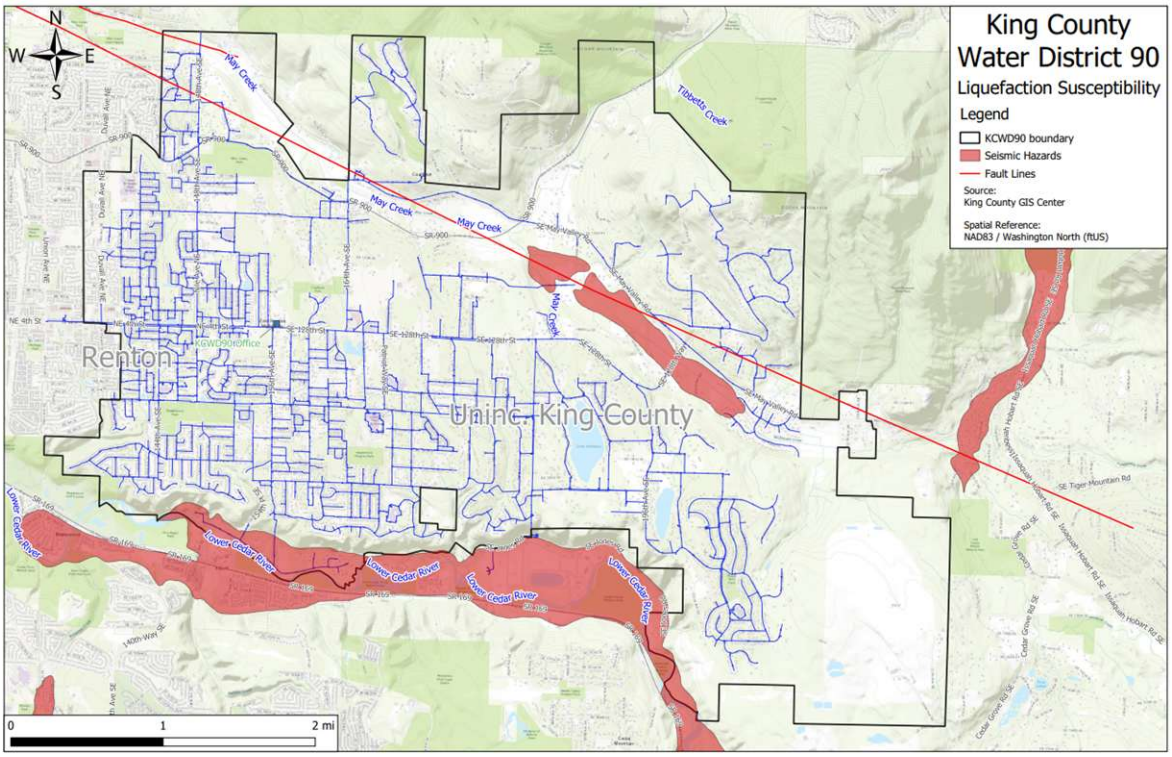


Figure 2: Earthquake Fault lines & Liquefaction risk within King County Water District No. 90 boundaries

Liquefaction Zones

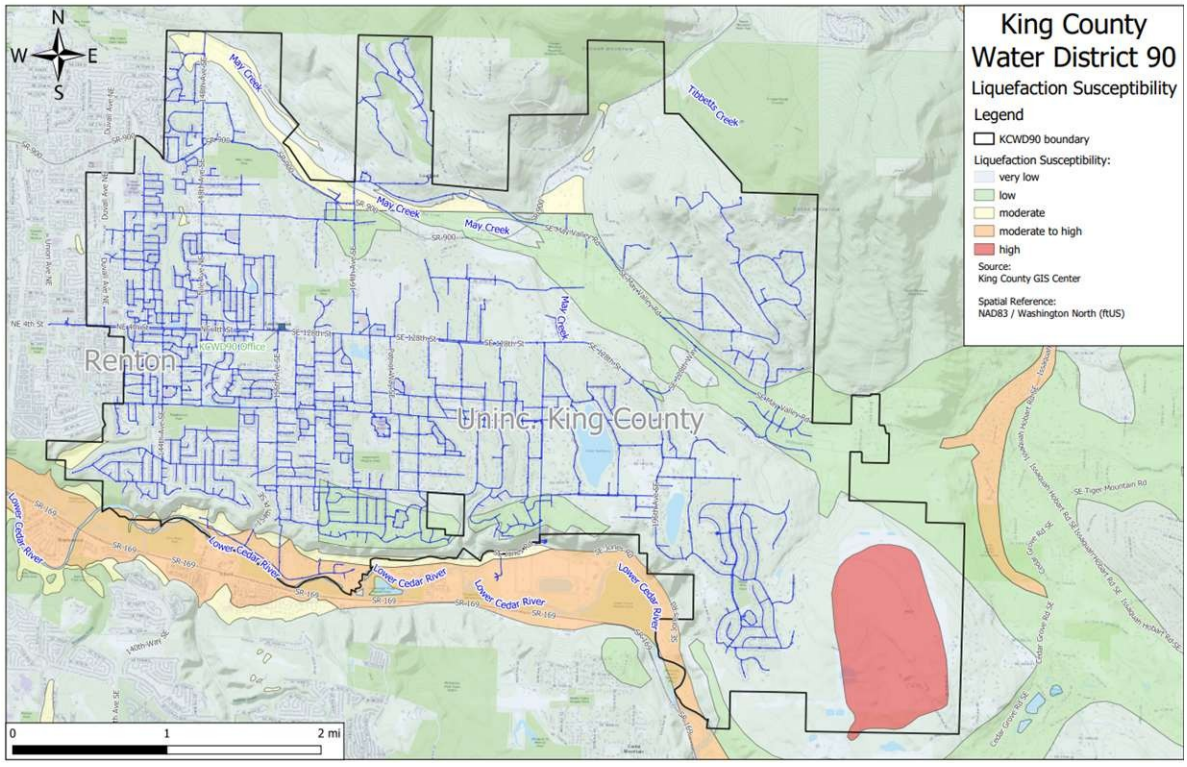


Figure 3: Liquefaction Risk within King County Water District No. 90 Boundaries

Flood & Landslide Risk

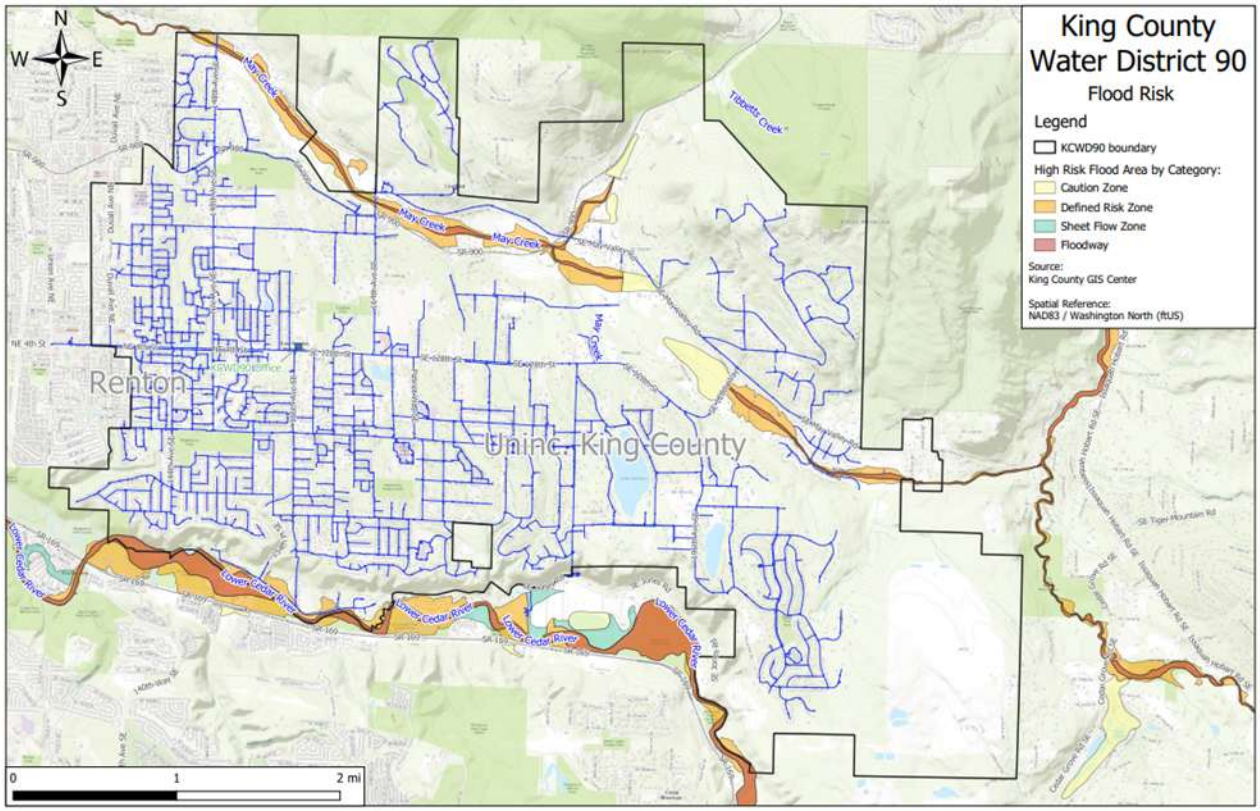


Figure 4: Flood and Landslide Risk within King County Water District No. 90 boundaries

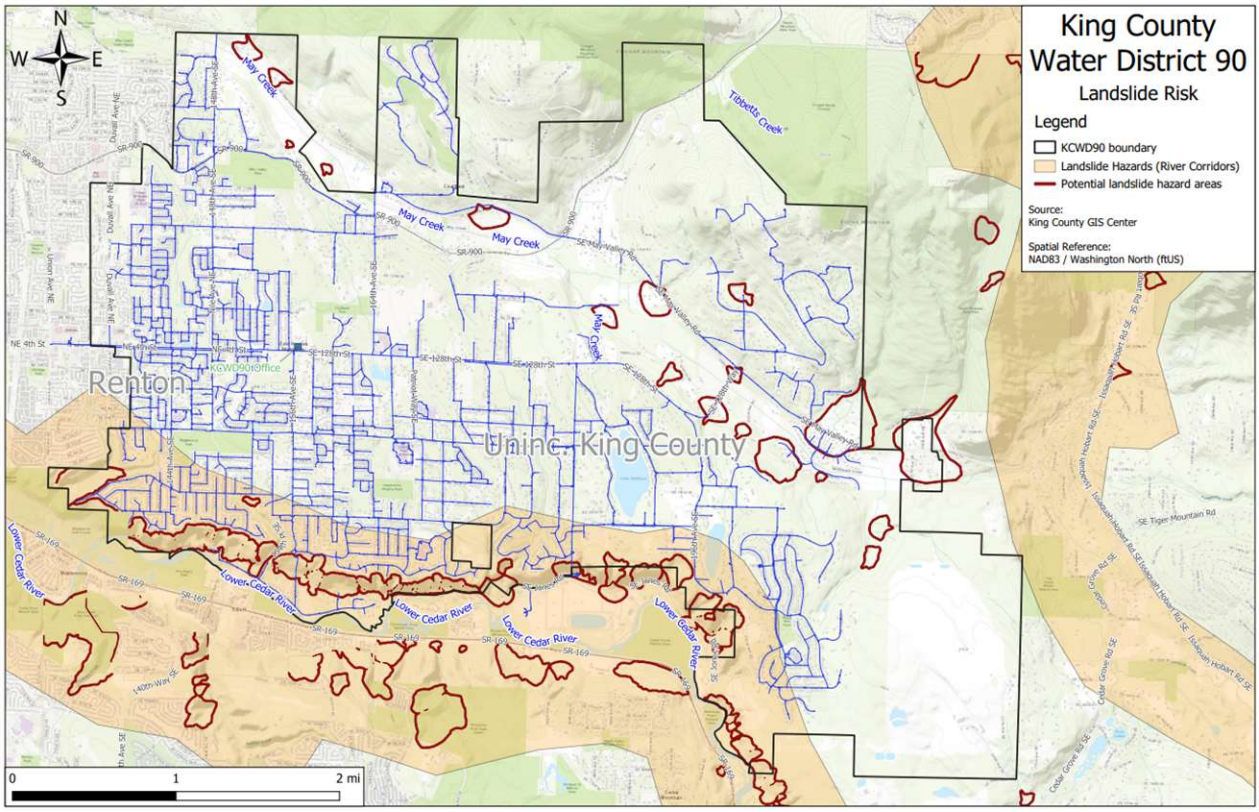


Figure 5: Landslide Risk within King County Water District No. 90 Boundaries

Park, Open and Green Space adjacent to the District

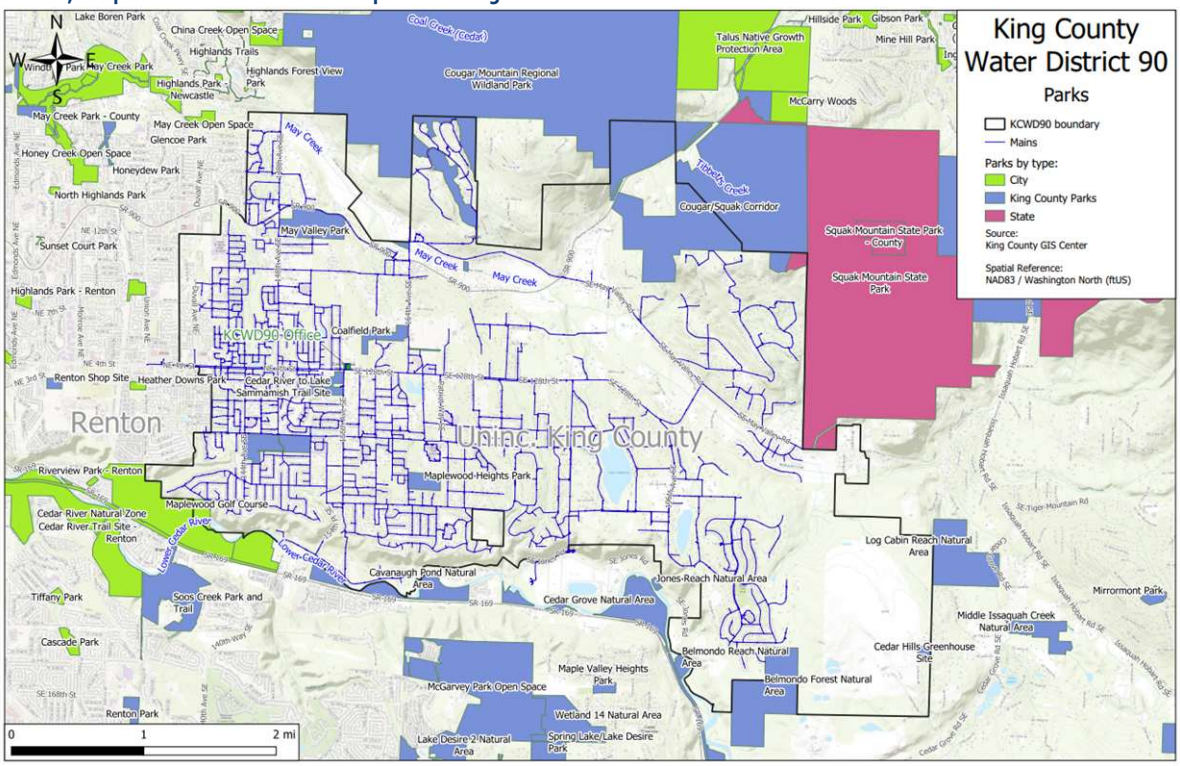


Figure 6: Parks and Open Space adjacent to King County Water District No. 90 Boundaries

Future Annexation Area

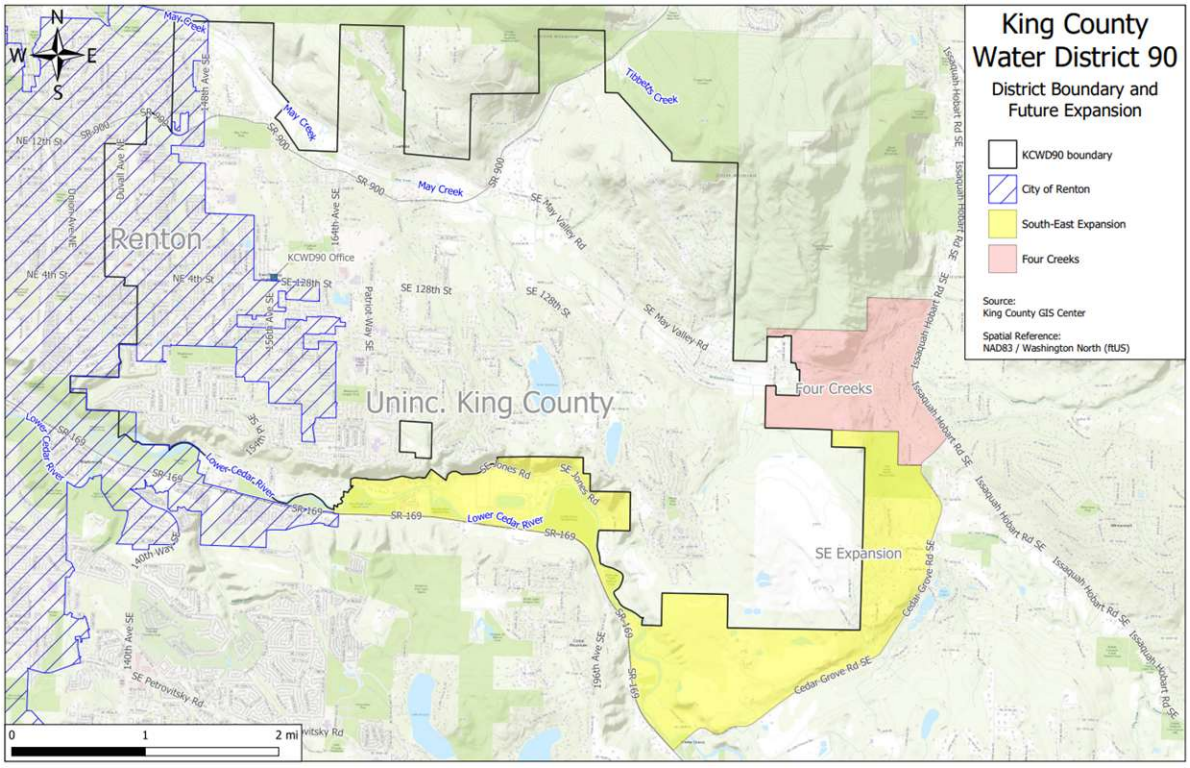


Figure 7 - Future Annexation Areas

Assets at Risk

Asset	Value ($)	Risk Summary	Vulnerability Summary	Impact Summary
Water Treatment Plant	$ 3,000,000	The WTP is the District's emergency water supply and is at risk of failure after a major event due to its location. The District is working to reduce this risk by relocating the WF and WTP out of the flood, liquefaction, and landslide zones. Work on this project began in 2024.	The District's existing WTP is vulnerable to landslides from Earthquakes, rain events, flooding, and wildfires. The District has received a FEMA BRIC Grant to relocate its existing WF and WTP to a more secure location at the District's Headquarters site.	The WF and WTP are the District's emergency supply, with a goal of providing about 25% of total water consumption. The District's emergency supply is critical if its source from SPU is not available after an event.
Well Field	$ 3,000,000	The District's WF and WTP work in conjunction. If water from the WF is limited, then the WTP will not function, and the District will have no emergency supply of water.	The District WF is in the 100-year flood plain. EQ activity could shift the well casing and decrease the level of production. In 2025 the District will drill and new well and the new WF location adjacent to the District's offices.	The WF and WTP are the District's emergency supply, providing about 25% of total water consumption. The District's emergency supply is critical if its source from SPU is not available after an event.
8 Pump Stations	$ 16,000,000	The District provides water service for customers 316 feet to 1363 feet above sea level. It requires a number of PSs to move this water from the valley to the tops of the many hills in the District. PS are valued at $2M each.	Any of the PS are vulnerable to threats such as wildfire, terrorism, or earthquake. PS at higher elevations (PS 4-8) are at higher elevations and can be easily cut off from service if the road is not accessible.	If a PS is out, customers within a particular zone or zones will not have potable water. It is possible that District tanks and pipes could depressurize and run dry. In 2025, the District is rebuilding PS 4, 5, 6, 7, & 8 to improve function and resiliency.
8 Storage Reservoirs	$ 24,000,000	Any one of the District's 8 reservoirs could depressurize and lose all of its stored water. Reservoirs are valued at an average of $3M each.	The District's reservoirs are very vulnerable to ground movement related to an Earthquake. Only Res 1 has been seismically retrofitted.	Leaks in water mains or inlet/outlets on reservoirs could cause them to depressurize and lose all of the stored water. This would greatly reduce the amount of water available for people and firefighting. This could also create water quality concerns.

135 Miles of Water Main	$415,000,000	Water main breaks in any of the District's transmission or distribution mains would mean that water would not be available to customers served by that water main. The average water main value in 2024 is $1.6 million per mile.	All of the Districts water mains are vulnerable to ground movement from earthquakes. The District has about 3 miles of steel water mains and 16 miles of AC water mains that are more at risk than HDPE or DI water mains. All fittings, regardless of main type, are at risk for movement and dislocation.	Water main leaks would mean water is unavailable to a certain portion of the system until the main is repaired. After a significant event, such as an earthquake, there could be numerous mains in need of repair, and many customers could be without water for an extended period of time.
1,095 Fire Hydrants	$ 8,760,000	Fire hydrants are critical to the fire department to fight fires. After a large earthquake or wildfire event it is expected that there would be numerous fires throughout the District. The average fire hydrant costs $8,000.	The biggest risk to fire hydrants would be if there is no water in the main to serve the hydrants. In that case, there would be no water to fight a structure or wildfire event. Typically damage to just one fire hydrant can be mitigated with additional hoses to span the longer distance.	Customers and structures could be at risk of total loss if there is no water to fight fires.
22 Pressure-Reducing Valves (PRV) or Stations	$ 5,500,000	PRVs or Pressure Reducing Stations may stop working, causing over-pressurization of a Zone. The average cost of a PRV station is $250K	The areas that have only one PRV would not have any potable water.	No potable water and no firefighting capacity in zones served by only one PRV. Zones with two or more stations would have a decreased risk overall but could still fail and disrupt service.
Administration/Operations buildings (Headquarters)	$ 5,500,000	It would be very difficult for the District to operate effectively if the headquarters (HQ)buildings were impacted. However, since Covid-19, the Office staff can service customers remotely more than ever.	The District's HQ is where all of the financial, administrative, planning, and customer service functions take place. The HQ site could be vulnerable to earthquakes, fire, severe weather, or prolonged power outages.	Loss of one or both of the HQ's buildings would severely impact the District's operations. While the District's emergency response plan includes a secondary location from which to operate if necessary, this would be very limited and slow operation until a more permanent location is available.

Vactor Truck, Dump Truck & Backhoe	$ 1,500,000	The District depends on large equipment like the vactor, dump truck and backhoe to make repairs to District infrastructure. Losing any of these pieces of equipment would slow down the recovery and repair process.	District large equipment assets could be impacted if there was no access to gas/diesel for an extended period of time, and/or if roads were not accessible.	It is critical after a major event that the District has the tools, the staff and the inventory to complete system repairs as quickly as possible. Losing some, or all, of these large pieces of equipment would slow down the repair process.
8 Generators	$ 2,000,000	Generators are critical for extending service to areas that are cut off from power.	Generators that are damaged are not working, or that we cannot get to a specific location would decrease the District's ability to respond and recover after an event.	The generators allow the District to continue to provide water to a specific zone after a major event. It is a major component of the District's emergency response plan. Failure to deploy generators or damage to generators would mean that customers could be without water for much longer periods of time.

Plan Update Process

The District participated in the multijurisdictional planning process led by King County. The District's General Manager, Darcey Peterson, and Operations Manager, Joshua Drummond, participated in training sessions with King County representatives to prepare this 2025 update to the Regional Hazard Mitigation Plan. Events included meetings with regional participants, such as other Special Purpose Districts, cities, and county and state emergency personnel. Events also included work sessions, and webinars.

Internally the District prepared this Hazard Mitigation Plan by forming an internal planning team to discuss hazards and mitigation options. This team consisted of District staff, including the General Manager, the Operations Manager, the Field Foreman, the Field Lead and other District office and Field Staff. The internal planning team met from July 2024 to February 2025. During these meetings, assets were identified, maps were reviewed, and potential hazards were discussed. This risk assessment process helped the team identify assets exposed or vulnerable to hazards. As each hazard was reviewed, the internal planning team asked the following 7 questions related to assets impacted:

1. What is the hazard?
2. What assets are at risk due to this hazard?
3. What is the risk to those assets?
4. What other assets rely on that asset?
5. What effect does the loss of that asset have on my organization?
6. What effect does the loss of that asset have on my community?
7. What can I do to reduce or eliminate the risk to that asset from this hazard?

The answers to these questions were used to create a spreadsheet of impacts and possible mitigation strategies per hazard type. From these documents, Hazard Mitigation Strategies were developed. Frequently strategies for mitigation cover more than one hazard.

Additional Renton Regional Fire Authority regarding wildfire risk, City of Renton Emergency Management Personnel, and the District's Board of Commissioners.

Jurisdiction Planning Team

Name	Title	Organization	Contribution
Darcey Peterson	General Manager	KCWD90	Data analysis & review, identification of strategies
Joshua Drummond	Operations Manager	KCWD90	Data analysis & review, identification of strategies
Gus Flather	Field Foreman	KCWD90	Data analysis & review, identification of strategies
Dalton Bond	Field Lead	KCWD90	Data analysis & review, identification of strategies
Tim Johnson	Field Crew	KCWD90	Data analysis & review, identification of strategies
Sean Reed	Field Crew	KCWD90	Data analysis & review, identification of strategies
Tatiana Estrada	Office Staff	KCWD90	Data analysis & review, identification of strategies
Kallibek Kazbekov	GIS Support	KCWD90	Data analysis & review, identification of strategies & maps
Sam Amira	Commissioner	KCWD90	Plan & Strategy review
Alvin Materi	Commissioner	KCWD90	Plan & Strategy review
Pete Eberle	Commissioner	KCWD90	Plan & Strategy review
Craig Christensen	Engineer	DEA, Inc.	Plan & Strategy review
Nhan Vo	Engineer	DEA, Inc.	Plan & Strategy review

The District also engaged in public outreach as it prepared this Hazard Mitigation Plan. The District participated in Eastside Fire and Rescue's Town Hall on 11/06/2024. At this meeting District staff took the opportunity to ask customers what hazards they were most concerned about. The second event was the National Night Out in August 2024. Again, District staff asked customers to indicate what hazards concerned them and then collected their email addresses so that customers could participate in the District's emergency preparedness survey. We also asked customers to participate in a survey that would identify their concerns. The following tables detail the District's public outreach program as it relates to this Hazard Mitigation Update.

Public Outreach Events

Planning Activity	Date	Summary	Attendees
National Night Out (Ida Naila)	8/6/2024	Community Engagements	District Staff, Commissioners & Customers
Public Outreach w/ Fire	11/6/2025	Eastside Fire Town Hall	Management Team & Public
Community Survey	1/22 to 2/3/2025	Community Engagements	District Customers
Customer Open House	4/8 & 4/9/2025	OPEN HOUSE	District Staff, Consultants and Staff

The District sent out a "Regional Hazard Mitigation Survey" by email to over 6,000 customers during the winter of 2025. Of these, 640 (10%) completed surveys were returned. The survey queried customers about what hazards they had personally experienced, what hazards they were most concerned about, how prepared for a major event their household is, and who they believe is responsible for preparing for a major hazard. The responses were reviewed by the internal planning team and the Board of Commissioners.

Meetings with other jurisdictions, map/data reviews, extensive research, meetings with the internal planning team, and input from District customers have helped District staff develop and prioritize potential mitigation strategies.

Going forward, successful completion of developed strategies will be contingent on grants and/or loans received, available District funding, staff and partner (i.e.. engineering) workload, and the completion of needed information or studies. Strategies may be reprioritized or canceled completely based on these and other factors. The project list will be reviewed annually with the Capital Budget review.

The following "Plan Update Timeline" chart details the training, meetings, and work sessions necessary to complete this Hazard Mitigation Update.

Plan Update Timeline

Planning Activity	Date	Summary	Attendees
Intent to Participate and Kick Off	10/30/2023	Intent and Planning	Regional Participants & District Staff
Hazard Mitigation Staff Meeting	7/9/2024	Hazards Assessment	All District Staff
Meet with King County	7/10/2024	Wildfire Planning	KC Staff and Management Team
Regional Hazard Mitigation Workshop	7/25/2024	Hazard Vulnerability Annex	KC Staff and Management Team
King County Wildfire Risk Reduction Strategy	7/22/2024	Wildfire Planning	Fire Districts, City & County Staff
Eastside Fire and Rescue Town Hall	11/6/2024	Community Engagements	District Staff and Customers
Customer Survey - Wildfire Risk	11/6/2024	Community Engagements	District Staff and Customers
Capital Spending Plan - Draft 1 2025	12/9/2024	Capital Prorities	Commissioners & Management Team
Capital Spending Plan - Draft 2 2025	1/14/2025	Capital Prorities	Commissioners & Management Team
Hazard Mitigation Planning Team	1/14/2025	Hazards Assessment	District Committee
Hazard Mitigation Planning Team	1/21/2025	Hazards Assessment	District Committee
Hazard Mitigation Planning w Engineering	1/22/2025	Fire Hazard Assessment	District Management & Engineering Staff
Community Survey	1/22-2/3/2025	Community Engagements	District Customers
Hazard Mitigation Planning Team	1/28/2025	Hazards Assessment	District Committee
Hazard Mitigation Planning Team	2/10/2025	Strategies Review	District Committee
Commissioners Meeting	2/11/2025	Hazards Assessment	District Commissioners & Committee
Staff Meeting	2/11/2025	Hazard Assessment	All District Staff
Commissioners Meeting	2/18/2025	Strategies Review	Commissioners & Management Team
Commissioners Meeting	2/19/2025	Final Review	DEA Engineering Staff
Commissioners Meeting	3/4/2025	Approval of Plan	Commissioners & Management Team

Jurisdiction Hazard Mitigation Program

Hazard mitigation strategies were developed through a two-step process. Each jurisdiction met with an internal planning team to identify a comprehensive range of mitigation strategies. These strategies were then prioritized using a process established at the county level and documented in the base plan.

Plan Monitoring, Implementation, and Future Updates

King County leads the mitigation plan monitoring and update process and schedules the annual plan check-ins and bi-annual mitigation strategy updates. The county solicits updates on mitigation projects for inclusion in the county-wide annual report. As part of participating in the 2025 update to the Regional Hazard Mitigation Plan, every jurisdiction agrees to convene its internal planning team at least annually to review its progress on hazard mitigation strategies and update the plan based on new data or recent disasters.

As part of leading a county-wide planning effort, King County Emergency Management will send to planning partners any federal notices of funding opportunities for the Hazard Mitigation Assistance Grant Program. Proposals from partners will be assessed according to the prioritization process identified in this plan and the county will, where possible, support those partners submitting grant proposals. This will be a key strategy to implement the plan.

The next plan update is expected to be due in April 2030. All jurisdictions will submit letters of intent by 2028, at least two years prior to plan expiration. The county will lead the next regional planning effort, beginning at least 18 months before the expiration of the 2025 plan.

Continued Public Participation

King County and its partner cities and Special Purpose District's already maintain substantial public outreach capabilities, focusing on personal preparedness and education. Information on ongoing progress in implementing the hazard mitigation plan will be integrated into public outreach efforts. This will provide King County residents who are already engaged in personal preparedness efforts with context and the opportunity to provide feedback on the county's progress and priorities in large-scale mitigation. In the vertical integration of risk-reduction activities from personal to local to state and federal, it is important that the public understand how its activities support and are supported by larger-scale efforts.

The outreach and mitigation teams will also continue to work with media and other agency partners to publicize mitigation success stories and help explain how vulnerabilities are being fixed. When possible, public tours of mitigation projects will be organized to allow community members to see successful mitigation in action.

National Flood Insurance Program (NFIP)

As a Special Purpose District, King County Water District No. 90 is not subject to the NFIP.

Hazard Mitigation Capabilities

The District has created 13 Strategies to increase its resiliency to natural and man-made disasters throughout the Service Area. Each year, in conjunction with the annual Operating and Capital budget review, District staff and Commissioners will review and reprioritize projects, if necessary, identified by Hazard Mitigation Strategies.

Both budgets include projects identified in the Comp Plan and this Hazard Mitigation Plan. For example, the District has an ongoing water main replacement program with a goal of replacing, on average, one mile of water main per year.

District rates, loans, and grant programs currently fund capital projects. The District can also obtain bond funding if necessary to complete projects.

Goals are broad policy statements of the community's vision for the future. They help describe the contribution each strategy makes toward major objectives that reach beyond any individual department or discipline. In alignment of this and with the Plan's purpose, King County's Regional Hazard Mitigation Steering Committee adopted King County's Determinants of Equity as Mitigation Plan Goals:

1. Access to Affordable, Healthy Food
2. Access to Health and Human Services
3. Access to Parks and Natural Resources
4. Access to Safe and Efficient Transportation
5. Affordable, Safe, Quality Housing
6. Community and Public Safety
7. Early Childhood Development
8. Economic Development
9. Equitable Law and Justice System
10. Equity in Government Practices
11. Family Wage Jobs and Job Training
12. Healthy Built and Natural Environments
13. Quality Education
14. Strong, Vibrant Neighborhoods

Hazard Mitigation Authorities, Responsibilities, and Capabilities

Plans

When plans and planning processes are more integrated, greater impact can be achieved through clearer definitions, smarter investment, and partnerships. Successful integration requires regular review of the District's Planning documents.

The District has a history of combining Hazard Vulnerability Strategies with the annual update of the District's Capital Infrastructure Plan and Capital Spending Plan (budget). For example, the 2015 Hazard Mitigation Strategies were included in the 2015 Comp Plan. In addition, every Fall, the District Board and Management Team review the strategies and incorporate them into Capital Program projects and goals. Some strategies are not feasible until additional grants or loans are available.
Along with the plans below, the District is currently creating an Asset Management Program that will be integrated with the plans below and the Hazard Mitigation Plan going forward.

Plan Title	Responsible Agency	Point of Contact	Relationship to Hazard Mitigation Plan
Comprehensive Plan	The District & Washington Department of Health	Darcey Peterson	The District's most recent Comprehensive Plan was finalized in 2015. The plan identifies critical District assets, anticipated growth and system demand, and the long-term CIP program. The plan data was used to inform the Hazard Mitigation Plan. Strategies developed are consistent with plan goals and future capital spending plans. The District will prepare a new plan in 2026 and will include the 2025 Hazard Vulnerability Goals
Comprehensive Emergency Management Plan	District	Joshua Drummond	The District's Emergency Response Plan (ERP) is updated and reviewed annually.
Capital Facilities Plan	District	Darcey Peterson	The District's Capital Plan is reviewed in January of every year. Changes to priorities and needs are translated to a six-year Capital Spending Plan. The goals and strategies developed in the Hazard Mitigation Plan are approved and funded through the Capital Facilities Plan.
Strategic Plan 2022-2027	District	Darcey Peterson	The District has identified 9 different strategic goals. Each goal has a set of subgoals, timelines, and reporting requirements. These goals are reviewed annually and factored into
Financial Management Policies	District	Darcey Peterson	The District updated its Financial Policy document in 2021. These guidelines help determine how capital projects are paid for and prioritized.

Hazard Mitigation Strategies

2025 Hazard Mitigation Strategies

#	Strategy	Lead Agency/POC	Timeline	Cost	Priority
1	New Intertie & Pump Station with Seattle	KCWD90	2025-2030	$ 7,500,000	High
2	Seismic upgrades at Reservoir #2	KCWD90	2025-2030	$ 1,035,000	High
3	Add Solar Back-up Power at HQ and other District Sites	KCWD90	2025-2030	$ 500,000	High
4	Wildfire Resiliency - Extend Water System along May Valley Road	KCWD90	2025-2035	$ 3,500,000	High
5	Seismic upgrade along May Valley Road	KCWD90	2025-2035	$ 4,000,000	Med
6	Seismic Improvements for Reservoirs #4, #5 & #6	KCWD90	2028-2033	$ 3,000,000	Med
7	Seismic Improvements for Reservoir #7	KCWD90	2030-2040	$ 1,000,000	Med
8	Harden Water System - Transmission Backbone	KCWD90	2035-2045	$ 20,000,000	Med
9	Harden Water System - Replace Steel and A/C	KCWD90	2025-2045	$ 20,000,000	High
10	Defensible Space	KCWD90	2025-2030	$ 600,000	Med
11	Wildfire Resiliency - Buildings, Parks and Green Space	KCWD90	2025-2030	$ 300,000	Med
12	Landslide, Liquefaction & Seismic Improvements for Single-Access Locations	KCWD90	2025-2035	$ 5,000,000	Low
13	Flood Mitigation	KCWD90	2030-2045	$ 500,000	Low

2020 Hazard Mitigation Strategies – Progress Update

Strategy	Summary	Updated Timeline	Status
Relocate WF and WTP	FEMA BRIC Grant Received March 2024	2024-2025	**In Process**
Add Intertie with the City of Renton and/or Coal Creek	FEMA BRIC Grant Received March 2024	2024-2025	**In Process**
Site Specific Community Survey	Coffman Seismic Studies all Sites	2021	**Complete**
Harden Water System	Replaced 4 miles of leaking steel main with HDPE	2022-2024	**Ongoing**
Emergency Response Training and Exercises	District	2019-2024	5
Seismic Upgrades / PS4 - 8	FEMA Hazard Mitigation Grant Received April 2024	2025	**In Process**
Emergency Operations Center (EOC) & Emergency Water Distribution	District	2022-2026	7
Cyber Resiliency	Completed IT Contingency Plan 2022 and Updated Cyber Policy 2023	2019-2021	**Complete**
Seismic Upgrades to District Tanks	District	2022-2026	9
Communication Resiliency	Cell Service to be installed at all remote sites. Adding redundant telemetry communications in 2025	2024-2025	**In Process**
Wildfire Resiliency	District	2019-2024	11
New Garage / EOC	Headquarters Site Planning	2024-2025	**Planning**
Increase Security at District Locations	District	2020-2024	13
Harden Existing WF and WTP	No longer applies as WF and WTP are being relocated.	2023-2028	N/A

2015 Hazard Mitigation Strategies -Progress Update

Strategy	Description	Priority	Status
KCWD90-1—Continue to support county-wide initiatives identified in part 3 volume 1 of this plan.	County-wide initiatives	Low	Ongoing
KCWD90-2—Participate in the plan maintenance identified in part 3 volume 1 of this plan.	County-wide initiatives	Low	Ongoing
KCWD90-3—Seismic upgrades/retrofits to District PS 4,5,6,7, and 8 including building, electrical systems with variable frequency drivers and auto transfer switches.	Applied for FEMA grant for High Valley (PS 4, 5 & 6) in Sept 2016. Total estimated cost is $725,000 to upgrade. FEMA is still considering our application	Medium	In Process
KCWD90-4—Training and Testing of Emergency Power System.	Monthly testing, quarterly training.	Low	Complete
KCWD90-5—Harden Water System – Replace 14,000+' of 10" AC Pipe with 12" DI Pipe – 550 & 744 Zones.	No current main replacements are for AC main	Medium	Complete
KCWD90-6—Harden Water System – Replace 18,000+' AC & Steel Pipe with 8' DI Pipe – 744 & 804 Zones.	1) Zone 744 "Lake McDonald Project" Replace 3,800' of AC pipe with 8" & 12" pipe DI Pipe – 2017. 2) "West Lake Kathleen Project" Loan Approved – Replace 5,500' of AC and Steel Pipe with 8" DI Pipe, also install 2,900' of 12" DI pipe – 2019 Total of 12,200 Feet of Pipe.	High	Complete
KCWD90-7—Public Awareness and Emergency Preparedness Program.	Increased community outreach significantly.	Low	Complete
KCWD90-8—Enhance Communications with UHF Radio System.	Added additional CB radios to vehicles & equipment. The District has determined that participation in PSERN is a more effective solution.	Low	Complete
KCWD90-9—Harden Telemetry System and Communications with Radio/Cellular – Pump Stations 1, 2, 3, 4, 5,6,7,8, Well and Water Treatment Plant.	Completed Telemetry Strategic Plan 2016. Upgrade Communications at PS1 in 2019. Wells, WTP, PS 2 planned for 2020.	Low	Ongoing
KCWD90-10—Pump Stations Bypass System – PS 4, 5, 6, 7, and 8 – Provides the ability to pump around a pump station after a full Electrical system failure.	4 & 5 will have station bypass completed in 2025. 7 & 8 complete with District staff in 2026.	Low	Ongoing

KCWD90-11—Install 2,300' for 8" DI water main and PRV station on 154th PL SE from Jones Rd to SE 142nd PL (The only main serving this area is in a landslide-prone area).	No work completed (The goal is to add redundancy. However, only a few customers are impacted.).	Medium	On Hold
KCWD90-12—Install the third pump with a variable frequency drive at PS 2 for emergency supply to 744 and 804 zones, as well as the landfill and co-generation plant.	Contract for Engineering Services approved June 2019. Construction is anticipated by the end of 2019.	Medium	Complete
KCWD90-13—Install 500,000-Gal Storage Tank Maple Hills for 744 and 804 zones for emergency supply.	Growth in the area has slowed considerably. (2025 updates; additional Reservoir is not needed at this time.)	Medium	On Hold

Mitigation Strategies

The following pages include 2025 Mitigation Strategies #1 - #13.

Strategy #1 - Add Second Intertie SPU (via Coal Creek Utility District)

Lead Points of Contact	**Partner Points of Contact (Title)**	**Hazards Mitigated/Goals Addressed**	**Funding Sources and Estimated Costs**
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	Washington State Department of Health (DOH) Seattle Public Utilities (SPU) Washington State Department of Ecology (DOE) Coal Creek Utility District (CCUD)	Goal 6 – Community and Public Safety Goal 14 – Strong, vibrant neighborhoods	$7,500,000 FEMA PWTF/DWSRF District Rates

Strategy Vision/Objective

The District currently purchases approximately 94.5% of its water from SPU; however, there is currently only one connection between the District and SPU. The District aims to complete a second intertie with SPU through CCUD. This project will also require the construction of a new pump station capable of pumping 2,800 gallons per minute (gpm).

Mitigation Strategy

The District currently receives 94.5% of its water supply through an SPU transmission main that runs through areas in the City of Renton and is susceptible to liquefaction. In a significant earthquake, water delivery to the District at Pump Station #1 would likely be disrupted for days or weeks. In order to provide supply redundancy, the District aims to establish a permanent second intertie with the Coal Creek Utility District (CCUD) to obtain wholesale water from SPU from an alternate location within the District. A second intertie location would allow the District to get "Tolt" water from the north if "Cedar River" water is cut off from the south.

The District's emergency water supply is sourced from our Well Field (WF), which is situated along Jones Road. In 2025, we initiated plans to relocate the WF to the District's headquarters to ensure a dependable emergency water source if the connection with SPU fails. Additionally, the District is collaborating with the City of Renton to establish a temporary, portable intertie for emergency use only.

In the event of a large wildfire or multiple fire incidents, the portable intertie with the City of Renton and the permanent intertie with SPU can enhance the District's water supply. This setup would temporarily provide additional water for fire protection and suppression efforts.

2-Year Objectives	**5-Year Objectives**	**Long-Term Objectives**
Work with SPU and CCUD to determine criteria and location for a permanent intertie and new pump station.	Design, plan, bid, and build a second permanent intertie, additional water main and pump station to receive SPU water.	Strengthen the District's emergency supply of water.

Update the interlocal agreement with the SPU and CCUD to determine a location for a second intertie.		

Implementation Plan/Actions

- Seek funding to add a permanent intertie with SPU via CCUD.
- Update agreements with CCUD and SPU for emergency water.
- Study the best possible locations for additional interties.
- Design, plan, bid, and build a second SPU intertie and Pump Station

Performance Measures

Reinforce the District's emergency water source with additional interties to SPU via CCUD so potable water is available after a significant event.

Strategy #2 - Seismic upgrades to District Reservoir #2

Lead Points of Contact	**Partner Points of Contact (Title)**	**Hazards Mitigated / Goals Addressed**	**Funding Sources and Estimated Costs**
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	Washington State Departments of Health (DOH) King County Department of Health (KCDOH) King County Emergency Management (KCEM) Eastside Fire and Rescue (ESFR)	Goal 6 – Community and Public Safety Goal 14 – Strong, vibrant neighborhoods	$35,000 for study $1,000,000 for improvements FEMA PWTF/DWSRF District Rates

Strategy Vision/Objective

Harden District's second largest reservoir (Res #2) against earthquake hazards. The retrofits could include earthquake valves (aka automatic shutoff valves), seismic monitoring, flow meters, anchoring tie-downs, adding flexible piping/joints on connections to the distribution system, and Earthquake (EQ) resistant piping on the discharge pipe.

Mitigation Strategy

The District has eight reservoirs within our distribution system. Only Res #1 (4.75 million gallons) has been reviewed and upgraded for seismic activity. A seismic valve and tie-down straps were added to this reservoir in 2006.

Res #2 is the District's second-largest reservoir, with a capacity of 2,000,000 gallons. Built in 1970, it serves the District's largest elevation zone of 649. Retrofitting this reservoir would allow the District to maintain water after a significant earthquake that could cause multiple main leaks, leading to the quick depletion of available water. This water would remain available to serve customers directly (i.e., filling station) and allow the District staff to quickly find and repair water main leaks. (It is difficult to locate leaks when the entire distribution system runs dry.)

2-Year Objectives	**5-Year Objectives**	Long-Term Objectives
Complete a review of Res #2 to determine needs. Consult the Districts geological survey to determine soil types. Develop a list of improvements to harden Res #2	Develop a site-specific improvement plan, a budget, and a timeline. Determine available funding.	Improve our reservoirs' reliability, resiliency, and ability to withstand a significant seismic event.

Implementation Plan/Actions

- Complete a study of Res #2 improvements needed.
- Develop a list of upgrades/improvements for the reservoir.
- Prioritize reservoir improvements and seek funding.
- Determine what improvements could be made in-house.
- Consider redundancy of electrical, SCADA, security, and other systems.
- Add improvements, including auto shut-off valves, tie-downs, and flexible piping.
- Continue and expand employee training of seismic valves and emergency operations.
- Continue annual inspections to ensure seismic valves are in place and operational.

Performance Measures

- Complete a study of Res #2.
- Develop projects and design for improvements.
- Determine the priority of improvements.
- Secure funding.
- Complete Seismic Retrofit.

Figure 1 - Reservoir #2

Strategy #3 - Add Solar backup power at HQ and other District Sites

Lead Points of Contact	**Partner Points of Contact (Title)**	**Hazards Mitigated/Goals Addressed**	**Funding Sources and Estimated Costs**
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	Washington State Department of Health (DOH) Washington State Department of Commerce (DOC) Puget Sound Energy (PSE)	Goal 6 – Community and Public Safety Goal 14 – Strong, vibrant neighborhoods	$500,000 FEMA/Other PWTF/DWSRF District Rates

Strategy Vision/Objective

The District aims to invest in solar power and Battery Energy Storage Systems (BESS) at its headquarters and in various other locations. The objective is to achieve significant cost savings on electricity bills, partly by offsetting power surges during pump start-up. Additionally, this initiative seeks to improve power redundancy and reliability across the District.

Mitigation Strategy

The District's headquarters site is excellent for solar production and battery storage. The site has suitable lines of sight for solar photovoltaic systems (PV) and sufficient space for solar panel placement. PV production and battery storage at this site would provide resiliency to the District's operations during an extended power outage. The current administration building's 400A/240V electrical system is suitable for a 15kW solar array with integrated battery storage. The proposed building to the northeast of the current buildings would also be suitable for a PV system. With the assumption of a 400A/240V electrical system, a second 15kW solar array with storage could be added to the administrative site.

Additional Solar improvements could be possible at Res 1, 3A, 3B, and/or PS 3 & 6. These sites have suitable solar lines of site for a small PV (5kW) and storage system. While insufficient to power the main pumps, a small PV system would offset the fuel loads of the existing generator and could run the Telemetry for an extended period.

2-Year Objectives	**5-Year Objectives**	**Long-Term Objectives**
Determine the cost, location, and potential solution for Solar Improvements at various District Sites. Plan for Solar and BESS at the District's headquarters location.	Look for grants or other funding. Develop, plan, design, bid, and contract for solar installation. Complete installation of solar with new District Headquarters and WF.	Strengthen the District's emergency electrical supply and lower District energy costs.

Implementation Plan/Actions

- Complete Solar Planning Study with DOC grant funding in 2025.
- Use recommendations to look for grants or other funding to implement solar and BESS.
- Work with PSE on integration and Permitting with relevant agencies.
- Plan, Design, bid and Contract for Solar & BESS installation services.

Performance Measures

Complete the installation of Solar Back-up power at HQ and other District sites to lower power consumption and expense and increase resiliency.

Figure 1 - Possible layout of Solar at District Headquarters

Strategy #4 - Wildfire Resiliency; add water main along SE May Valley Road to Hobart Issaquah Road

Lead Points of Contact	Partner Points of Contact (Title)	Hazards Mitigated/Goals Addressed	Funding Sources and Estimated Costs
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	King County Emergency Response Renton Regional Fire Authority Eastside Fire and Rescue Four Creeks Ranch Water Association	Goal 6 – Community and Public Safety Goal 14 – Strong, vibrant neighborhoods	$2.0 to $3.5 million for the Main Extension from Squak Mt. Road SE to Issaquah Hobart Road. FEMA District Rates

Strategy Vision/Objective

The District aims to expand its service area by annexing properties along SE May Valley Road. This will provide homeowners with fire protection and address the area's failing wells. This strategy will improve homeowners' access to clean water and provide better fire protection and reliable water supply (as wells fail in the area).

Mitigation Strategy

The District is working to expand its Service Area Boundaries east along SE May Valley Road from Squak Mountain Road SE to Issaquah-Hobart Road SE. By adding 1.6 miles of water main along May Valley Road, the District aims to provide potable water services to approximately 235 existing properties that are currently relying on wells and small Class B water systems. Many customers in this area have reported significant issues with their wells running dry. This region is in the Wildland-Urban Interface (WUI) and is subject to a higher-than-average risk of wildfires. The District hopes that introducing fire protection in this underserved area will help mitigate potential wildfires before they can spread.

The District is also seeking partnerships with King County, City of Renton, and the Eastside Fire District to add the water main along May Valley and fire service to the parks and green space surrounding the District.

2-Year Objectives	5-Year Objectives	Long-Term Objectives
Work on annexation by approval of property owners in the proposed annexation area. Develop relationships with other agencies that would support this additional infrastructure.	Seek and secure FEMA (or other) funding to install 1.6 miles of water main along SE May Valley Road at about $2.5 to 3.5 million. Determine necessary upgrades to the Four Creeks Ranch water system and set	Create resiliency, especially concerning the WUI interface and potential wildfires in the District.

	a new rate structure for new customers in this area.	

Implementation Plan/Actions

- Continue conversations with future customers regarding annexation.
- Get approval for annexation from the Boundary Review Board.
- Identify partners and stakeholders. Build a coalition of support for the project.
- Determine necessary improvements or upgrades to the Four Creeks Ranch water system.
- Design projects, gather necessary easements, and start permitting.
- Determine the scope of improvements necessary for the Four Creeks Ranch community.

Performance Measures

Complete the main extension along SE May Valley Road to Issaquah-Hobart Road to serve water to this underserved area.

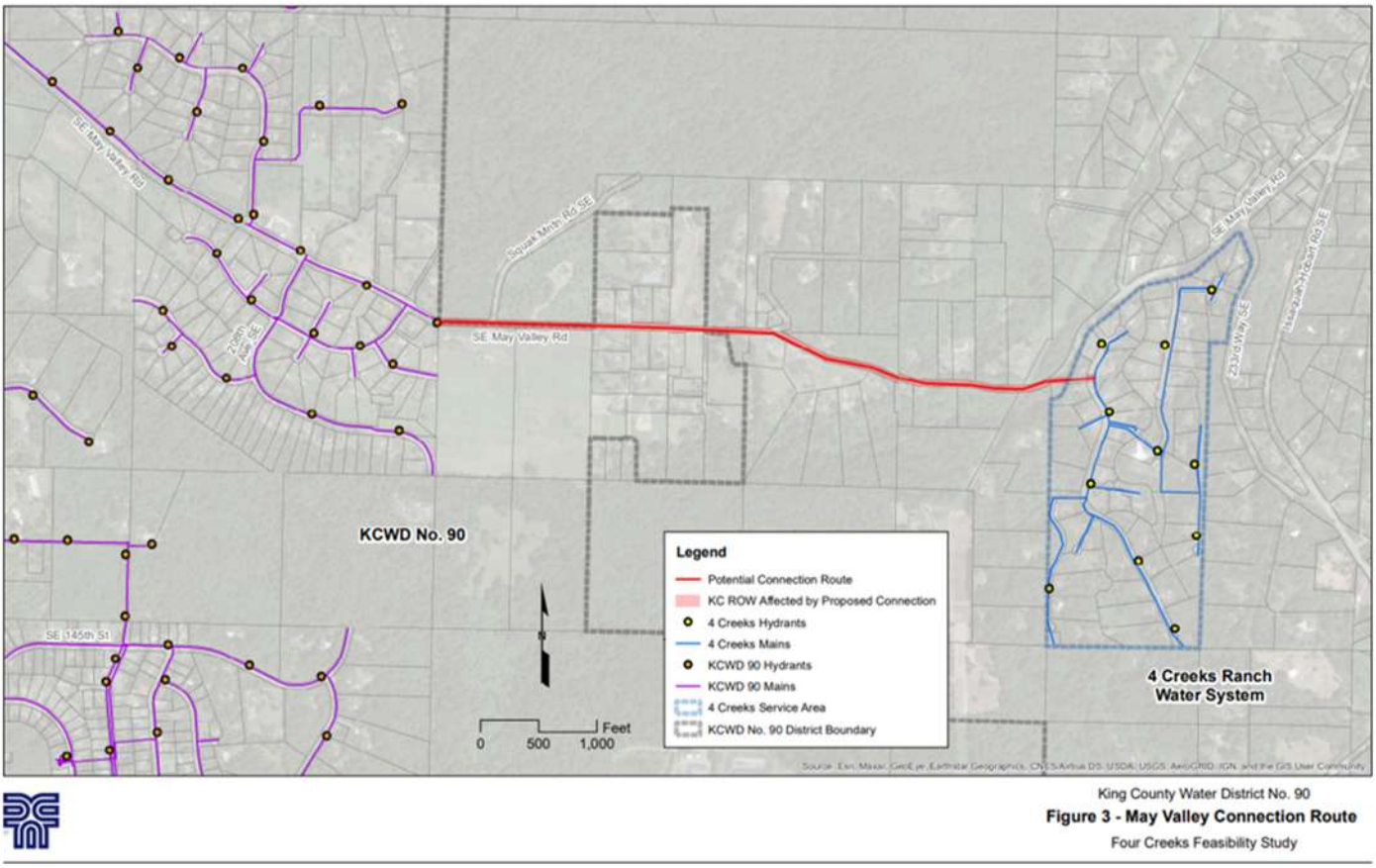


Figure 1 - Potential Main Extension location along May Valley Road

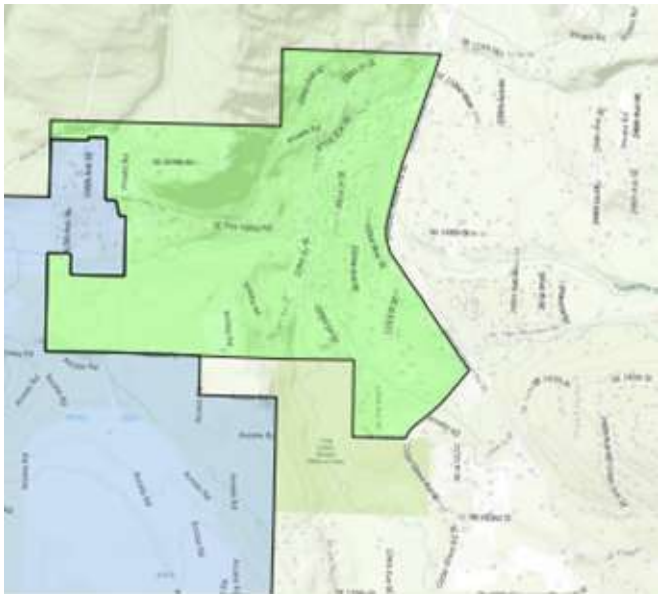


Figure 2- Future Annexation Area

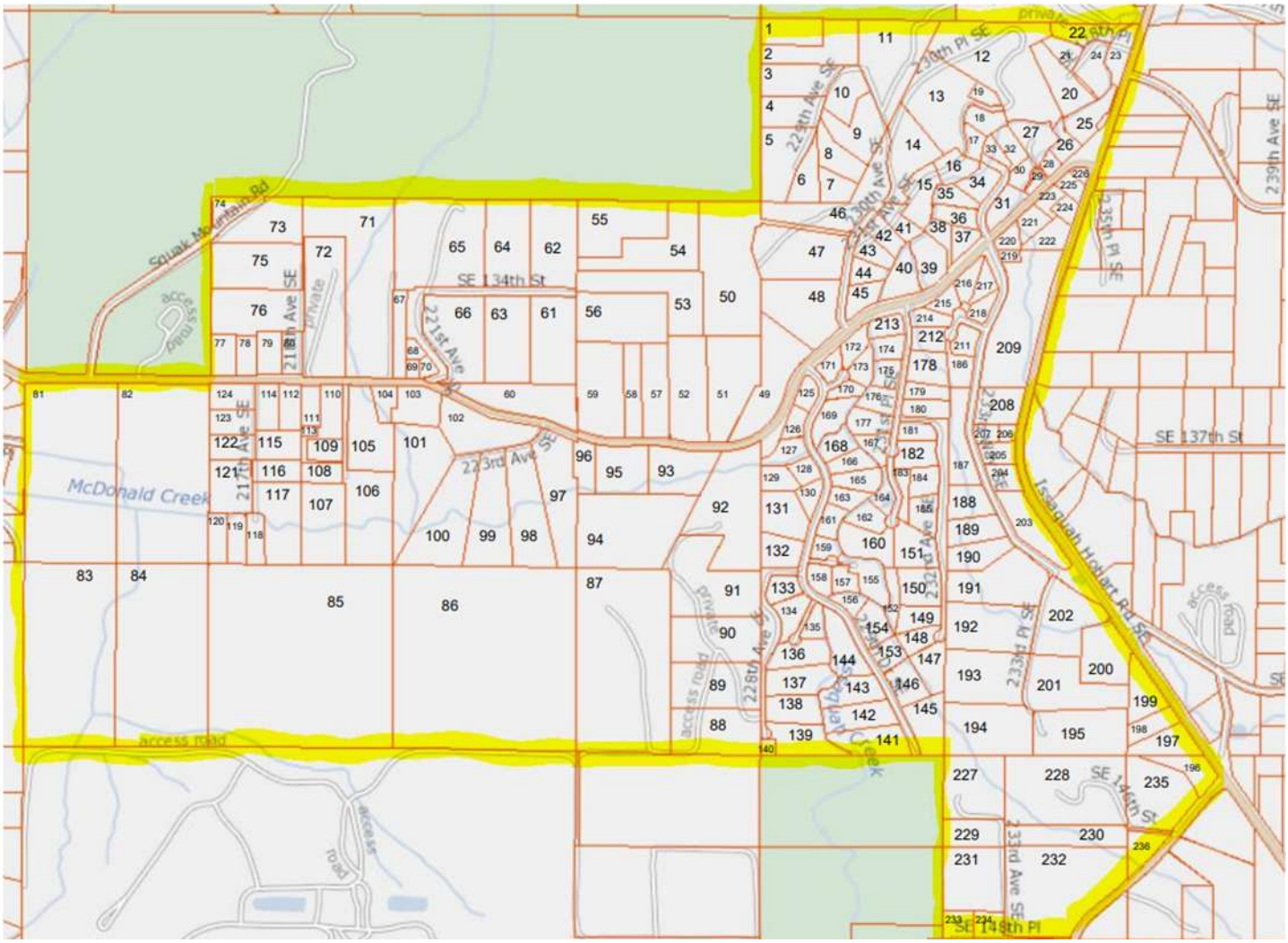


Figure 3 - Properties within the future Annexation Area

KCWD90 Hazard Mitigation Plan
Strategy #4 – Wildfire Resiliency; add water main along SE May Valley Road

Strategy #5 - Seismic Upgrades along May Valley Road

Lead Points of Contact	**Partner Points of Contact (Title)**	**Hazards Mitigated /Goals Addressed**	**Funding Sources and Estimated Costs**
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	Washington State Department of Health (DOH) King County Emergency Management City of Renton Emergency Management	Goal 6 – Community and Public Safety Goal 14 – Strong, vibrant neighborhoods	$4.0 Million FEMA PWTF/DWSRF District Rates

Strategy Vision/Objective

Seismic Upgrades along May Valley Road, including water mains and appurtenances.

Mitigation Strategy

Hazard mitigation research has shown that SE May Valley Road marks the southernmost point of the Seattle Fault. This fault line extends into the Cascade Mountains from the Olympic Peninsula, across Bainbridge Island and Elliott Bay. Seismologists indicate that this fault line was active about 1,000 to 1,100 years ago, capable of causing a large earthquake (magnitude 7.0 or greater) and significant damage to existing infrastructure. The Seattle Fault is believed to be the source of the 1965 Puget Sound Earthquake and the 2001 Nisqually Earthquake. Lidar mapping has revealed that certain areas, including West Seattle and Bainbridge Island, experienced an uplift of as much as twenty feet during the last major earthquake event.

The District plans to study the existing and future water mains along SE May Valley Road to identify strategic locations along the Seattle Fault line where additional valves, hydrants, and flexible, earthquake-resistant HDPE mains and road crossings could be beneficial. This study will involve reviewing any current or future water main that intersects SE May Valley Road and may be vulnerable to significant land movement during an earthquake. In the long term, the District aims to install 1.5 miles of earthquake-resistant water main along SE May Valley Road, stretching from 148th Ave SE to 164th Ave SE. This addition would create more looping in the water system and could provide service to customers who are currently underserved due to risks such as liquefaction, landslides, and wetlands in the area. The estimated cost for this project is $4,000,000, calculated at a rate of $500 per foot for 1.5 miles.

2-Year Objectives	**5-Year Objectives**	**Long-Term Objectives**

Review current and future plans related to new and existing infrastructure near SE May Valley Road to determine improvements necessary. Complete minor improvements in-house with District staff.	Identify improvements, design a project, create bid documents, and bid for upgrades and a possible main extension along SE May Valley Road.	Improve reliability and resiliency of the District's Distribution system related to the Seattle Fault.

Implementation Plan/Actions

- Seek Grant funding from FEMA or other
- Complete site investigation and upgrade needs
- Prepare upgrade design and requirements
- Prepare scope and bid documents
- Determine if any projects can be completed in-house
- Complete construction of upgrades

Performance Measures

Complete the upgrade of various small and large projects to increase the seismic resilience along May Valley Road.

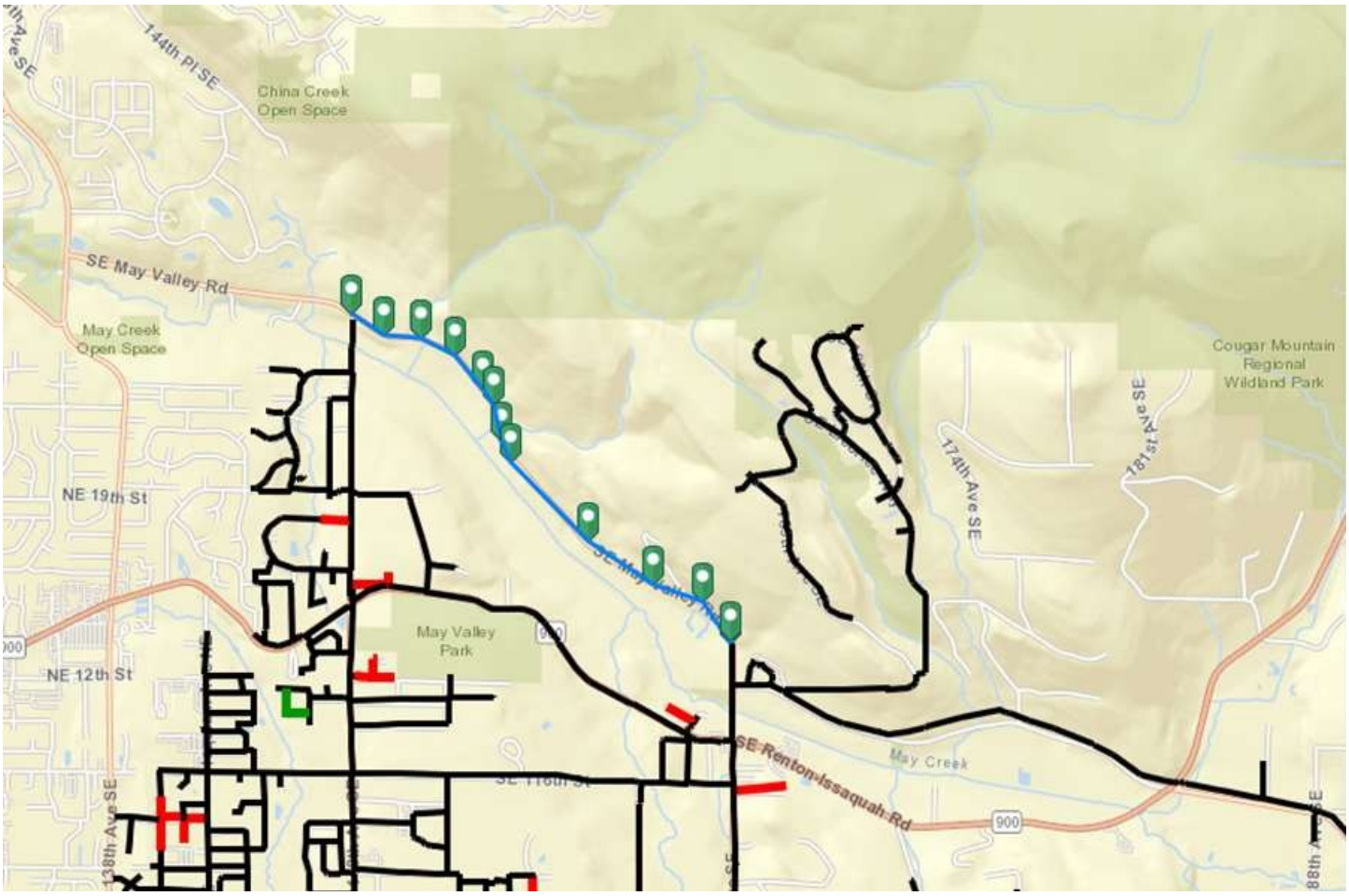


Figure 1 - May Valley Road – proposed new water main and location of seismic improvements

Strategy #6 - Seismic Upgrades for Reservoir 4, 5 & 6

Lead Points of Contact	**Partner Points of Contact (Title)**	**Hazards Mitigated /Goals Addressed**	**Funding Sources and Estimated Costs**
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	Washington State Departments of Health (DOH) King County Department of Health (KCDOH) King County Emergency Management (KCEM) Eastside Fire and Rescue (ESFR)	Goal 6 – Community and Public Safety Goal 14 – Strong, vibrant neighborhoods	$3.0 Million FEMA PWTF/DWSRF District Rates

Strategy Vision/Objective

Mitigate the Seattle Fault risk along SE May Valley Road by seismically upgrading Res 4, 5 & 6. Add additional Shake Alert monitoring sites and seismic retrofits to reservoirs.

Mitigation Strategy

Seismically retrofit steel Res 4 & 5, including adding automatic seismic isolation valves to prevent the reservoirs from draining after a seismic event. Replace concrete Res 6. Add Shake Alert and automatic shut-down valves at all three sites. Identify other improvements that could increase the resiliency of these reservoirs to withstand a seismic event.

Conduct site-specific subsurface investigations to determine solutions for foundation improvements at each site. Reinforce the foundation on large horizontal tanks. Consider automatic shutoff valves on tanks. Seismically retrofit water tanks, which can include anchoring to foundations, strengthening tank walls, replacing nonflexible pipe connections, and improving roof structures over large reservoirs.

2-Year Objectives	**5-Year Objectives**	**Long-Term Objectives**
Study Res 4, 5 & 6 to determine what improvements and upgrades may be needed to help these reservoirs withstand the impacts of a seismic event.	Once improvements are identified, design a project, create bid documents and go out to bid to complete identified improvements. Complete smaller improvements in-house with District staff.	Improve reliability and resiliency of the District's Storage system as it relates to the Seattle Fault.

Implementation Plan/Actions

- Seek Grant funding from FEMA or other
- Complete site investigation and upgrade needs
- Prepare upgrade design and requirements
- Prepare scope and bid documents
- Complete construction of upgrades to District Reservoirs

Performance Measures

Identify improvements needed to increase resiliency and redundancy at Reservoir Sites.

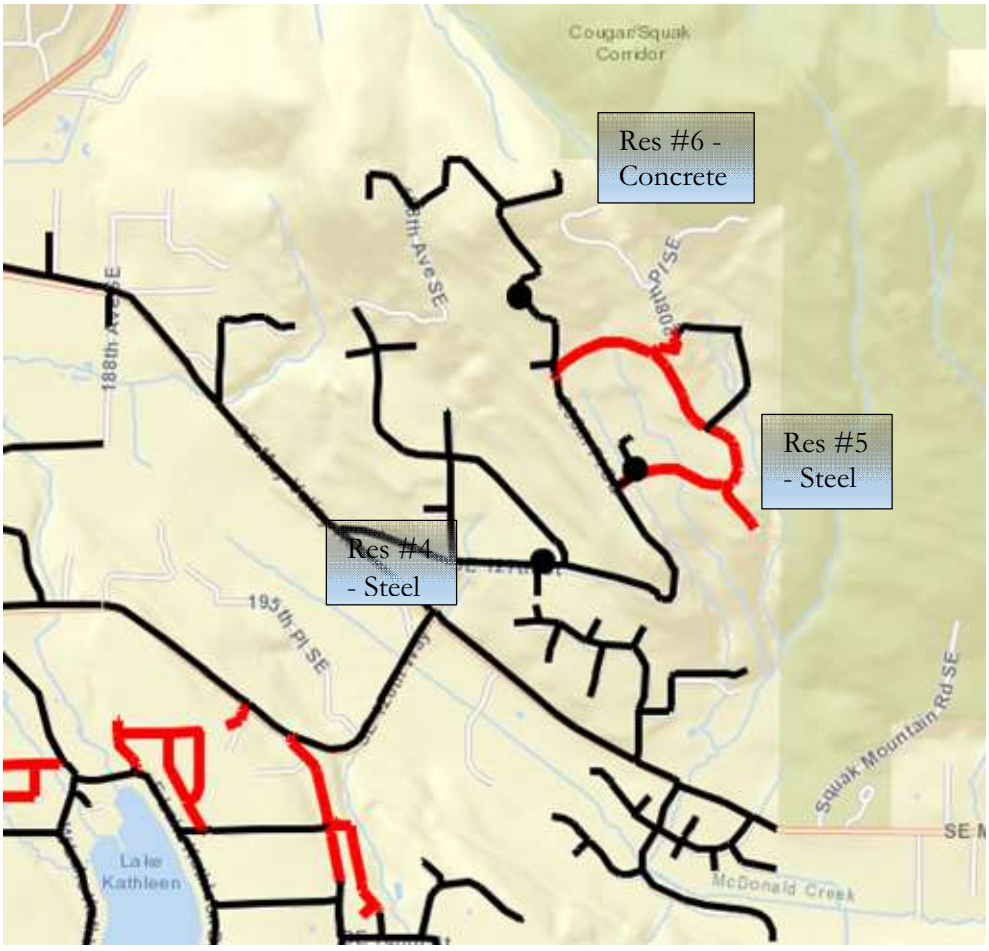


Figure 1 – Reservoirs 4, 5 & 6 in High Valley

Strategy #7 - Seismic Upgrades for Reservoir #7

Lead Points of Contact	Partner Points of Contact (Title)	Hazards Mitigated /Goals Addressed	Funding Sources and Estimated Costs
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	Washington State Departments of Health (DOH) King County Department of Health (KCDOH) King County Emergency Management (KCEM) Eastside Fire and Rescue (ESFR)	Goal 6 – Community and Public Safety Goal 14 – Strong, vibrant neighborhoods	$1.0 Million FEMA PWTF/DWSRF District Rates

Strategy Vision/Objective

Mitigate the Seattle Fault risk along SE May Valley Road by seismically upgrading Res 7. Add additional Shake Alert monitoring sites and seismic retrofits to reservoirs.

Mitigation Strategy

Seismically retrofit and/or Replace concrete Res 7. Improvements could include adding seismic valves to prevent the reservoir from draining after a seismic event, Shake Alert, and automatic shut-down valves. Identify other improvements that could increase the reservoirs' resiliency to withstand a seismic event.

Conduct site-specific subsurface investigations for new tank installations in high seismic zones to determine the potential for permanent ground movements. Reinforce the foundation. Seismically retrofit water tank, which can include automatic shutoff valves, anchoring to foundations, strengthening or replacing tank walls, replacing nonflexible pipe connections, and improving roof structures over large reservoirs.

2-Year Objectives	5-Year Objectives	Long-Term Objectives
Study Res #7 to determine what improvements and upgrades may be needed to help this reservoir withstand the impact of a seismic event.	Once improvements are identified, design a project, create bid documents, and go out to bid to complete identified improvements. Complete smaller improvements in-house with District staff.	Improve reliability and resiliency of the District's Storage system as it relates to the Seattle Fault.

Implementation Plan/Actions

- Seek Grant funding from FEMA or other
- Complete site investigation and upgrade needs
- Prepare upgrade design and requirements
- Prepare scope and bid documents
- Complete construction of upgrades to District Reservoirs

Performance Measures

Identify improvements needed to increase resiliency and redundancy at Reservoir Sites.

Figure 1 - Reservoir #7 in Licorice Ferns

Strategy #8 – Replace Water Mains along SE 128th Street – "Backbone Transmission System"

Lead Points of Contact	**Partner Points of Contact (Title)**	**Hazards Mitigated/Goals Addressed**	**Funding Sources and Estimated Costs**
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	Washington State Departments of Health (DOH) King County Division of Local Services (Roads) City of Renton Roads Department	Goal 4 – Access to Safe and Efficient Transportation Goal 6 – Community and Public Safety Goal 11 – Family Wage Jobs Goal 14 – Strong, vibrant neighborhoods	$15-20 Million FEMA PWTF/DWSRF District Rates

Strategy Vision/Objective

Harden the existing water system by replacing the District's 12" CI water main with 12"-16" HDPE water main. (aka Transmission backbone).

Mitigation Strategy

The project involves replacing 3.6 miles of a 12-inch cast iron transmission water main along SE 128th Street, extending from PS 1 to Res 1. This water main is vital to the District's transmission system, as it transports water from the District's source at PS 1 (provided by SPU) to Res 1 and 2. The replacement will utilize an earthquake-resistant pipe (High-Density Polyethylene or HDPE). Due to the main's location along SE 128th Street, which is a large four-lane paved road, the cost for this replacement will be significantly higher than at other locations. The estimated cost for the project ranges from $700 to $1,000 per foot, totaling between $13 million and $19 million.

Earthquake-resistant pipes are designed to withstand seismic forces better, reducing the risk of rupture during an earthquake. By preventing damage, these pipes ensure that the water supply remains available, especially for emergency services and community resilience. Fewer damages lead to significantly reduced repair costs. HDPE enhances safety and water quality by preventing flooding and contamination caused by main breaks. Additionally, it contributes to the overall durability and longevity of water infrastructure.

2-Year Objectives	**5-Year Objectives**	Long-Term Objectives
Review benefits and costs of replacing the Districts "backbone" transmission system with earthquake-resistant HDPE.	Define the project and complete basic engineering. Include the project in future Comprehensive Plan updates.	Improve reliability, resiliency, and water quality of the District's Transmission water main.

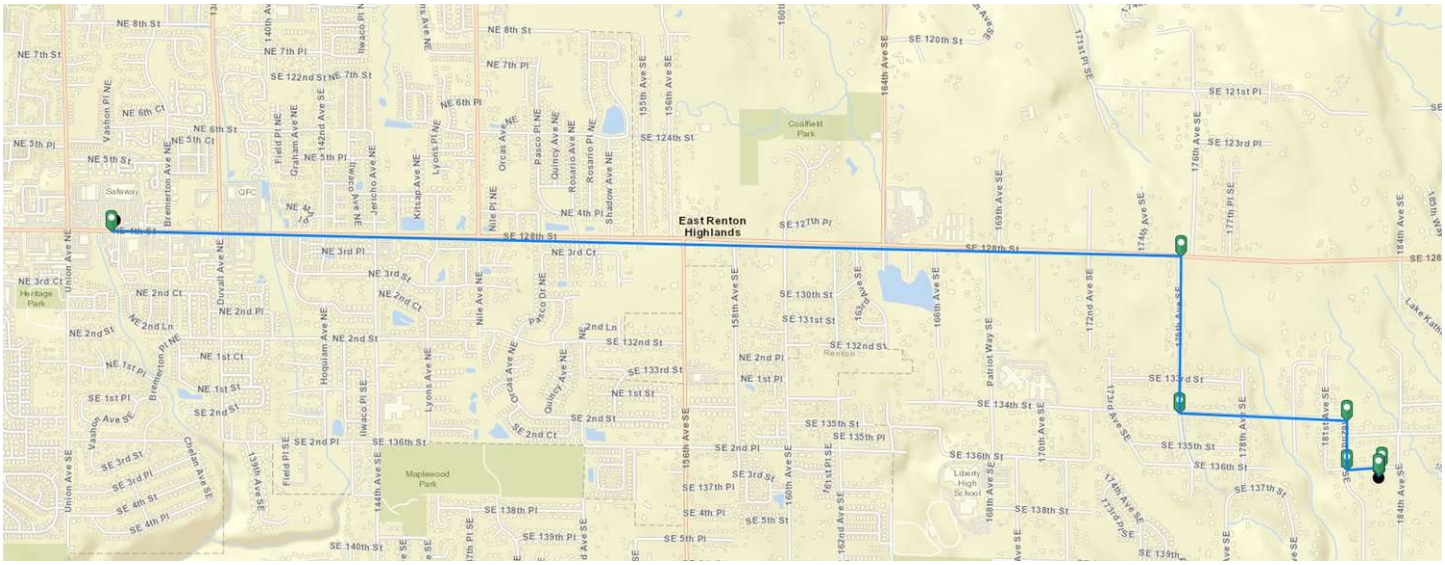
Establish project timing and funding availability.		

Implementation Plan/Actions

- **Identify funding options:** Determine if grant money, low-interest loans, or rate increases are required to fund the project.
- **Assessment and Survey:** Conduct a thorough assessment of the existing water main, identifying its location, condition, and any issues that need to be addressed. Survey the area to determine the best route for the new pipe.
- **Project Design**: Develop a detailed project design that outlines the specifications for the new water main, including the type of pipe, diameter, length, and materials needed. Ensure the design complies with local building codes and regulations.
- **Permits and Approvals:** Obtain all necessary permits and approvals from local authorities, including environmental clearances if required. This step ensures that the project adheres to legal and safety standards.
- **Budget and Cost Estimates:** Prepare a comprehensive budget that includes the costs of materials, labor, equipment, and any contingencies. Obtain cost estimates from contractors and suppliers to ensure accurate budgeting.
- **Contractor Selection:** Choose a qualified and experienced contractor to carry out the work. Review their credentials, past projects, and references to ensure they can handle them.
- **Project Timeline:** Develop a project timeline that outlines the start and end dates and key milestones. This helps ensure the project stays on schedule and any potential delays are managed effectively.
- **Stakeholder Communication:** Inform all relevant stakeholders, including residents, businesses, and local authorities, about the project. Provide information on the project's scope, timeline, and any potential disruptions to the water service.
- **Risk Assessment and Mitigation:** Identify potential risks associated with the project, such as environmental impacts, safety concerns, and logistical challenges. Develop a plan to mitigate these risks and ensure the project's success.

Performance Measures

Complete planning, design, timing and eventually the project to replace 3.6 miles of 12" Cast Iron water main.


East Renton Highlands
NE 8th St
NE 7th St
NE 6th St
NE 5th St
NE 4th St
NE 3rd St
NE 2nd St
NE 1st St
SE 128th St
SE 132nd St
SE 133rd St
SE 134th St
SE 135th St
SE 136th St
SE 137th St
SE 138th St
SE 139th Pl
SE 140th St
SE 120th St
SE 121st Pl
SE 123rd Pl
SE 124th St
SE 130th St
SE 131st St
Coalfield Park
Maplewood Park
Liberty High School
Safeway
QFC
Heritage Park
Renton

Strategy #9 - Harden Water System (Replace AC & Steel)

Lead Points of Contact	**Partner Points of Contact (Title)**	**Hazards Mitigated/Goals Addressed**	**Funding Sources and Estimated Costs**
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	Washington State Departments of Health (DOH) King County Division of Local Services (Roads) City of Renton Roads Department	Goal 4 – Access to Safe and Efficient Transportation Goal 6 – Community and Public Safety Goal 11 – Family Wage Jobs Goal 14 – Strong, vibrant neighborhoods	$15-20 Million FEMA PWTF/DWSRF District Rates

Strategy Vision/Objective

Harden the existing water system by replacing steel and Asbestos Cement (AC) water mains, upgrading PRVs, and adding additional water mains to provide redundant supply options. Replace CI water main after Steel and AC or if failing.

Mitigation Strategy

The District has approximately 3 miles of 4-inch to 8-inch steel water mains and 15.5 miles of 4-inch to 12-inch AC water mains. Over the next ten years, the District plans to replace about 1 mile of water main each year. As of 2025, the current replacement costs are $306 per foot for pipe bursting or directional drilling and $600 per foot for open-cut water main installation. This means the District is looking at an annual expenditure of approximately $1.6 million to $3.1 million for water main replacements.

The District has made efforts to lower the cost per foot by using trenchless methods or pipe-bursting techniques. While also focusing on installing pipes and connections that offer improved earthquake resilience, such as HDPE. Furthermore, the District has updated its standards to include earthquake-resistant pipes, restrained joints, and flexible couplings wherever needed.

Traditionally, steel water mains are susceptible to leaks and can be costly for district staff to repair and maintain. AC water mains can become "punky," meaning they are soft and easily penetrated, particularly in corrosive soil conditions. These mains are also prone to large leaks, which can cause flooding and complicated repairs. Both types of pipes do not meet the district's current standards and are at a greater risk of failure during an earthquake or landslide.

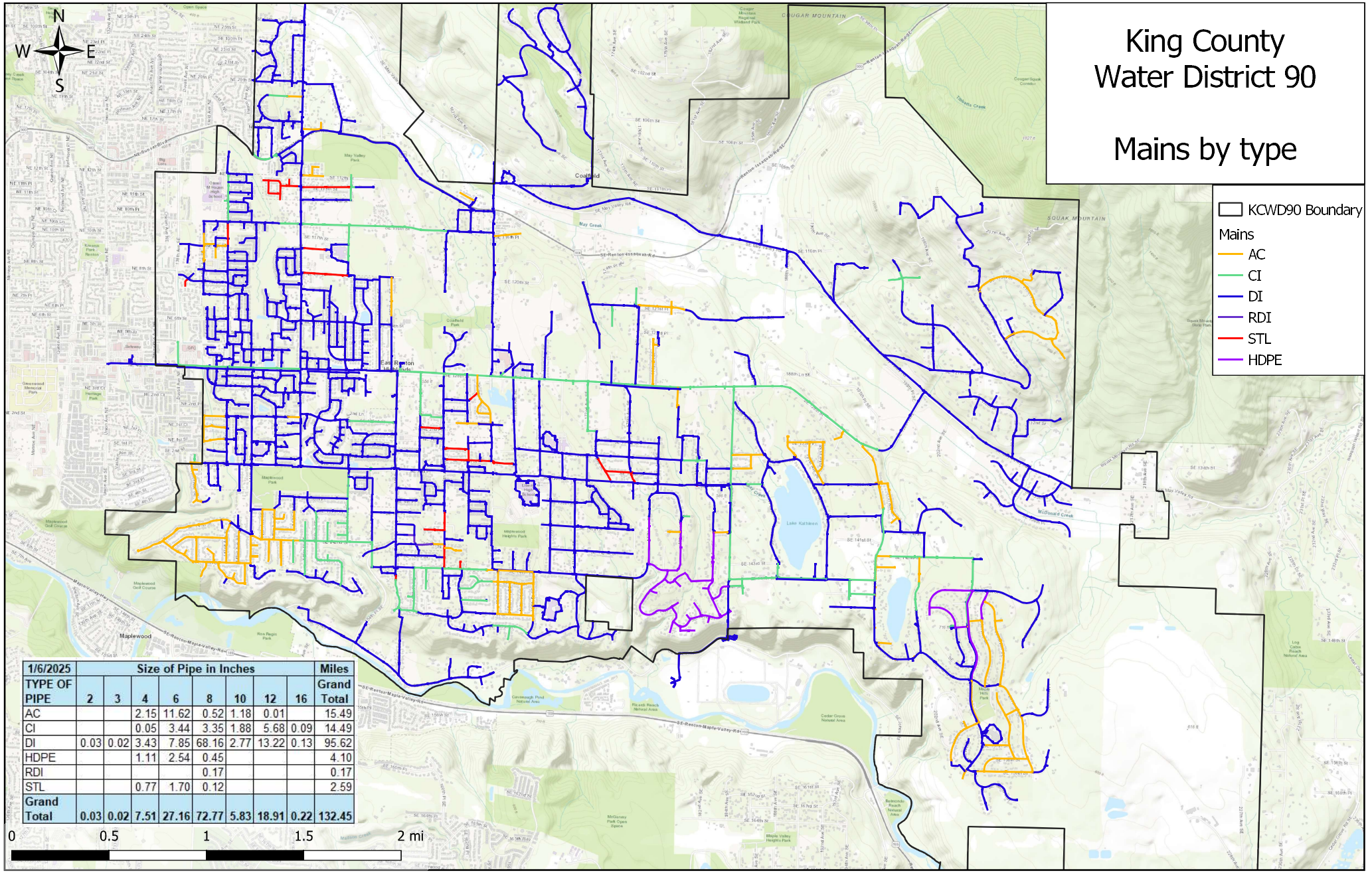
2-Year Objectives	5-Year Objectives	Long-Term Objectives
Prioritize main replacement based on leaks, pipe type, age, and earthquake resilience. Consider the potential impact of earthquakes and landslides on the pipes. Prepare main replacement specifications, bid documents, and contracts.	Complete, on average, $1.6-3.1 million of water main replacement per year. Seek loan funding to support water main hardening goals. Continue the process on an ongoing basis until all 20 miles of steel and AC water main have been replaced.	Improve reliability, resiliency, and water quality of the water main serving potable water to District customers.

Implementation Plan/Actions

- Seek funding from PWTF, DWSRF, FEMA or Other as it becomes available, annually or biannually.
- Add to water main prioritization factors for EQ-prone areas, transmission vs. distribution water mains, high-pressure areas, and future fire flow requirements.
- Incorporate findings from Site Specific Community Surveys, measuring potential earthquake risk by parcel into water main prioritization.
- Group projects as needed to develop cohesive plans – with CIP review.
- Consider hardening benefits for potential earthquakes and landslides.
- Prepare upgrade design and requirements once the project is identified.
- Prepare scope and bid documents once the project is identified.
- Complete construction of upgrades to water mains - as needed once the project is identified:
    - Replace/Reinforce about 1,000 feet of 6" CI water main along SE 148th Street, from 158th Ave SE to 160th PL SE, to reduce landslide impacts.
    - Add excess water main to High Valley Zones to reduce the impact of landslides, flooding, and earthquakes.
    - Install a second feed down to Jones Road along 154th PL SE for redundancy or add a small tank along Jones Road to feed the 316 Zone.
    - Add a PRV downstream of PRV 11.
    - Add a PRV at the top of the hill above the WTP to slow the water down in the event of a landslide or earthquake. Add telemetry and modem for automatic shutdown after EQ event.
    - Retrofit PRVs for seismic resiliency and add flexible EQ joints.

Performance Measures

Complete annual upgrades for about 1 mile (on average) of existing Steel and AC water main. Retrofit PRVs for seismic resiliency. Add water mains and/or PRVs for redundancy.



1/6/2025	Size of Pipe in Inches								Miles
TYPE OF PIPE	2	3	4	6	8	10	12	16	Grand Total
AC			2.15	11.62	0.52	1.18	0.01		15.49
CI			0.05	3.44	3.35	1.88	5.68	0.09	14.49
DI	0.03	0.02	3.43	7.85	68.16	2.77	13.22	0.13	95.62
HDPE			1.11	2.54	0.45				4.10
RDI					0.17				0.17
STL			0.77	1.70	0.12				2.59
Grand Total	**0.03**	**0.02**	**7.51**	**27.16**	**72.77**	**5.83**	**18.91**	**0.22**	**132.45**

Strategy #10 - Wildfire Resiliency

Lead Points of Contact	Partner Points of Contact (Title)	Hazards Mitigated/Goals Addressed	Funding Sources and Estimated Costs
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	King County Emergency Management City of Renton Emergency Management Eastside Fire and Rescue (ESFR)	Goal 6 – Community and Public Safety Goal 14 – Strong, vibrant neighborhoods	$100,000 for Defensible Space & Fencing $500,000 for Roofs & Pump Stations FEMA District Rates

Strategy Vision/Objective

The District seeks to increase resiliency against wildfire and structural fires for all District facilities.

Mitigation Strategy

The District plans to employ the strategies identified in FEMA Technical Fact Sheet No. 4, "Defensible Space." These strategies include eliminating all combustible materials within 30 feet of the property, keeping roofs clean, and removing low-hanging branches. Between 30 and 100 feet of the property, remove auxiliary buildings, plant fire-resistant vegetation, and use driveways or walkways as natural fire breaks. In areas greater than 100 feet, thin and prune vegetation.

In some locations, fencing around the property may be necessary to clearly define the area and help create defensible space.

The District desires to replace all wood or composite roofs with metal roof materials and upgrade the District pump stations made from combustible materials (e.g., wood) to concrete structures.

Work with King County and Renton Emergency Management, Renton Fire Authority, and Eastside Fire and Rescue to coordinate response efforts, training, responsibilities, and goals to prepare for potential wildfire activity.

2-Year Objectives	5-Year Objectives	Long-Term Objectives
Seek FEMA funding to add fencing and replace roofs at District sites. Prioritize and begin the process of creating defensible space around District sites. Develop relationship and training opportunities with local fire agencies.	Continue upgrading sites with fencing, metal roofing, and concrete buildings. Continue to create defensible space around District sites. Maintain existing defensible space. Plan new well field, new water treatment plant, and new garage to be built with defensible space.	Create resiliency at all District sites by continuing to upgrade fencing, roofs, buildings, and sites as necessary.

Implementation Plan/Actions

- Seek funding to add fencing and replace roofs at District sites.
- Seek funding to upgrade wood pump stations to concrete.
- Prioritize and begin the process of creating defensible space around District sites.
- Create an ongoing plan to add and maintain defensible space around District sites.
- Plan a new storage tank, new well field, water treatment plant, and new garage to be built with defensible space and out of noncombustible materials.
- Develop relationships and training opportunities with local fire agencies.
- Complete storage/fire flow study and plan, design, and build a new tank to meet the defined need.

Performance Measures

Continue to upgrade fencing, roofs, buildings, and sites at all district sites as necessary to create resiliency and establish defensible space around them.

Creating defensible space is crucial for protecting your property from wildfire. By following these steps, the District can significantly reduce the risk of wildfire damage to property. Here are the key steps to take:

1. **Zone 0 (0-5 feet from your home)**:
    - Remove all flammable materials, such as leaves, pine needles, and debris.
    - Keep vegetation well-watered and maintained.
    - Use non-combustible materials for mulch, such as gravel or stone.
2. **Zone 1 (5-30 feet from your home)**:
    - Trim trees and shrubs to maintain a safe distance from your home.
    - Remove dead plants, trees, and shrubs.
    - Keep grass mowed to a height of 4 inches or less.
    - Space out trees and shrubs to prevent fire from spreading.
3. **Zone 2 (30-100 feet from your home)**:
    - Create horizontal and vertical spacing between trees and shrubs.
    - Remove dead plant material and debris.
    - Thin dense vegetation to reduce fire intensity.
4. **Fire-Resistant Building Materials**:

- Use fire-resistant roofing materials, such as metal, tile, or asphalt shingles.
- Install fire-resistant siding, such as stucco, brick, or fiber cement.
- Use tempered glass for windows and doors.

5. **Regular Maintenance**:
   - Clean gutters and roofs regularly to remove dry leaves and debris.
   - Store firewood and other combustible materials at least 30 feet away from your home.
   - Keep a reliable water source and firefighting tools, like hoses and shovels, readily accessible.
6. **Emergency Preparedness**:
   - Develop an emergency plan and practice evacuation routes.
   - Stay informed about local fire conditions and warnings.
   - Have an emergency kit ready with essential supplies.

Strategy #11 - Wildfire Resiliency; Parks, Green, and Open Space

Lead Points of Contact	**Partner Points of Contact (Title)**	**Hazards Mitigated/Goals Addressed**	**Funding Sources and Estimated Costs**
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	The City of Renton – Office of Emergency Response. King County – Office of Emergency Response Renton Regional Fire Authority Eastside Fire and Rescue	Goal 6 – Community and Public Safety Goal 14 – Strong, vibrant neighborhoods	$300,000 to add water service to state and local parks FEMA District Rates

Strategy Vision/Objective

The District seeks to increase resiliency against wildfires and structural fires, specifically in parks, green spaces, and open spaces adjacent to the District's boundaries.

Mitigation Strategy

Work with State, County, and City Park Agencies to add water service to park access locations. Coordinate with King County and Renton Emergency Management, Renton Fire Authority, and Eastside Fire and Rescue to design, plan, and build water service to the WUI interface areas.

Wildfires are unpredictable and can escalate rapidly, making early detection and preparedness essential. Implementing defensible space, using fire-resistant materials, and ensuring access to water are vital mitigation strategies that can help reduce the risk of a large wildfire. The primary goal is to contain the fire before it has a chance to spread.

2-Year Objectives	**5-Year Objectives**	**Long-Term Objectives**
Identify locations at adjacent parks and open and green spaces where water service could be installed. Seek strategic partnerships and funding options.	Design, contract, and install water services in parks, open spaces, and green spaces vulnerable to wildfires and adjacent to the District (also part of the WUI interface).	Create resiliency within the District boundaries by adding water service in the WUI interface zones, especially those adjacent to parks and open and green spaces.

Implementation Plan/Actions

- Identify potential funding and funding partners.
- Plan, design, and install water services to park, open, and green space.
- Determine other improvements that may be required (i.e., additional storage or pumping requirements).
- Engage local partners and stakeholders.
- Determine which projects could be done in-house.

Performance Measures

Create resiliency at sites around the District that serve parks and open and green spaces by adding hydrants and water service to address potential wildfires before they get too large.

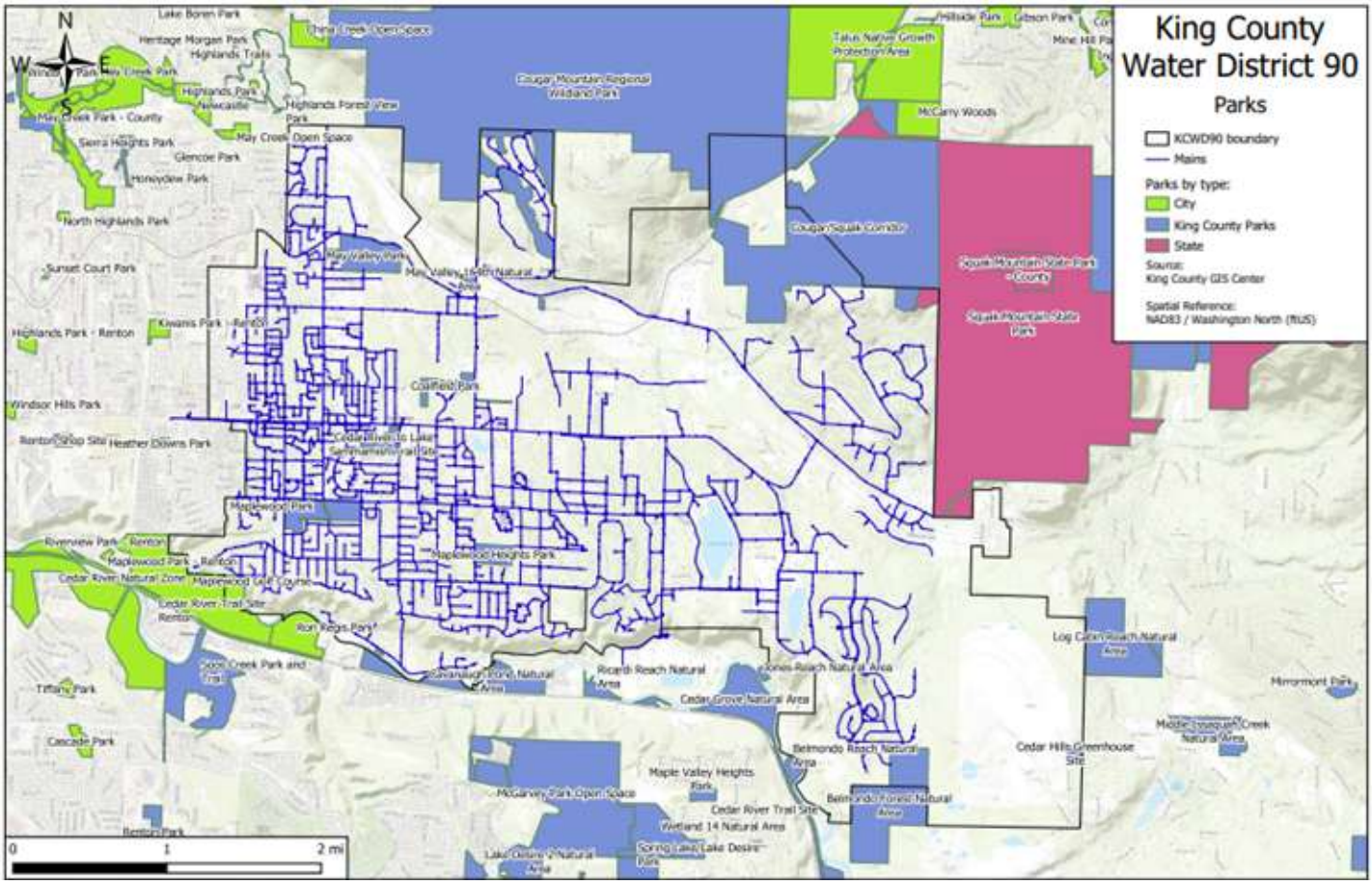


Figure 1 - Parks, Green and Open Space Adjacent to District Boundaries

Strategy #12 - Seismic Upgrades for Single Access Areas

Lead Points of Contact	**Partner Points of Contact (Title)**	**Hazards Mitigated /Goals Addressed**	**Funding Sources and Estimated Costs**
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	Washington State Departments of Health (DOH) King County Department of Health (KCDOH) King County Emergency Management (KCEM) Eastside Fire and Rescue (ESFR)	Goal 6 – Community and Public Safety Goal 14 – Strong, vibrant neighborhoods	$5.0 Million FEMA PWTF/DWSRF District Rates

Strategy Vision/Objective

Mitigate the Seattle Fault risk along SE May Valley Road by identifying areas of the District with single access points. This could be either a single-access water main or a single-access road. A large earthquake could create landslides or land slippage, disconnecting part of the District from the District's backbone distribution system.

Mitigation Strategy

The District plans to identify areas that could become isolated following a large earthquake event. While the most likely scenario would involve an earthquake on the Seattle fault line, events could also be triggered by the Cascadia fault. Regions within the District, such as High Valley and Licorice Ferns, are located at significant elevations of 800 to 1,200 feet above sea level and rely on only one access road and a single water main for supply. The District seeks to explore options for adding redundant mains to create a loop or provide a secondary source of water.

The roads leading to the High Valley and Licorice Ferns areas are steep and may become impacted or impassable during severe weather conditions. Access to both neighborhoods is limited to a single road for entry and exit. Additionally, these zones currently have only one main water supply line.

The District plans to install approximately 2,000 feet of water main along 188th Ave SE, starting at SE 122nd Street and ending just before SE May Valley Road. This project will provide redundancy and a second water supply line to the High Valley Zones, complete the system loop, and facilitate a more consistent water flow. This improvement will help reduce stagnant water issues and related water quality complaints.

2-Year Objectives	**5-Year Objectives**	**Long-Term Objectives**
Review current and future plans related to new and existing infrastructure that only has a single access point such as High Valley or Licorice Ferns. Determine improvements necessary.	Once improvements are identified, design a project, create bidding documents and go out to bid to complete additional access and/or additional watermain connection (i.e. looping or redundant mains). Complete smaller improvements in-house with District staff.	Improve reliability and resiliency of the District's Distribution system as it relates to the Seattle Fault and it's impact on single access locations around the District.

Implementation Plan/Actions

- Seek Grant funding from FEMA or other
- Complete site investigation and upgrade needs
- Prepare upgrade design and requirements
- Prepare scope and bid documents
- Complete construction of upgrades or new main installation to increase access

Performance Measures

Identify improvements needed to increase resiliency and redundancy to single access sites.

Figure 1 - Single access to Licorice Ferns1

Figure 2 - Single access to High Valley

Strategy #13 – Flood Mitigation

Lead Points of Contact	Partner Points of Contact (Title)	Hazards Mitigated / Goals Addressed	Funding Sources and Estimated Costs
Darcey J. Peterson, General Manager Joshua Drummond, Operations Manager KCWD90	Washington State Departments of Health (DOH) King County Department of Health (KCDOH) King County Emergency Management (KCEM) Eastside Fire and Rescue (ESFR)	Goal 6 – Community and Public Safety Goal 14 – Strong, vibrant neighborhoods	$500,000 for improvements FEMA PWTF/DWSRF District Rates

Strategy Vision/Objective

Secure District assets, access roads, equipment, and finished water from the impacts of flooding.

Mitigation Strategy

The District will work with the State and King County to assist in replacing undersized culverts that can exacerbate flooding. The District also plans to communicate with King County Storm drainage employees to keep the culverts clean and flowing.

Since flooding can lead to backflow events that may overwhelm blowoff systems if they are not adequately elevated, the District plans to install valves at higher elevations in areas prone to flooding. It is important to review sites that experience periodic flooding to identify whether additional infrastructure is needed. Additionally, locations for Air Vac standpipes should be identified, GPS-tagged, and potentially raised to a higher elevation as necessary.

The District will also review valves available in flood-prone areas to determine if insertion valves could allow more opportunities to reduce flow after or during an event. Additionally, the District will create a plan that includes evacuation routes and communication with family members and/or emergency contacts.

2-Year Objectives	5-Year Objectives	Long-Term Objectives
Encourage collaboration and communication with County and State agencies overseeing culverts and road improvements.	Complete a study and develop a list of improvements throughout District. Determine which of these projects can be done in-house versus contracting out.	Mitigate the impact of flooding on District assets and access.

Expand employee training on spotting flood-prone locations and encourage preventative maintenance when applicable.	Start upgrades on most critical access roads.	

Implementation Plan/Actions

- Implement a program to keep all drains and culverts clear of debris to reduce possible flooding.
- Install backflow preventers on low-lying overflow pipes to protect finished water.
- Secure or elevate chemical and other tanks to prevent them from floating away, releasing contents or damaging other equipment.
- Maintain sufficient supplies of chemicals and fuel in anticipation of supply disruptions during a flood.
- Contact your local power utility and local emergency management agency to plan for priority restoration of power to your water or wastewater utility.
- Ensure backup power for pumps, treatment facilities, and remote units.
- Make sure generators, electrical connections and fuel supplies are protected from flooding (e.g., elevated, easy to access).
- Arrange for priority access to fuel supplies (e.g., vendor contract).

Performance Measures

- Complete a study of the flood-prone areas.
- Identify projects to be completed
- Develop and expand employee training for emergency response.
- Scope, design, identify funding and timing of capital projects to mitigate flooding.

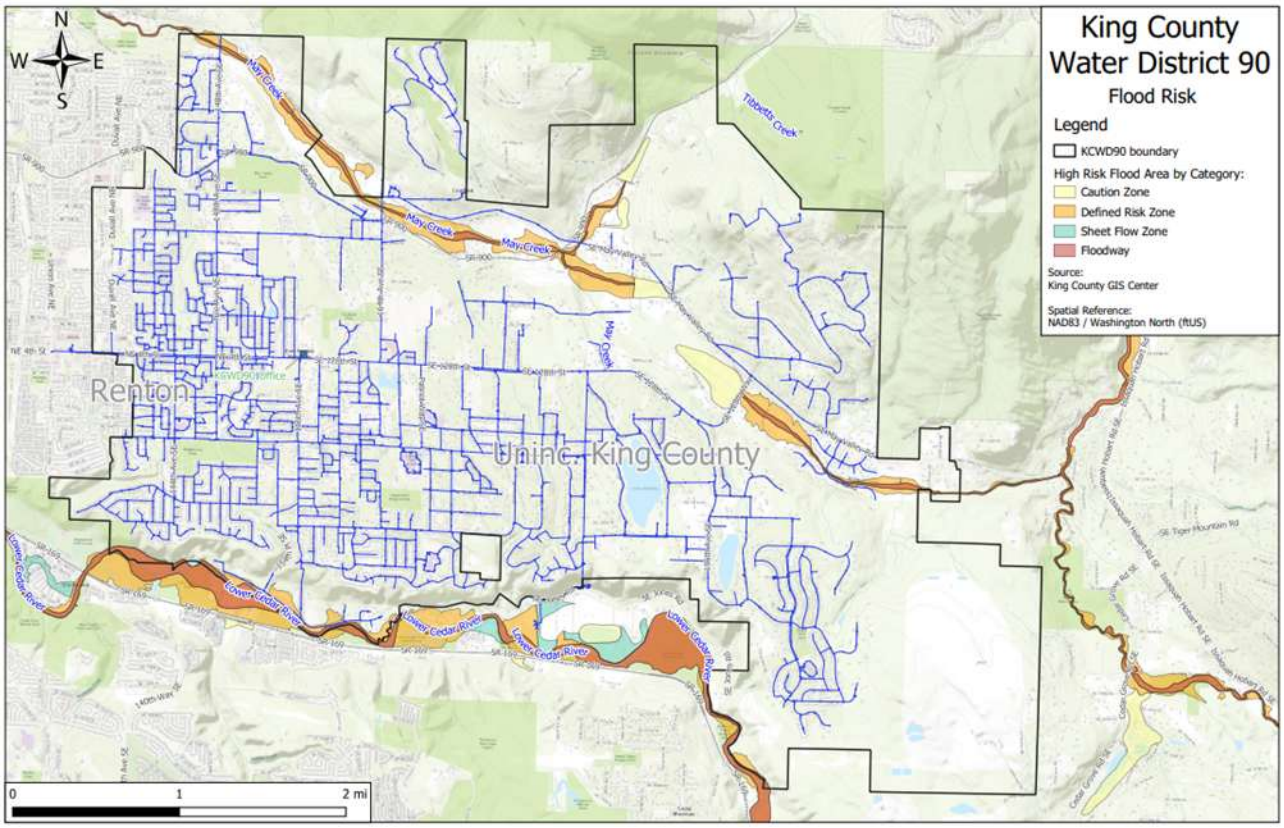


Figure 1 - Flood Prone Areas of the District