MIDDLE FORK SNOQUALMIE RIVER

CAPITAL INVESTMENT STRATEGY

December 24, 2019 DRAFT

The Middle Fork Snoqualmie River basin drains 170 square miles beginning in the Cascade Mountains. The river flows through the Upper Snoqualmie River Valley at the base of Mount Si near the City of North Bend and merges with the North and South Forks of the Snoqualmie River near the City of Snoqualmie. The 12 discontinuous flood protection facilities on the Middle Fork Snoqualmie River do not contain flood flows. Fully implementing this strategy will reduce risks from flooding and erosion.

Scope: The corridor planning process will support decision makers in setting flood risk reduction priorities by:

- Defining flood and erosion hazards in the corridor planning area;
- Focusing on critical "worst first" public safety risks in the corridor; and
- Proposing a conceptual six-year Capital Investment Strategy consistent with budget placeholder.

Summary of Risk: Under existing conditions, the following risks are present:

For a 500-year Flood
- 362 homes at risk
- 7 miles of public roads at risk
- Approximately 700 homes isolated by flooded roads

Channel Migration
- 158 homes at risk
- Over 2 miles of public roads at risk

Proposed Risk Reduction Projects: Below is a sequenced action plan for implementing risk reduction efforts in the Middle Fork Snoqualmie River Corridor. The project sequence reflects current information on urgency, severity, consequence, responsibility or authority, and funding or partnership opportunities.

The current adopted 2020-2025 King County Flood Control District (FCD) Capital Improvement Program (CIP) includes:

- $11.4M for Upper Snoqualmie Valley Residential Mitigation, a portion of which is annually programmed to cost share home elevations along the Middle Fork;
- $8.4M for acquisitions of homes at risk from severe channel migration;
- $150K to inspect and identify deficiencies that need to be addressed to make facilities enrolled in the US Army Corps of Engineers Public Law (PL) 84-99 program eligible for assistance; and
- $3.9M allocated to the Middle Fork Snoqualmie River Near Term Actions, within the next six years (specific projects TBD).

PROJECT	PROBLEM	APPROACHES	COST ESTIMATES[1]
Efforts Underway[2]			**(Funded Projects -2020 CIP)**
A. Residential Flood Mitigation	Approximately 204 homes outside of channel migration hazard area are in areas that flood at a 500-year flood.	Elevate 12 homes; assuming two homes per year over next six years. (Assumes two elevations per year of the total ten homes per year throughout the Upper Snoqualmie Basin). Propose maintaining this rate over the next six years, anticipate additional funding in out years.	Total: $2.7M FCD CIP: $2.4M[3] Homeowner Match: $270K
B. Channel Monitoring and Sediment Management Program	Localized sediment accumulation can increase flood and erosion risks to homes and infrastructure within the floodplain.	Conduct channel monitoring of the Middle Fork Snoqualmie River channel as part of King County's sediment management program. Consider sediment management actions as part of risk reduction projects involving levee modifications.	Total: $240K[3] FCD CIP Request: $240K
C. Property Acquisition	Eighteen homes at risk from channel migration are located in the severe channel migration zone area.	Acquire at risk homes from willing sellers. This request is limited to real estate services and appraisal costs. Individual purchase cost requests will occur prior to negotiations with property owners.	Total: $8.4M FCD CIP Request: $570K
D. US Army Corps of Engineers Public Law (PL) 84-99	Two levees are enrolled but not eligible for participation in the U.S. Army Corps of Engineers levee program. The two levees do not currently meet PL84-99 standards.	Inspect and identify deficiencies, develop deficiency action plan. Implement maintenance and repair projects to address deficiencies based upon FCD direction.	Total: $150K FCD CIP Request: $150K

[1] Cost estimates include best available projections regarding right-of-way acquisition, design, construction, 10-year site establishment, 10-year effectiveness monitoring. Cost estimates do not include maintenance and monitoring beyond 10 years.
[2] Currently funded Flood Control District projects.
[3] Cost attributed to Operating Budget – not included in the six-year Capital Improvement Program project cost.

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PROJECT	PROBLEM	APPROACHES	COST ESTIMATES[1]
Proposed Near Term Actions (Years 0-6)		**FCD CIP Placeholder:** **FCD CIP Request:** **Total Project Cost:**	**$3.9M** **$3.9M** **$3.9M**
E. SE Mount Si Road Isolation Risk Reduction	Mount Si Road is flooded beginning at a 50-year flood, cutting off access to 415 homes.	Potential solutions include elevating the bridge approaches, placing new culverts, and redirecting flows away from the roadway.	Total: $1.2M[2] FCD CIP Request: $1.2M
F. Floodplain Conveyance Improvements (Phase 1 – planning and implementation)	Overflow channels originating from the Middle Fork Snoqualmie River flow through neighborhoods and cross roads creating risk to homes and infrastructure.	Potential solutions include channel modifications, enhancements, and culvert improvements.	Total: $12M[3] FCD CIP Request: $2.7M
Proposed Medium Term Actions (Years 7 – 10)		**(Unfunded Projects)**	**Total Project Cost: $20.3M - $25.3M**
G. Floodplain Conveyance Improvements (Phase 2 – continued implementation)	Overflow channels originating from the Middle Fork Snoqualmie River flow through neighborhoods and cross roads creating risk to homes and infrastructure.	Potential solutions include channel modifications, enhancements, and culvert improvements.	Total: $12M[3] FCD 7-10 YR Request: $9.3M
H. Mason Thorson Extension Risk Reduction	This levee creates a flow constriction exacerbating sediment deposition, erosion, and flooding. Damage to the upstream end of levee continues to occur; the levee overtops beginning at a 20-year flood.	Potential solutions include levee modifications, levee setback, and sediment management.	Total: $5.4M
I. Mason Thorson Ells Risk Reduction	This levee creates a flow constriction exacerbating sediment deposition, erosion, and flooding.	Potential solutions include levee modifications, levee setback, and sediment management.	Total: $5.6M to $10.6M
Proposed Long Term Actions (Beyond 10 Years)		**(Unfunded Projects)**	**Total Project Cost: $2M to $8.5M**
J. 428th Ave SE Road Isolation Risk Reduction	428th Ave SE floods beginning at a 10-year flood contribute to limited access to more than 300 homes.	Potential solutions include elevating the roadway and replacing culverts to increase conveyance.	Total: $1.2M
K. Increase Flood Storage and Conveyance	Select flood protection facilities no longer protect infrastructure or development and take up valuable flood storage and conveyance capacity.	Potential solutions include levee setbacks, levee modifications, levee removals, and sediment management.	Total: $800K to $7.3M
Total Middle Fork Capital Investment Strategy estimated implementation costs excluding projects A , B, C & D - funded through authorized projects or programs.			**Total Project Cost: $26.2M to $37.7M** **Already Allocated CIP or Operating $11.2M**

[1] Cost estimates include best available projections regarding right-of-way acquisition, design, construction, 10-year site establishment, 10-year effectiveness monitoring. Cost estimates do not include maintenance and monitoring beyond 10 years.
[2] Possible project partner – King County Roads Services Division.
[3] Possible funding and project partner – City of North Bend. Total Project Cost $12M; $2.7M included in near term total project cost and $9.3M in the medium term total project cost.