



City of Lake Forest Park Plan Annex

Introduction

In 1912, Lake Forest Park became one Seattle’s first planned communities, with strict consideration to its natural beauty and resources. The population remained around 5,000 residents until the early 1960’s, when parts of the surrounding area became incorporated.

Lake Forest Park is defined by the Lake Washington shoreline as well as hillsides and the King / Snohomish County boundaries. It is a suburb community of Seattle, which is 95% residential and 5% commercial. In addition, the City incorporates a 16-acre shopping mall and other small commercial business areas providing moderate retail sales and service oriented businesses. The population growth of the City of Lake Forest Park has remained relatively flat in the past decade.

Growth in the city is slow and has primarily come from one large multifamily project on the southern boundary of the city. The City continues to see a steady increase in single family home density but the community actively resists smaller lot sizes and increases to density. The limited development translates to the hazards facing the city also remaining fairly consistent from year to year.

The Cities 3.65 square miles is situated at the north end of Lake Washington. The city's southern boundary begins at the city limit of Seattle. To the north, Lake Forest Park ends at the Snohomish county line, where the adjacent towns of

Mountlake Terrace and Brier border it. To the east, the city is bounded by Lake Washington and at 55th Avenue NE where the city of Kenmore begins; the Burke-Gilman Trail runs in parallel to the lake shore, following the shoreline into Kenmore to the north, and Seattle to the south. The city's western boundary is at the City of Shoreline's city limit, mostly following 25th Avenue NE.

Jurisdiction Profile

Incorporated in 1961

Current Population 13,569
(estimated US Census 2018)

The City is governed by a seven member Council and operates under a Mayor/Council form of government.



Jurisdiction Point of Contact:

Name: Mike Harden
Title: Police Chief
Entity: Lake Forest Park Police
Phone: 206.957.2850
Email: mharden@cityoflfp.com

Plan Prepared By:

Name: Carl Lunak
Title: Emergency Manager
Entity: NEMCo
Phone: 425.354.1744
Email: clunak@northshorefire.com

Lake Forest Park includes Lyon Creek and McAleer Creek, both of which provide habitat for salmon and meander through the City to the shores of Lake Washington. The shoreline includes two private beach clubs but no public boat access to Lake Washington.



Lake Forest Park Risk Summary

Hazard Risk and Vulnerability Summary

HAZARD	RISK SUMMARY	VULNERABILITY SUMMARY	IMPACT SUMMARY
Avalanche	Lake Forest Park is not at risk for Avalanches.		
Earthquake	Earthquakes can be the most destructive hazard in Lake Forest Park. There is at least one fault line that runs through the City.	Lake Forest Park has identified some liquefaction zones along Lake Washington and the geographical make-up of the City increases the risk of major utilities, roadways and other infrastructure damage during earthquakes.	The most recent earthquake that affected the City was the Nisqually Quake of 2001. Lake Forest Park experienced minor damage and indications that a quake located closer to the City would have resulted in more significant damage.
Flood	The city of Lake Forest Park has had some history with Lyon Creek and McAleer Creek flooding. The city has 5 % of the total number of home, commercial, institutional in a flood zone.	Ongoing efforts to improve natural creek flow and culvert projects have reduced the frequency of flooding events but climate change and out of jurisdiction development still put 100 homes at risk of flooding. The city is a member of the Lake Ballinger Forum in an effort to reduce flooding impacts.	Storm related flooding is likely with previous flooding in 1997 and 2007 causing \$3 million and \$4 million in damages.
Landslide	An estimated 20% of the city is located in an area of potential landslides.	The topography of the city, its numerous ravines and steep slopes along Lake Washington and elsewhere have the potential for landslides.	Many single family residential homes, roadways, and utilities are at risk for loss. Historically many small slides with limited impact have occurred.
Severe Weather	Lake Forest park can experience significant wind, rain, ice, and snow events. These often occur during the winter months, but severe weather can happen year round.	Power lines serving the community are primarily above ground for both Seattle City Light and Puget Sound Energy. Exposure to wind, tree, and snow damage cause power outages in the City as well as limit access in some areas.	Multiple days of roadways covered in snow and ice limit transportation through the City. Neighborhoods can be isolated and without power for multiple days.
Tsunami	The city is not at risk for Tsunami but its proximity to Lake Washington does expose it to a seiche.	Geological evidence indicates a previous seiche in the area reached a height of over 10 feet above current lake levels.	SR 522 could be damaged and over 250 homes along Lake Washington could be inundated by a seiche
Volcano	Lake Forest Park could be affected by ash fall from volcanic activity	Ash fall models are not available but estimates based on weather patterns indicate that significant	Ash fall may impact the city roadways, cause equipment and



		ash could blanket the city from Mt Rainier, Glacier Peak, Mt Baker or Mt Saint Helens although low probability	machinery breakdown and hamper regular services.
Wildfire	The city does not have large areas of open natural space usually associated with wildfire however a seasonal risk impacted by climate change does exist.	The city has many small natural areas intertwined by residential homes with heavy vegetation within close proximity to structures. Limited access and difficult terrain pose challenges for firefighting.	In the past 5 years 12 small fires (less than 100' x 100') have been reported and extinguished.
Civil Disturbance	It is unlikely but possible for a civil disturbance to occur in Lake Forest Park.	Lake Forest Park residents are generally active participants in local government and have a good relationship with political leaders. The city's proactive police force is trained to deal with civil disturbances and mutual aid agreements are in place.	There is no history of civil disturbances in the city.
Cyber Attack	The City is vulnerable to a cyber-attack. The city is attached to the outside network through KC I-Net and through Wireless Access Points	Cyber-attacks could potentially interrupt the Cities computer network and interconnected systems. The loss of access to records, communications and other systems could significantly limit the day to day operation of the City.	Lake Forest Park has not had any incidents of significant cyber-attack however continual changes in technology
Dam Failure	The city has no Dams however Mountlake Terrace has a Dam on Lyon Creek upstream of the City.	Downstream damage would occur to the stream bank, fish habitat, and private property damage may occur. Additionally roadways may be overrun with water or culverts washed out.	Streets, power, domestic water and sanitary sewer utilities might be damaged by water.
Hazardous Materials Incident	With limited commercial facilities in the city and none of them storing large supplies of hazardous materials the primary risk is contained to those being transported through the city.	The transportation of hazardous materials on State Route 522 and 104 is the primary source and location of hazardous chemicals in the city. Both roads proximity to Lake Washington, its tributaries and the city's higher density residential areas put hazardous chemicals in close proximity to high impact areas.	Hazardous material incidents have been limited in size, less than 50 gallons, of flammable liquids in the past 5 years but much larger quantities are transported through the city daily.
Public Health Emergency	Like most primarily residential cities the risk of a public health emergency is limited.	The city's population has limited vulnerabilities within the community however epidemics can still interrupt normal	An epidemic that reduced the availability of staff for the City or City service providers
Terrorism	The possibility of a terrorist event is present in the city however the	Lake Forest Park police are trained to identify and respond to this type of incident.	No terrorist activities have impacted the city.



	city does not have any high visibility targets.		
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Hazard and Asset Overview Map(s)

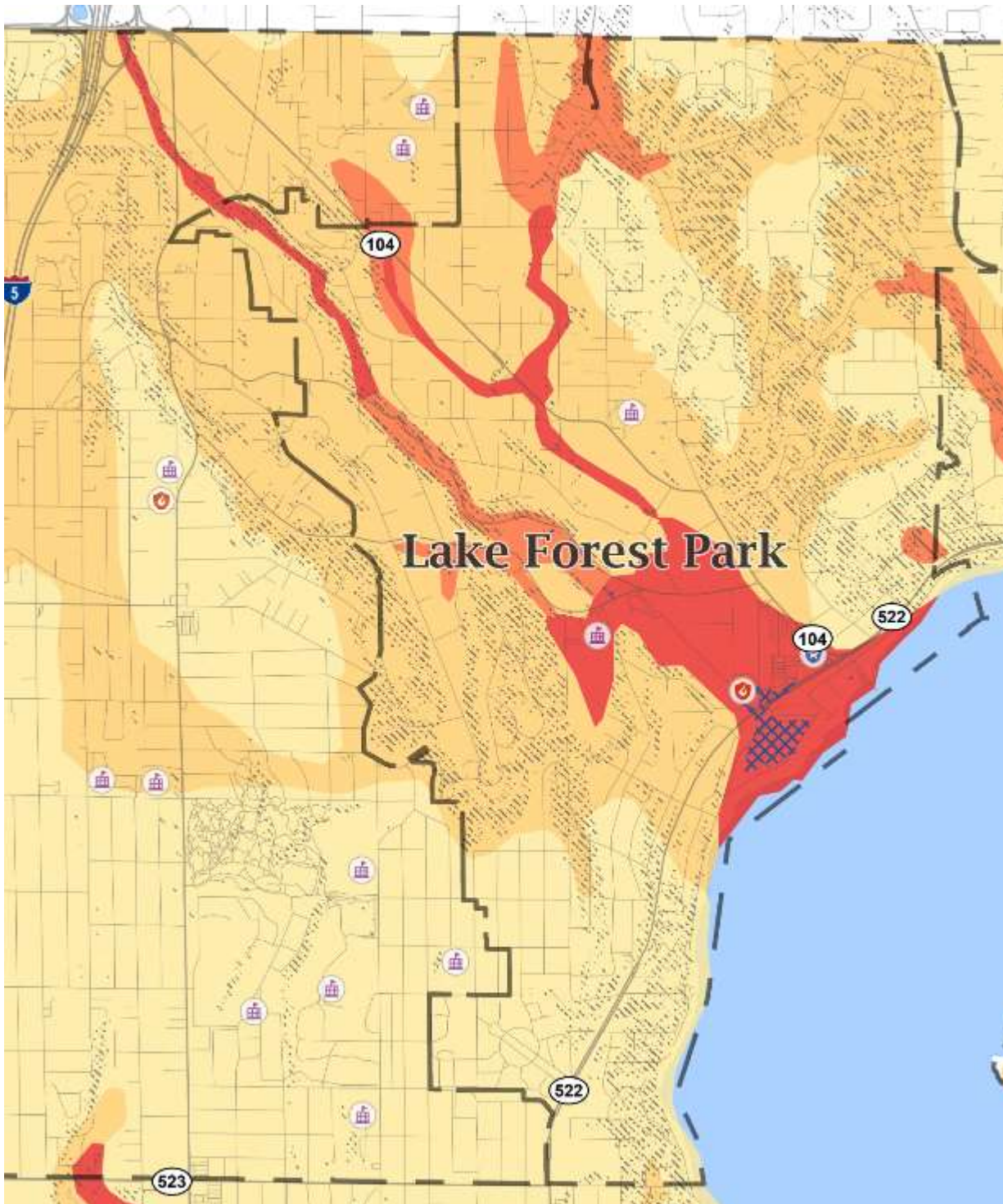


Figure 1: Liquefaction Zones



Figure 2: Known Earthquake Faults



Assets at Risk

ASSET	VALUE (\$)	RISK SUMMARY	VULNERABILITY SUMMARY	IMPACT SUMMARY
City Hall	4.5 million (est.)	Liquefaction Area	City Hall is located near a fault line and built on soils with elevated risk of liquefaction.	City Hall was constructed to the latest construction code in 2000 however a significant earthquake could damage utilities serving the facility.
Beach Drive Sanitary Sewer Station	1.5 million (est.)	Liquefaction Area	The wastewater pumping station is located near a fault line and built on soils with elevated risk of liquefaction.	Failure or extensive damage to this facility could result in untreated wastewater spilling into Lake Washington.

Plan Update Process

The City of Lake Forest Park began this plan update by convening a hazard mitigation planning team. The team consists of Emergency Manager Carl Lunak (Northshore Emergency Management Coalition), Police Chief Mike Harden, and Deputy City Administrator Frank Zenk. Additionally, the planning team sought input from subject matter experts within the City staff.

The planning team determined to develop an annex to the King County Regional Hazard Mitigation Plan based on the previous 2005 annex to the regional plan. Carl Lunak led the annex development process and will maintain the document in cooperation with the King County Office of Emergency Management.

The City participated in regional outreach events as outlined below to gather input from Lake Forest Park residents and visitors.



Jurisdiction Planning Team

NAME	TITLE	ORGANIZATION	CONTRIBUTION
Mike Harden	Chief of Police	City of Lake Forest Park	Contributor
Frank Zenk	Deputy City Administrator	City of Lake Forest Park	Contributor
Carl Lunak	Emergency Manager	NEMCo	Composer

Plan Update Timeline

PLANNING ACTIVITY	DATE	SUMMARY	ATTENDEES
King County HMP introduction	12/13/2018	Introduction to the regional hazard mitigation plan process	Carl Lunak
Initial meeting with King County	2/27/2019	Review planning expectations and template	Carl Lunak
Lake Forest Park Leadership team briefing	3/12/2019	Create Planning Team	Carl Lunak, Steve Sutton, Frank Zenk
Plan Development	7/23/2019	Review Plan edits and additional work needs	Carl Lunak, Mike Harden, Frank Zenk
Plan Development & Review	9/30/2019	Review Plan edits and finalize draft	Carl Lunak, Mike Harden, Frank Zenk

Public Outreach

Public Outreach Events

EVENT	DATE	SUMMARY	ATTENDEES
Emergency Volunteer Meeting	July 17, 2019	Emergency Volunteers were briefed on the plan and asked to prioritize hazards impacting LFP and identify assets.	Carl Lunak, 22 members of the community including neighboring city residents interested in Emergency Management
Emergency Volunteer Meeting	September 18, 2019	Emergency Volunteers provided input on historical damage and hazards.	Carl Lunak, 23 members of the community including neighboring city residents interested in Emergency Management
Preparedness Fair	September 21, 2019	Visitors to the fair will view hazard maps and have an opportunity to discuss critical facilities and natural hazards.	Carl Lunak, Mike Harden, over 800 visitors to the fair from the community including 28 residents that signed in to discuss community hazards



Lake Forest Park 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.

Hazard mitigation strategies in Lake Forest Park were developed starting from prior versions of the city’s Mitigation Plan. The City reviewed recent emergencies, and planning documents to update vulnerabilities. Additionally LFP meet with utilities and the fire department to further refine local hazards.

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. Updates on mitigation projects are solicited by the county for inclusion in the countywide annual report. As part of participating in the 2020 update to the Regional Hazard Mitigation Plan, every jurisdiction agrees to convene their internal planning team at least annually to review their progress on hazard mitigation strategies and to update the plan based on new data or recent disasters.

As part of leading a countywide planning effort, King County Emergency Management will send to planning partners any federal notices of funding opportunity 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 2025. All jurisdictions will submit letters of intent by 2023, 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 2020 plan.

Continued Public Participation

King County and its partner cities 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, 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 addressed. When possible, public tours of mitigation projects will be organized to allow community members to see successful mitigation in action.

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

PLAN TITLE	RESPONSIBLE AGENCY	POINT OF CONTACT	RELATIONSHIP TO HAZARD MITIGATION PLAN
Comprehensive Plan	Lake Forest Park	Steve Bennett	Takes in consideration the hazard potentials in land use actions.
Comprehensive Emergency Management Plan	Lake Forest Park	Carl Lunak	Hazards identified in the HMP are used to guide exercise, drills and specific training.
Capital Facilities Plan	Lake Forest Park	Frank Zenk	This plan updates the City Hall Facility so we can respond to the community during an emergency.

Programs, Policies, and Processes

PROGRAM/POLICY	RESPONSIBLE AGENCY	POINT OF CONTACT	RELATIONSHIP TO HAZARD MITIGATION PLAN
Building Codes	Lake Forest Park	Calvin Killman	2015 International Building Code
Emergency Management Program	NEMCo	Carl Lunak	All Hazard Planning
Critical Areas Ordinance	Lake Forest Park	Steve Bennett	Planning Regulations
Policing Policies	Lake Forest Park Police	Mike Harden	Civil Disturbance and Terrorism
Fire Codes	Northshore Fire District	Jeff LaFlam	Fire Regulations
Insurance Policy	Washington Cities Insurance Authority	Carlene Brown	Cybersecurity

Entities Responsible for Hazard Mitigation

AGENCY/ORGANIZATION	POINT OF CONTACT	RESPONSIBILITY(S)
Public Works	Frank Zenk	Contributor
Community Development	Steve Bennett	Contributor
Office of the Mayor	Jeff Johnson	Review
Police	Mike Harden	Contributor
Fire	Eric Magnuson	Contributor



National Flood Insurance Program

National Flood Insurance Program Compliance

What department is responsible for floodplain management in your community?	Engineering
Who is your community's floodplain administrator? (title/position)	Neil Jensen P.E City Engineer
What is the date of adoption of your flood damage prevention ordinance?	
When was the most recent Community Assistance Visit or Community Assistance Contact?	2007
Does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are?	No
Do your flood hazard maps adequately address the flood risk within your community? If so, please state why.	No – we are waiting for updated maps. The updated maps should show a much-reduced area.
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of training/assistance is needed?	Yes Floodplain management 101, small community with no floodplain management team. One city engineer and one project manager.
Does your community participate in the Community Rating System (CRS)? If so, what is your CRS Classification and are you seeing to improve your rating? If not, is your community interested in joining CRS?	No
How many Severe Repetitive Loss (SRL) and Repetitive Loss (RL) properties are located in your jurisdiction?	SRL: None RL: None
Has your community ever conducted an elevation or buy out of a flood-prone property? If so, what fund source did you use? If not, are you interested in pursuing buyouts of flood prone properties?	No N/A No



Hazard Mitigation Strategies

The City of Lake Forest Park continues to identify projects and strategies based on the best available information to the City. Projects are prioritized based on information provided by each department within the City as well as contractors, engineers and subject matter experts.

2015 Hazard Mitigation Strategy Status

STRATEGY	DESCRIPTION	PRIORITY	STATUS
National Flood Insurance Program	Enforcement of the adopted flood damage prevention ordinance, participate in floodplain identification and map updates, provide public assistance/information on floodplain requirements and impacts	High	Removed from mitigation plan. An ongoing continuous effort included in sensitive area plan.
Building Code Effectiveness Grading Schedule	Consider evaluation of the City's building code enforcement program under the Building Code Effectiveness Grading Schedule administered by the WA Survey and Ratings Bureau	Medium	Completed
Plan Integration	Integrate hazard mitigation plan into other plans, ordinances or programs to dictate land uses within the City.	Medium	Completed
National Program Participation	Consider participation in incentive based programs such as Firewise, CRS and StormReady	Medium	Ongoing and included as mitigation strategy.
Retrofit Structures	Retrofit, purchase, or relocate structures in hazard-prone areas of repetitive loss	Medium	Completed
County-wide Initiatives	Support county-wide initiatives identified in this plan to include debris management	Medium	Ongoing and included as mitigation strategy.
Drought Public Information	Collaborate with water providers to educate public about impacts of drought on water supply	Low	Completed
Data Acquisition	Capture perishable data (high water mark) post event after significant damage to support further planning	Low	Ongoing but removed from plan. Integrated into standard operating procedures.



Plan Incorporation	Incorporate Flood Reduction Management Plan and Surface Water Management Plan recommendations into Capital Improvement Schedule	High	Completed
Resolve Surface Water Obstructions	Resolve surface water drainage obstructions within the City	High	Completed
Flood Mapping	Enhance data and mapping for floodplain and identify areas of flooding outside previously marked floodplains	Medium	Completed
Open Space Preservation	Develop acquisition and management strategies to preserve open space for flood mitigation, fish habitat, and water quality in the floodplain	Medium	Completed
Sewer Station Improvements	Complete efficiency evaluation, redundancy improvements, Sewer Lift Station retrofits to increase earthquake resistance and continuity of operation following power supply disruption	High	Ongoing and included as mitigation strategy.
Surface Water Program	Continue to implement and improve the surface water utility programs related to flood hazards management: Capital Improvement Program, Maintenance Operations, and Public Education	High	Ongoing and included as mitigation strategy.
SR 522 Culvert	Improve drainage of Lyons Creek into Lake Washington via culvert expansion under SR522	High	Completed
Volunteers	Coordinate with local volunteer organizations including RACES and ESCA. Promote volunteer training activities, pre-certification and CERT.	Medium	Ongoing and combined with other outreach as a mitigation strategy.
Public Outreach	Increase public awareness of severe storm mitigation activities	Medium	Ongoing and combined with other outreach as a mitigation strategy.



Ash Fall	Collaborate to develop ash fall models that are specific to North King and South Snohomish Counties	Low	Removed from plan.
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2020 Hazard Mitigation Strategies

STRATEGY	LEAD AGENCY/POC	TIMELINE	PRIORITY
Community Resilience Through Education	Lake Forest Park and NEMCo/Carl Lunak	Continuous ongoing effort.	High
Surface Water, Road Crossing Improvements	Engineering / Neil Jensen	Continuous ongoing effort with L80 & L-90 scheduled to be replaced 2022	High
Wastewater Pump Station Improvements	Engineering / Neil Jensen	2024	High



Hazard Mitigation Strategy

Lead Points of Contact Chief of Police Emergency Manager	Partner Points of Contact City of Kenmore, Northshore Fire District, Northshore Utility District, King County Emergency Management	Hazards Mitigated / Goals Addressed All Hazards / 3,4,6,10,13,14	Funding Sources and Estimated Costs City Funds
Strategy Vision/Objective Engagement of the community and City service providers in emergency planning and preparation.			
Mitigation Strategy Continue to deliver a diverse offering of outreach and education, specific to emergency management, to all who live, work, or recreate in Lake Forest Park.			
2-Year Objectives Complete 4 Community Emergency Response Team trainings Host 2 Multiagency Coordination Meetings	5-Year Objectives Identify community members underrepresented in workshops, CERT trainings, and other outreach.	Long-Term Objectives Identify and engage the Lake Forest Park community in emergency management.	
Implementation Plan/Actions Using existing data determine what areas are underrepresented in existing outreach programs. Identify opportunities to engage new community members and potentially develop specific outreach efforts. Continue to build on prior outreach success.			
Performance Measures Number of members opting into the Lake Forest Park notification system, newsletter outreach, and the NEMCo volunteer database.			



<p>Lead Points of Contact City Engineer</p>	<p>Partner Points of Contact Washington State Department of Transportation, Metro Transit</p>	<p>Hazards Mitigated / Goals Addressed Flooding / 1,2,3,4,5,6,8,10,14</p>	<p>Funding Sources and Estimated Costs City funds, Grants</p>
<p>Strategy Vision/Objective Improve stream and surface water flow through restrictions caused by roadway crossings</p>			
<p>Mitigation Strategy Replace or refurbish culverts throughout the city.</p>			
<p>2-Year Objectives Complete culverts at NE 178th Street and Pfingst Animal Acres Park, and NE178th and 44th Ave NE</p>	<p>5-Year Objectives Complete culverts at NE 185th St and 35th Ave NE as well as 18400 block of 35th Ave NE.</p>	<p>Long-Term Objectives Identify and schedule any other culverts/road crossing needing replacement.</p>	
<p>Implementation Plan/Actions The City will continue to move these projects along as part of the capital improvements within the City.</p>			
<p>Performance Measures Completed functioning culverts.</p>			



<p>Lead Points of Contact</p> <p>City Engineer</p>	<p>Partner Points of Contact</p> <p>Department of Ecology</p>	<p>Hazards Mitigated / Goals Addressed</p> <p>Earthquake and Severe Weather / 3,4,5,6,10,12,14</p>	<p>Funding Sources/ Estimated Cost</p> <p>City Funds and Grants/\$1,500,000</p>
<p>Strategy Vision/Objective</p> <p>Update and improve the function and resiliency of the Beach Drive Sewer Pump Station</p>			
<p>Mitigation Strategy</p> <p>Evaluate the best option for replacing the Beach Drive Sewer Pump Station and complete construction.</p>			
<p>2-Year Objectives</p> <p>Complete design and permitting on the sanitary lift station project.</p>	<p>5-Year Objectives</p> <p>Complete construction of the new sanitary sewer lift station.</p>	<p>Long-Term Objectives</p> <p>A resilient functional sewer lift station.</p>	
<p>Implementation Plan/Actions</p> <p>The city will continue to move this project forward as part of its capital improvement program.</p>			
<p>Performance Measures</p> <p>A completed functional wastewater pump station.</p>			