Protecting public safety, the regional economy and critical infrastructure.
Levee Vegetation Policy
Cost Analysis
## Levee Vegetation Management Cost Analysis

<table>
<thead>
<tr>
<th></th>
<th>Trees Removed</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Estimates unless noted otherwise)</td>
<td>(Estimates unless noted otherwise)</td>
</tr>
<tr>
<td>2008-9 Tree Removal</td>
<td>512 (74 trees/mile)</td>
<td>$5.2 million (Actual) (includes land acquisition on Green River)</td>
</tr>
<tr>
<td>Potential Impacts of Regional Variance</td>
<td>8,700 – 19,000 (238 – 544 trees/mile)</td>
<td>$61,000,000 - $133,000,000 ($1.3-$2.9 million/mile)</td>
</tr>
<tr>
<td>Potential Impacts of National Standard</td>
<td>13,600 – 35,300 (354-660 trees/mile)</td>
<td>$95,000,000 - $174,000,000 ($2-$3.8 million/mile)</td>
</tr>
</tbody>
</table>
| Estimates from State of California – National Standard | Not Provided | $6,500,000,000 - $7,500,000,000 ($4-$4.7 million/mile) }
2008-9 PL 84-99 Project
Cost Analysis

- During 2008-9 the USACE provided $25,000,000 and King County provided $10,470,000, or 29% of the total cost of $35,531,000.
- Local cost-share is 20% of construction on non-federal levees, 0% of construction for federal levees.
- Local cost-share ranged from 19%-77%.
- USACE projects cost King County $1 for a project that costs the USACE $3.50 and could have been completed by King County for an estimated cost of $2.
- While there was a net savings to King County during 2008-9, there was also a likely higher total cost to the taxpayer.
- Local cost-share highest for projects under $1 million vs. over $1 million (62% vs. 29%)
Example: PL 84-99 Eligible Levee

Good example of a successful brushing operation

Source: USACE, 2010
Example of Biostabilized Levee
(Narita Levee, Green River)

Nov 2003

Sept 2007
2011 Capital Program

Preliminary Recommendations and CIP Options
Presentation Overview

- **No decisions today**
- Capital Project Evaluation Criteria and Process
- Overview of Flood Risk Reduction Strategy by Basin
- Current Capital Program Capacity
- New Proposals
- 2011-2016 Potential CIP Options
NOTE: This is a conceptual diagram and is not intended to imply clear and distinct thresholds between these categories.
Snoqualmie and SF Skykomish Strategy

- Strengthen and rehabilitate flood containment facilities
- Buyout or elevate at-risk structures, elevations and farm pads to reduce impacts on agricultural land uses in the Lower Valley
South Fork Snoqualmie Levee Improvements

Strengthen levee system (both banks) for effective flood containment.

South Fork Levee System Improvements Project Location Map
S.F. Snoqualmie River

Flood Protection Facility (Levee, Revetment)
Floodplain Boundary

Map Scale: 0 - 3,360 Feet
Upper Basin Residential Flood Mitigation
Lower Snoqualmie - Tolt Pipeline
Lower Snoqualmie – Farm Pads
Cedar-Sammamish Strategy

- Reduce flood velocities and volumes that threaten critical public infrastructure, residential dwellings, and block sole-access roads
- Reduce public safety risks associated with neighborhood-scale flooding and channel migration
Cedar Grove Mobile Home Park

January 2009
Rainbow Bend Levee Removal
Elliott Bridge Acquisition and Levee Setback

January 2009
Byers Bend and Dorre Don and Maplewood Neighborhood Flood Studies
Green River Strategy

- Rehabilitate levees to protect critical public infrastructure and regional distribution centers
- Increase storage and conveyance capacity; reduce slope of levees
- Implementation Constraints: Right-of-way issues are critical for implementation and project sequencing
- Temporary flood protection in response to USACE Howard Hanson Dam reduced storage capacity
Briscoe Reach
Levee Setbacks
Reddington Reach
Levee Setback and Extension
Horseshoe Bend 205

- 2009 Repairs with Corps
- 2010-2011 $10M in state funds to support levee rehabilitation
- 2010 Incorporate FCD Nursing Home Project into broader Horseshoe Bend reach
- 2012-2015 FCD funds to support long-term rehabilitation
Corps Partnership Projects

- **Flood Repairs (2008-9)**
  - Tukwila 205 and Horseshoe Bend 205 Repairs

- **Ecosystem Restoration Program**
  - Upper Russell Road Construction 2010-2012
  - Russell Road Lower Design 2010, construct 2011
  - Russell Road Lowest Design 2012, construct 2013
  - Boeing Levee 2013 (setback is already complete)
White River Strategy

- Reduce risks to public safety by setting back levees to increase flood storage and conveyance capacity
- Buyout residential structures at risk of flooding and rapid channel migration
- Temporary flood protection in City of Pacific
City of Pacific – Countyline and Right Bank
Setback
Countyline Project Construction

Phase I
- Project area
- Setback levee
- Biorevetment and riparian buffer
- Engineered log structures

Phase II
- Levee and revetment removal
Right Bank Setback Project Concept

Phase 1: Acquisition

Phase 2: Acquisition and design

Phase 3: Permitting and construction
Temporary Flood Protection Measures in the City of Pacific

Highlights

Near-term flood risk reduction in light of potential increased risk

Alignment maximized potential storage while accommodating year round park use

Installation > $360K + $162K from USACE

City coordinated private property protection with assistance from USACE and Pierce County

Ongoing cost of pumps and of seasonal opening and closing of City Park
Capital Program to Date

- 80% of 2008-2010 appropriations for projects scoring greater than 75% on flood risk benefit
- 52 Projects Complete in 2008-2009
- Increased need of $17M due to 2009 flood disaster
Adopted 2010-2015 Context

- 25 multi-year projects continue into 2011
- Limited capacity for new projects without impacting adopted high-priority projects
  - 2010-2015 Adopted CIP includes $27 million in new projects during 2011-2015, less than one year’s worth of FCD revenue
  - $24.5M of the $27.4M is in 2014-2015
  - 1 new start proposed for 2011, 2 new starts for 2012
<table>
<thead>
<tr>
<th>Submitted by</th>
<th>Name</th>
<th>Request</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn</td>
<td>Lones Levee Ext</td>
<td>$2,900,000</td>
<td>Already on CIP</td>
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<tr>
<td>Auburn</td>
<td>8th street Bridge debris removal</td>
<td>$50,000</td>
<td>Address through Green River Flood Prep Project</td>
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<tr>
<td>Auburn</td>
<td>Debris Removal Pad near 8th St Bridge</td>
<td>$75,000</td>
<td>Address through Green River Flood Prep Project</td>
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<tr>
<td>Pacific</td>
<td>Debris Removal on White River</td>
<td>$210,000</td>
<td>On-Going Programmatic Work with Multiple Agencies</td>
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<td>Kent</td>
<td>Kent Airport Levee</td>
<td>$13,000,000</td>
<td>Request is for 2018</td>
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<td>Kent</td>
<td>Frager Road levee rehabilitation</td>
<td>$38,000,000</td>
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<td>King County</td>
<td>Crisp Creek Floodplain Channel Avulsion</td>
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<td>Recommend Opportunity Fund</td>
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<tr>
<td>King County</td>
<td>Burns Creek Floodplain Management</td>
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<td>King County</td>
<td>PL 84-99 Mitigation work</td>
<td>$2,100,000</td>
<td>Required by permits</td>
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<tr>
<td>Auburn</td>
<td>Porter Bridge Levee</td>
<td>$3,500,000</td>
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<tr>
<td>King County</td>
<td>S. 180th to Strander Blvd Floodway Capacity Improvements</td>
<td>$75,000</td>
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<td>Lake Forest Park</td>
<td>Lyon/McAleer Creek Channel Improvements</td>
<td>$375,000</td>
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<tr>
<td>Seattle</td>
<td>Seawall Construction</td>
<td>$30,000,000</td>
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**Total New Requests:** $92,860,000
## New Proposals Evaluated for 2011-2016

<table>
<thead>
<tr>
<th>Submitted by</th>
<th>Name</th>
<th>Amount</th>
<th>Comment</th>
<th>Flood %</th>
<th>Impl %</th>
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<td>King County</td>
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<td>$2,100,000</td>
<td>Required by permits</td>
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<td>Seattle</td>
<td>Seawall Construction</td>
<td>$30,000,000</td>
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<td>100</td>
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</table>

**Total New Requests:** $36,050,000
Proposed CIP Adjustments
Common to all Options (highlighted in Green)

- **PL 84-99 Mitigation**
  - $2.1 million in 2011
  - Required by state and local permits

- **Lower Snoqualmie Residential Flood Mitigation**
  - $300,000 per year
  - Reduce risk to agricultural community
Proposed CIP Adjustments Common to all Options (Highlighted in Green)

- Projects resequenced due to landowner willingness (no net change in total appropriation)
  - Tolt River Mile 1.1 Levee Setback
- Projects resequenced due to readiness factors
  - Tolt Pipeline Protection
  - Pacific Debris Removal
Assumptions for all Options

- Emergency reserve target increases from $2.5 million to $3.5 million
- Emergency reserve target met under all options
- Projects adopted in 2008-2010 are not impacted
- Flood risk score drives re-sequencing of individual projects
Policy Issues Raised by New Proposals

- Levee Certification?
- Small Streams vs. Large Rivers?
- Coastal Hazards?
CIP Option 1

- Option 1: “Table” new project proposals until the 2012 plan update when policy issues such as coastal projects, small streams, and levee certification can be resolved and clearly articulated in the District’s plan and policies.
Impacts of Option 1:
Decision Deferred until Plan Update

New Proposal: Seattle Seawall
Request for $30M in 2012-2013

New Proposal: McAleer/Lyon Creek Flooding
Request for $375,000 in 2012
2011-2016 CIP Option 2

- Option 2: Provide Seattle Seawall funding at $5M/year starting in 2013; Add funding for Lake Forest Park proposal in 2012. Minimize impacts on high priority projects (e.g. those over 75-80%) previously identified in the capital program.
Impacts of CIP Option 2

- Delay 8 projects seeking to reduce residential flood risks,
- Majority of impact is on projects scoring between 65-75% on the flood risk scale.
- 4 projects along the Tolt River
- 1 on Issaquah Creek
- 1 on Sammamish River
- 1 on Bellevue’s Coal Creek
- 1 on the South Fork Skykomish
Impacts of CIP Option 3

- 15 projects delayed
- Under this scenario, several projects scoring up to 75%-85% would be delayed.
- Option 2 delayed projects plus:
  - Cedar River - Dorre Don, Maplewood, and Lower Jones Road.
Advisory Committee Discussion

- Questions on BTC Process and Discussion?
- Questions on Projects?
- Questions on CIP Options?
- Discussion and Feedback