• Local Challenges
• Levee Ready Columbia
• Collaboration Successes
• Drainage and flood-control system with 45-miles of federally authorized levees
• Drainage Districts operate and manage levees: participate in Corps PL84-99
• Jurisdictions participate in FEMA NFIP
What’s behind the levees?

- 40% of Port of Portland facilities; 12+ million tons of goods per year
- 17% of region’s future buildable industrial land
- $5+ billion in assessed property value
- ~7,500 residents
- 10% of the jobs in Multnomah County
Background - History of High Water Events

1948 Flood – Railroad Embankment Breach at Vanport

1948 Flood – Columbia Slough breach

1996 Chinook Landing Marine Park: North of the MCDD Marine Drive Levee

2005: Chinook Landing Marine Park
same structure as pictured above in non-flood conditions
Project Need - New Era of Challenges

- Change in system risk profiles
- Development challenges
- Climate change
- Natural resources protection
• System was originally certified by USACE in 2007.
• Based on new requirements, USACE determined that that two (out of five) systems no longer provided protection required by FEMA.
• All are accredited because FEMA has not initiated remapping for the area.
• Oregon BiOp released in 2016, strengthens case for accreditation

Project Need – Changing Requirements
These large potential costs are beyond any individual jurisdiction or agency’s ability to pay.

The Solution? Levee Ready Columbia
• More than 20 partner organizations
• Collaboratively funded
• Project Team structure
• Focus is to re-certify, remain accredited, and stay active in USACE PL84-99
• Transparency to the public
• Community risk awareness

Levee Ready Columbia – Formation

Program Partners

- Audubon Society
- Bridgeton Neighborhood Association
- City of Fairview
- City of Gresham
- City of Portland
- Bureau of Environmental Services
- Bureau of Parks and Recreation
- Bureau of Development Services
- Bureau of Transportation
- Water Bureau
- City of Troutdale
- Columbia Corridor Association
- Columbia Slough Watershed Council
- East Columbia Neighborhood Association
- Federal Emergency Management Agency
- Jubitz Corporation
- Metro
- Multnomah County
- Multnomah County Drainage District #1
- Peninsula Drainage District #1
- Peninsula Drainage District #2
- Port of Portland
- Sandy Drainage Improvement Company
- Sauvie Island Drainage Improvement Company
- State of Oregon
  - Department of Environmental Quality
  - Department of Land Conservation and Development
  - Governor’s Regional Solutions Team
- US Army Corps of Engineers
**Levee Ready Columbia - Timeline**

**DISCOVERY PHASE 1**
$3.5 MILLION
- Levee Engineering Assessments for first two districts

2013

**DISCOVERY PHASE 2**
$5.0 MILLION
- Levee Engineering Assessments for final three districts, Inventories and studies

2014

**ANALYSIS & PLANNING**
$TBD
- Risk based decision model: Alternatives analysis, System wide design and finance repairs

2015

**IMPLEMENTATION**
$TBD
- Implement repairs system wide

2016

**CERTIFICATION & ACCREDITATION**
$TBD
- Certify and submit documentation for system wide accreditation

2017

2018
Engineering Analysis

Levee Ready Columbia – Where are we now
PL 84-99 – Rehabilitation and Inspection Program

- Pump Station Inspections
- Outfall Video Scoping + Rating
- Relief Well Inspection
- Toe Drain Investigation
- Encroachment Study

Levee Ready Columbia — Where we are now
Inventories and Studies for Risk-informed Decision-making

Climate Change

Environmental Inventory

Economic Inventory

Community Asset Mapping

Levee Ready Columbia – Where are we now
Community Outreach – Events and Information

Levee Ready Columbia – Where are we now
Community Outreach – Program Identity

Levee Ready Columbia – Where are we now
Lessons Learned

Identify Mutual Responsibility

Shared Risk

Shared Benefits

Shared Responsibility
Meaningful Engage Stakeholders

Engage Project Partners – mutual decision-making and results

Engage the Community – digestible information
### Build the Revenue Bucket

Pursue multiple avenues of funding

- **Ratepayers**
- **Map holders**
- **Regional Entities**
- **State**
- **Federal**

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>IFA Loan Contribution</th>
<th>FY 16 Cash Contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro</td>
<td>$300,000</td>
<td>-</td>
</tr>
<tr>
<td>Port of Portland</td>
<td>$166,085</td>
<td>$100,000</td>
</tr>
<tr>
<td>State of Oregon</td>
<td>$166,085</td>
<td>$100,000*</td>
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<tr>
<td>PEN 1</td>
<td>-</td>
<td>$15,151</td>
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<tr>
<td>PEN 2</td>
<td>-</td>
<td>$16,385</td>
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<tr>
<td>MCDD</td>
<td>$1,149,744</td>
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<tr>
<td>SDIC</td>
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<td>$16,044</td>
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<tr>
<td>SIDIC</td>
<td>-</td>
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<td>Multnomah County</td>
<td>$21,285</td>
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<td>City of Portland</td>
<td>$999,183</td>
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<td>Gresham</td>
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<td>Fairview</td>
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<td>$7,098</td>
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<tr>
<td>Troutdale</td>
<td>$224,278</td>
<td>$13,426</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>$3,467,710</strong></td>
<td><strong>$441,050</strong></td>
</tr>
</tbody>
</table>
Make it Fun!

#leveelovepdx

Lessons Learned
Roll on Columbia, roll on

Continued Partnerships

Long-term funding for levee programs

Mutual decision-making for alternatives

Re-certify levee system

Remain in good standing in federal programs: accredited and in the RIP!
Questions?
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Levee Ready Columbia Project Manager
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Thanks!
EXTRA SLIDES
### Who is responsible for flood protection?

<table>
<thead>
<tr>
<th><strong>FEMA</strong></th>
<th><strong>Corps of Engineers</strong></th>
<th><strong>Local Agencies</strong></th>
<th><strong>Public</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Map flood risk: FIRM</td>
<td>Construct and inspect levees (RIP)</td>
<td>Opt to participate in NFIP</td>
<td>Understand risk</td>
</tr>
<tr>
<td>Provide Insurance: NFIP</td>
<td>Partner with communities to flood fight</td>
<td>Maintain Levees: Certification, Accreditation &amp; RIP</td>
<td>Buy flood Insurance</td>
</tr>
<tr>
<td>Catalyze community conversation about risk</td>
<td>Partner with communities to repair levees</td>
<td>Flood fight</td>
<td>Be prepared and have a plan</td>
</tr>
</tbody>
</table>
Continued Threat of Flooding

1964

1996 High Water along Marine Dr.
Interior Drainage Modeling
Levee Improvement Program FY15 -16 Budget

- Staffing, $326,158
- Engineering - MCDD & SDIC, $3,217,595
- Engineering - SIDIC, $399,000
- Engineering - P1 & P2, $148,000
- Inventories & Studies, $317,000
- Community Involvement, $110,000
- Facilitation, $225,000

Total Budget : $4.7 Million
Where are we?

- Levee Investigation and Planning: 2-4 years
- Major construction required?
  - NO: Seek Funding and Permits: 1-2 years → Remediation: 2-4 years → Certification Received → FEMA Review: 1 year → Approved → Accreditation Received
  - YES: Oregon Solutions
    - Levee accreditation not received: Create New Maps & Outreach: 3 years → FEMA could request certification at any time.
    - FEMA requests certification: FEMA Mapping: 2 years → Remediation: ??? years → NOT APPROVED
    - FEMA requests certification reflected on FIRM: FEMA requests certification → Oregon Solutions