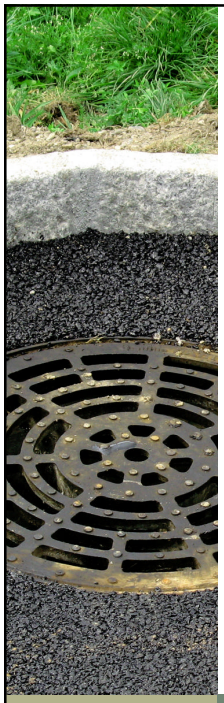
Portland's Drainage Infrastructure

What About Drainage?

- Drainage is not the sewer we often think of, but it *is* an underground system of pipes that maintains our quality of life.
- Drainage systems convey fallen rainwater, called *stormwater*, from paved streets, parking lots, our lawns and basements (via sump pump) to prevent pooling and flooding.



Drainage Prevents Damage

Stormwater is drained away to prevent expensive damage to our infrastructure.

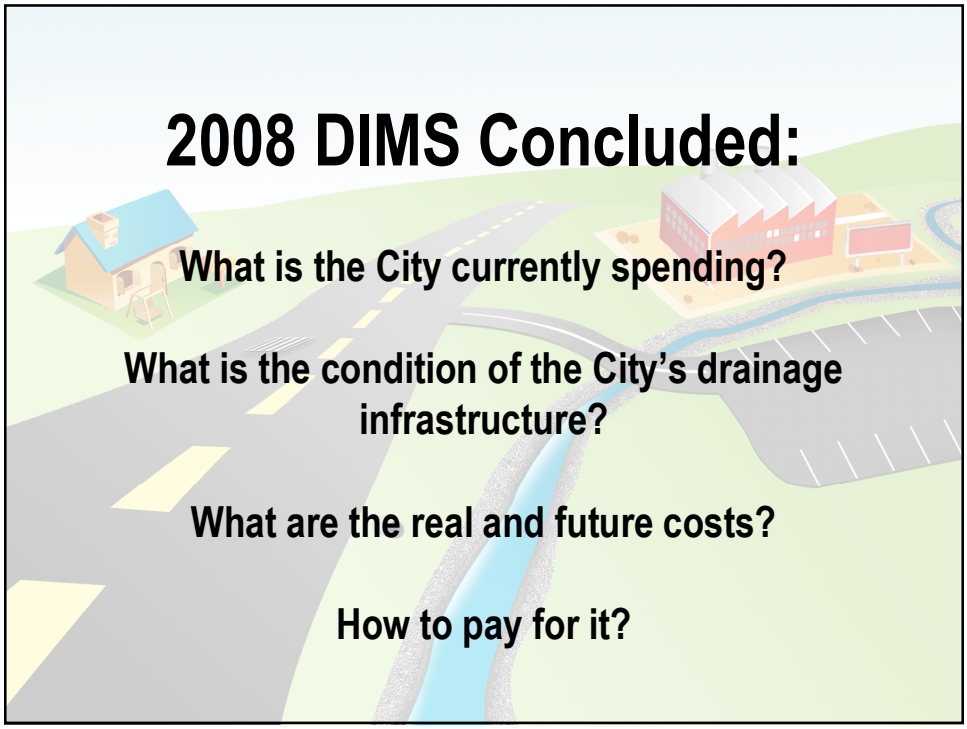
Basements	→	**Flooding**
Streets	→	**Erosion**
Beneath roadways	→	**Road heaving**



Polluted Stormwater

- Unfortunately, our drainage systems also carry pollutants like oil, fertilizers, sediment and trash.
- Rainwater that falls on paved streets, lawns, parking lots and sidewalks becomes polluted stormwater.


2008 DIMS Concluded:



What is the City currently spending?

What is the condition of the City's drainage infrastructure?

What are the real and future costs?

How to pay for it?

Elements of a comprehensive stormwater program

1. Administration
- General Administration
- Gen Prog Planning & Dev
- Interlocal Coordination
- Grants Program

2. Billing And Finance
- Billing Operations
- Customer Service
- Financial Management
- Indirect Cost Allocation
- General Government Support

3. Public Ed & Involvement
- Public Awareness
- SW Qual Ed & Reporting
- Public Involvement
- Citizen's Advisory Group
- Non-profit Integration
- Media Relations
- Risk Communications

4. Technical Support
- GIS Applications
- Database Management
- Mapping & Imagery
- General Data Collection
- Web & Customer Support

5. Engineering & Planning
- Des Criteria, Stds And Guidance
- Field Data Collection
- Quantity Master Planning
- Quality Master Planning
- Design, Field & Ops Engr
- Retrofitting For Water Quality
- Hazard Mitigation
- Zoning Support
- Multi-objective Planning Support

6. Operations & Maintenance
- General Maintenance Mgmt
- General Routine Maintenance
- General Remedial Maintenance
- Emergency Response Maint
- Infrastructure Management
- Public Assistance

7. Capital Improvements
- Major Capital Improvements
- Minor Capital Improvements
- Land, Easement, And ROW

8. Regulation And Enforcement
- Code Dev & Enforcement
- General Permit Administration
- Drainage Sys Insp & Reg
- Zoning & Land Use Reg
- Special Inspection Programs
- Flood Insurance Program
- Multi-Obj Floodplain Mgmt
- Erosion Control Program
- Pest, Herb & Fertilizer
- Used Oil & Toxic Materials
- Spill Response & Clean Up
- Illicit Con & Illegal Dumping
- Groundwater & Drinking Water
- Watershed Assessment & TMDL
- Septic & I&I Program
- Industrial Program
- Monitoring

Big Rocks Analysis: Cost

- Remedial Maintenance
- Routine Maintenance
- Capital Improvements
- Regulatory Compliance
- Master Planning
- Others ???

2010-2011 Assessment:

What is the City currently spending?

What is the condition of the City's drainage infrastructure?

What are the real and future costs?

How to pay for it?


WHALEBOAT RD
HOPE AV
STURDIVANT DR
CLAPBOARD RD
PAMELA RD
OVERSET RD
ABBY LN
CURTIS RD
QUIET LN
FROST HILL RD


WHALEBOAT RD
HOPE AV
STURDIVANT DR
CLAPBOARD RD
PAMELA RD
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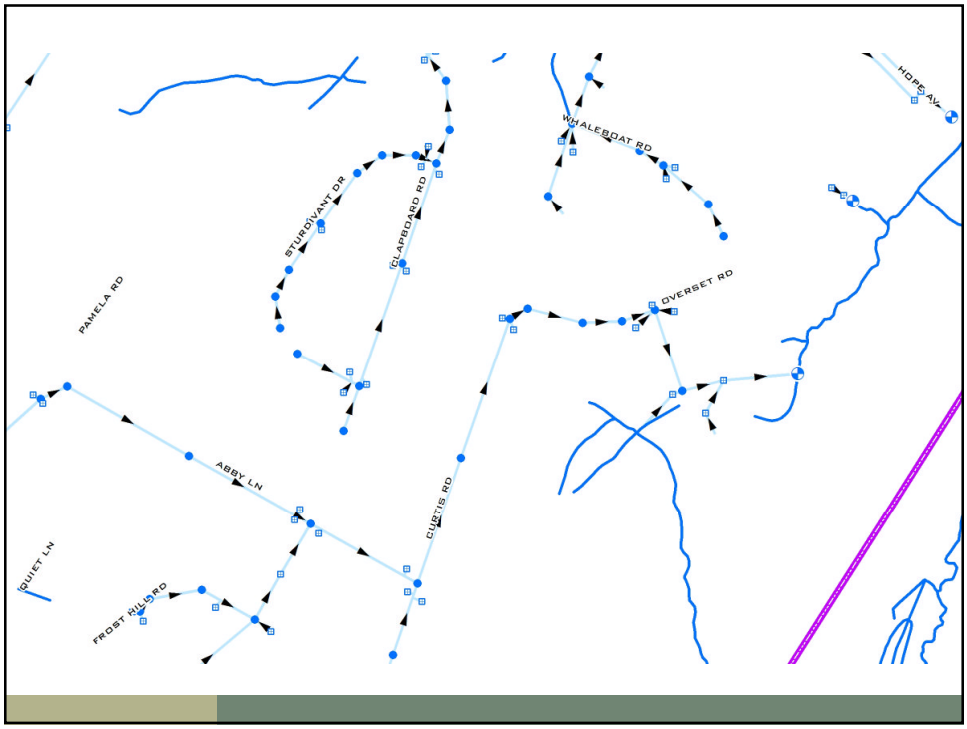
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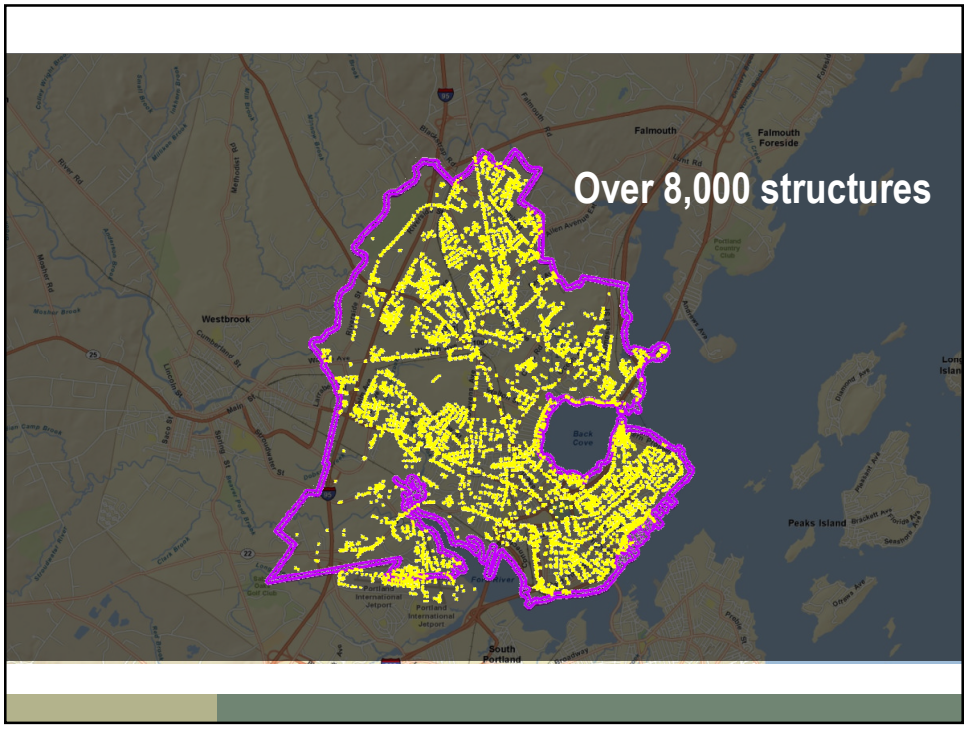
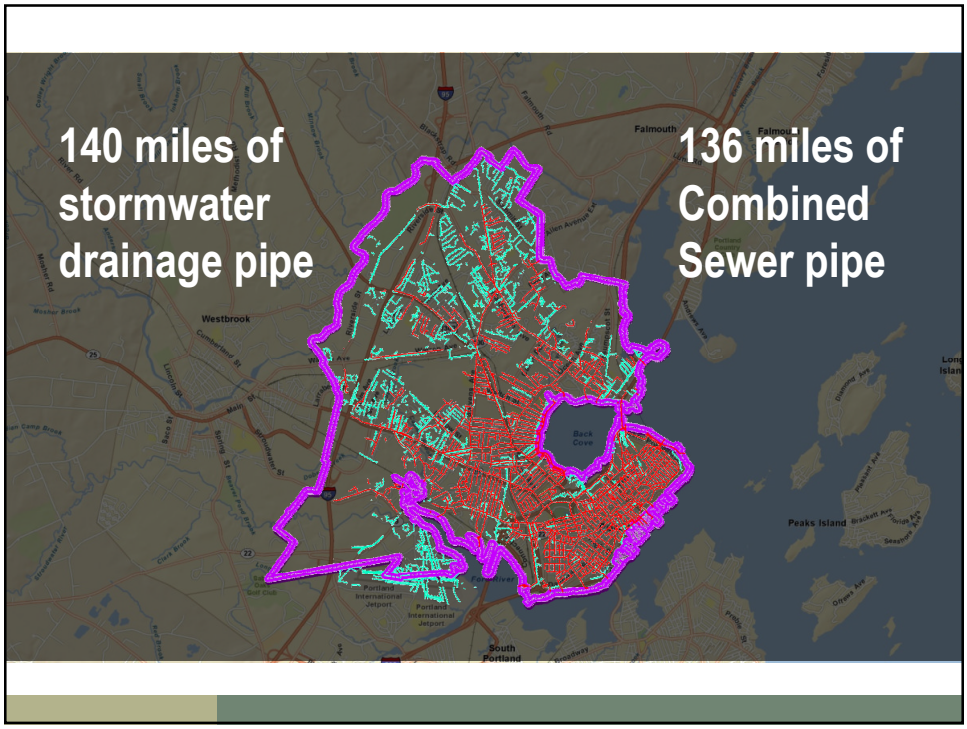
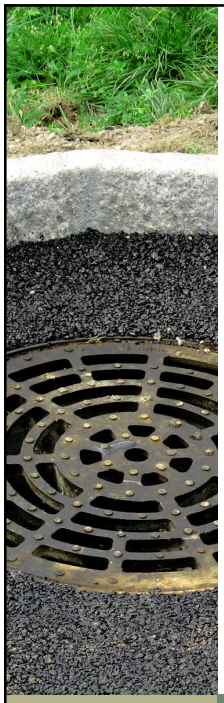
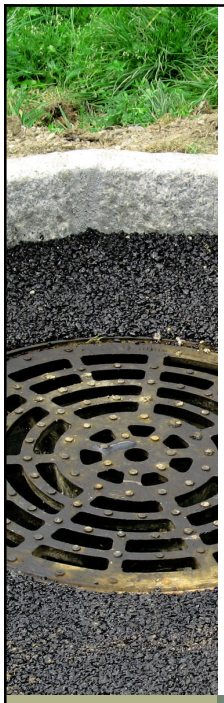

Over 8,000 structures
Falmouth
Falmouth Foreside
Westbrook
Back Cove
Peaks Island
South Portland


140 miles of stormwater drainage pipe
136 miles of Combined Sewer pipe
Falmouth
Westbrook
Back Cove
Peaks Island
South Portland



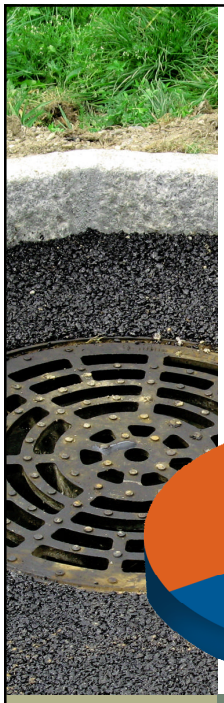
What Did We Do?

- Visually inspected catchbasins, manholes, visible portion of pipe and outfalls.
- Evaluated close to 300 structures in representative areas of the City.
- Used City's 5-point condition rating.
- Identified overall structural condition and rated specific portions of each structure.

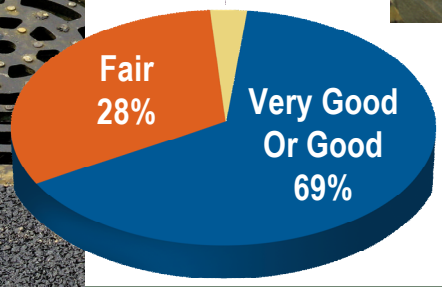


What Did We Do?

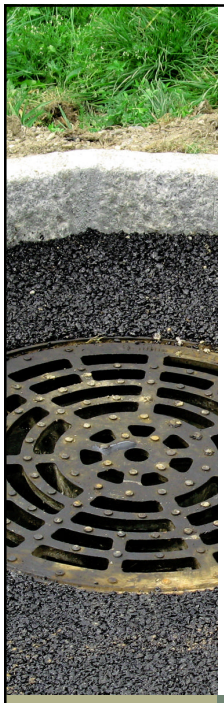
- FAIR = Remedial Maintenance
  - Replacing Covers/Grates
  - Concrete Parging
  - Replacing Headstones
  - Resetting Brick Risers
  - Televising and Jetting
  - Outfall Armoring
  - Cured in Place Pipe Lining
- POOR or VERY POOR = Replacement
  - Replace-in-Kind



What Did We Find?

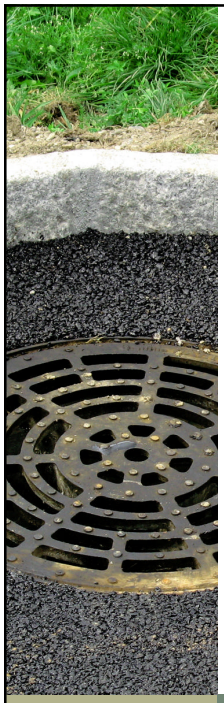


Manholes



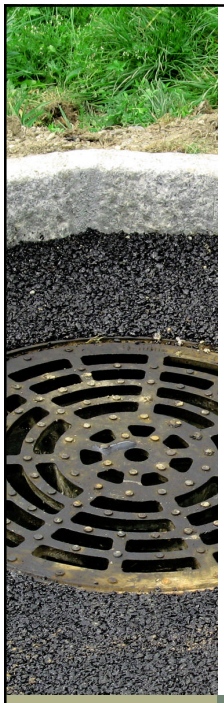
What Did We Find?

Catchbasins



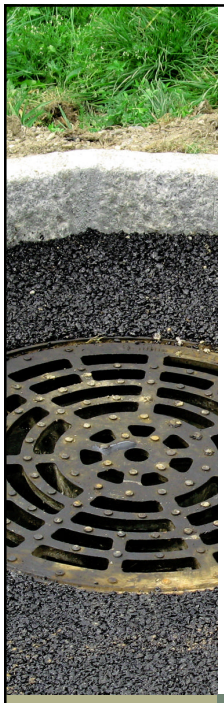
Interpreting the Results

- Pipes and Outfall condition: Based on data from structures
  - 60% Good
  - 30% Fair
  - 10% Poor
- Field sample extrapolated to entire City system



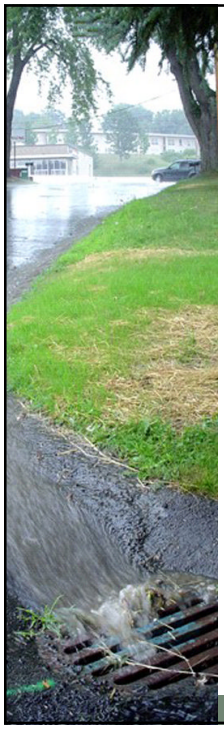
Interpreting the Results

- FAIR = Remedial Maintenance
  - $275 to $2100 per structure (includes Labor, Equipment and Material costs)
  - $70 to $250 per linear foot for pipe
- POOR or VERY POOR = Replacement
  - $3700 to $6500 per structure
  - $130 to $250 per linear foot for pipe



What Does this Mean to You?

- Updates the DIMS program cost summary table
- Assists with level of service discussion
- Allows informed decision of priorities and backlog



Next Steps for City

- Refine the level of stormwater management need in Portland?
- Refine assumptions, costs and level of service?
- How should we prioritize? What are the program priorities and timing?
- Most equitable ways to pay for it?