

Portland's Combined Sewer Overflow Remediation Efforts



Brad Roland – City of Portland
Charlene Poulin – Portland Water
District



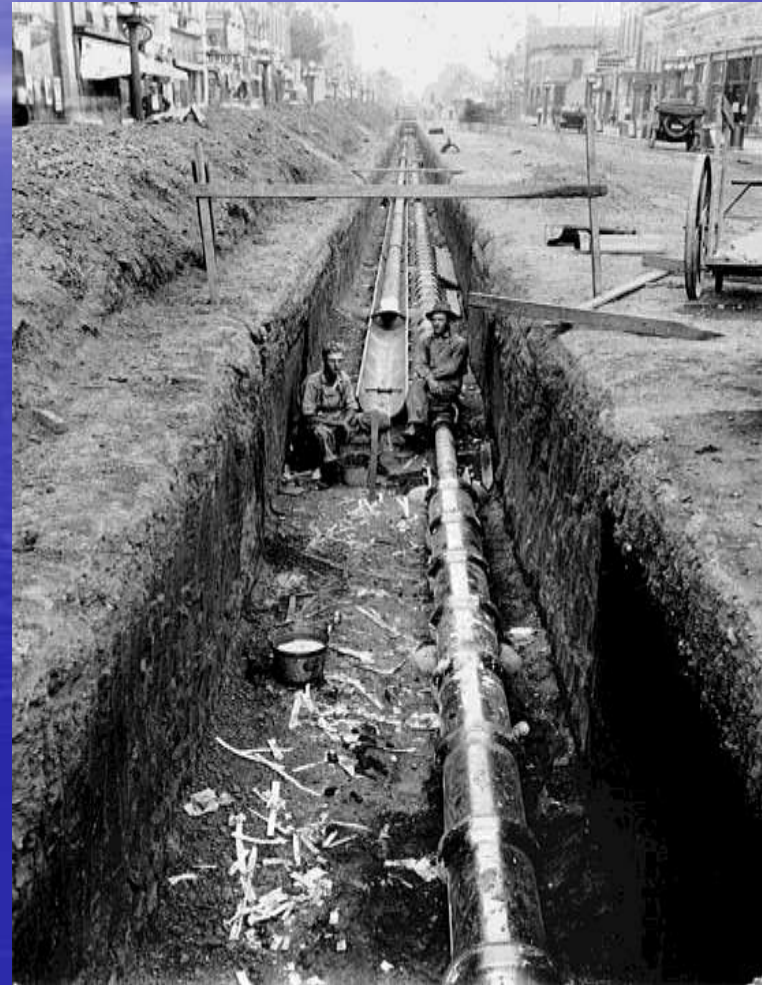
**When Portland used to be Falmouth
Prior to 1786**

1954



History of WW Treatment

- Rudolf Hering – 1895
- Investigation in October of 1894 of Back Cove 'nuisance'
- What was best remedy?
- Pomeroy Rock for final disposal
- Grand Trunk (now Tukeys) Bridge would work

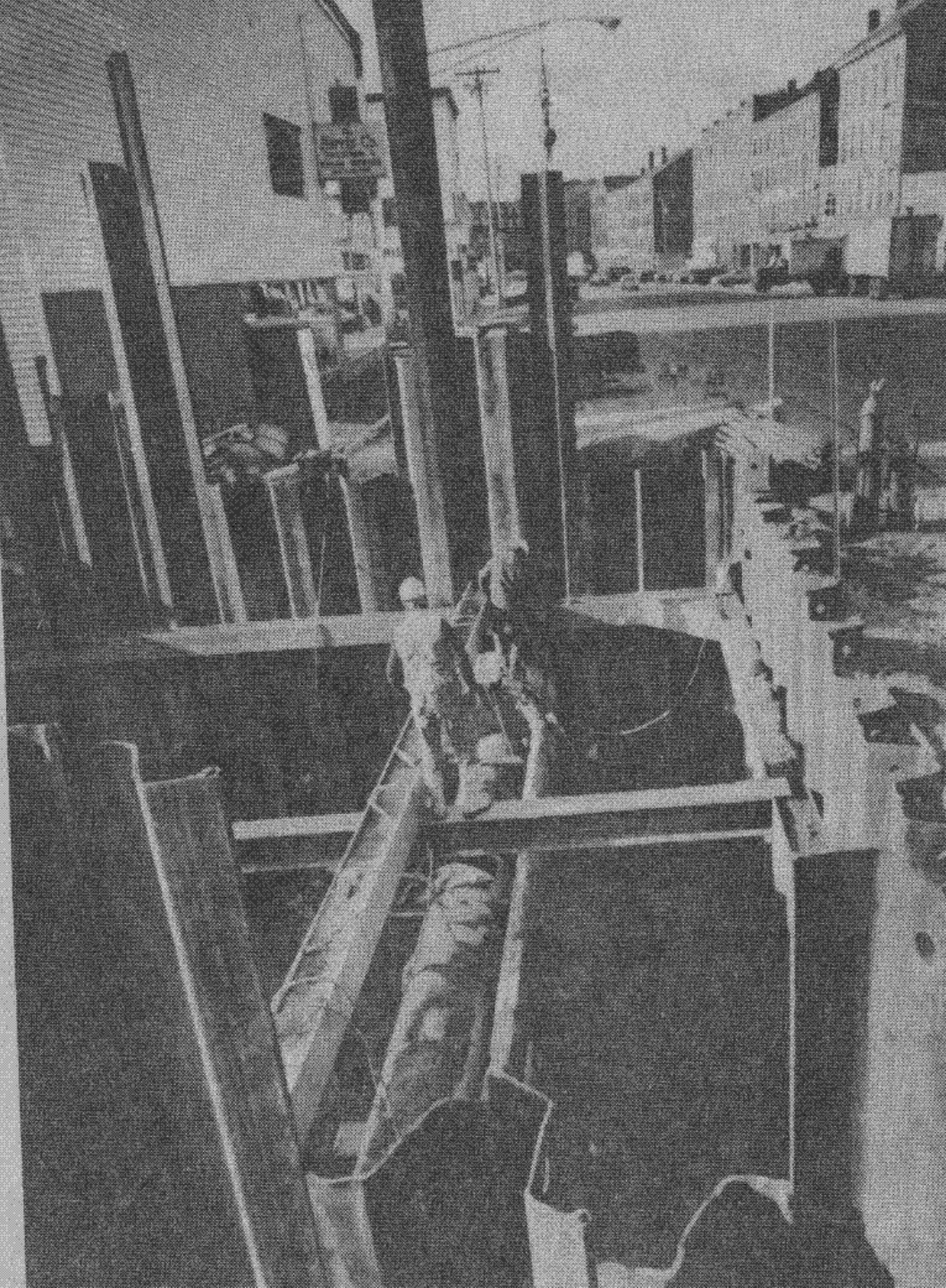


- 1958 Metcalf & Eddy
- Back Cove sewer projects
- Interceptors around cove
- Grease and Grit removal
- Chlorination during 'high' seasons
- Pump Stations to carry to Pomeroy Rock – also discharge point



Wastewater Milestones

- 1968: Legislature approves charter changes
- 1971: Regional Wastewater Plan completed
- 1972 and 1977: Federal Water pollution control amendments and Clean Water Act requires fishable, swimmable waters, includes funding
- 1979: East End Plant Completed

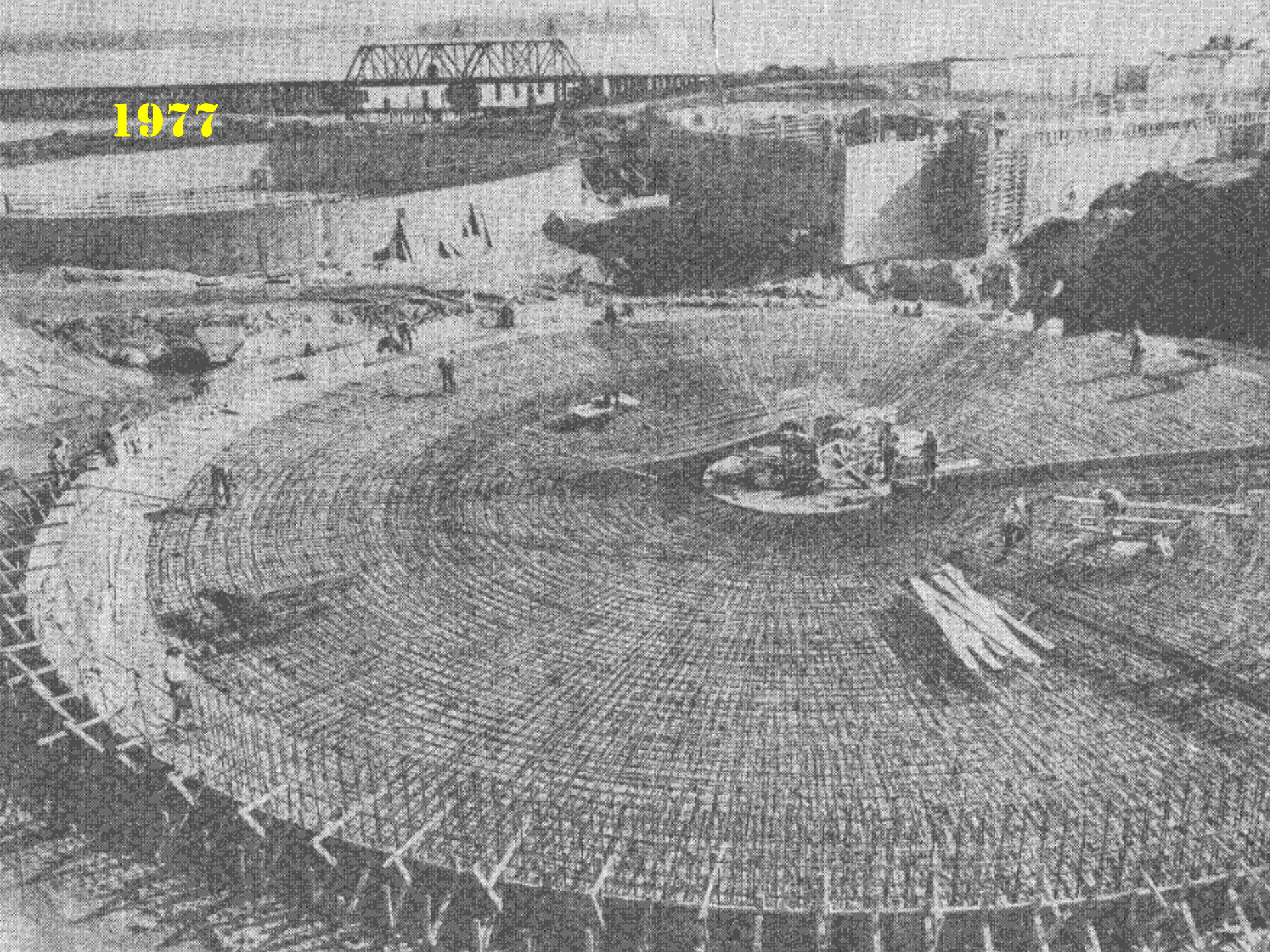


1976

1977



1977



1977



1978



1982



City reopening East End Beach

By KENDALL HOLMES
Staff Writer



Staff photo by Charles H. Merrill

Portland's East End Beach, closed to bathers since 1963, is being reopened. "Mother Nature has been very kind to us," said Assistant City Manager Paul Rollins.

The City Council ordered the beach closed 17 years ago when evidence of severe pollution, caused by raw sewage, became too obvious to ignore.

Pollution levels dropped dramatically last summer after the city's new sewage treatment plant opened and natural tidal action began cleansing debris from East End waters.

City officials said today that continued water quality testing has allowed them to pronounce the beach safe for swimming. "For many people who have been paying sewer user bills, this may be the first real benefit," Rollins said. "We can finally open the beach and the only real reason is that the sewer facility is on line and operating properly."

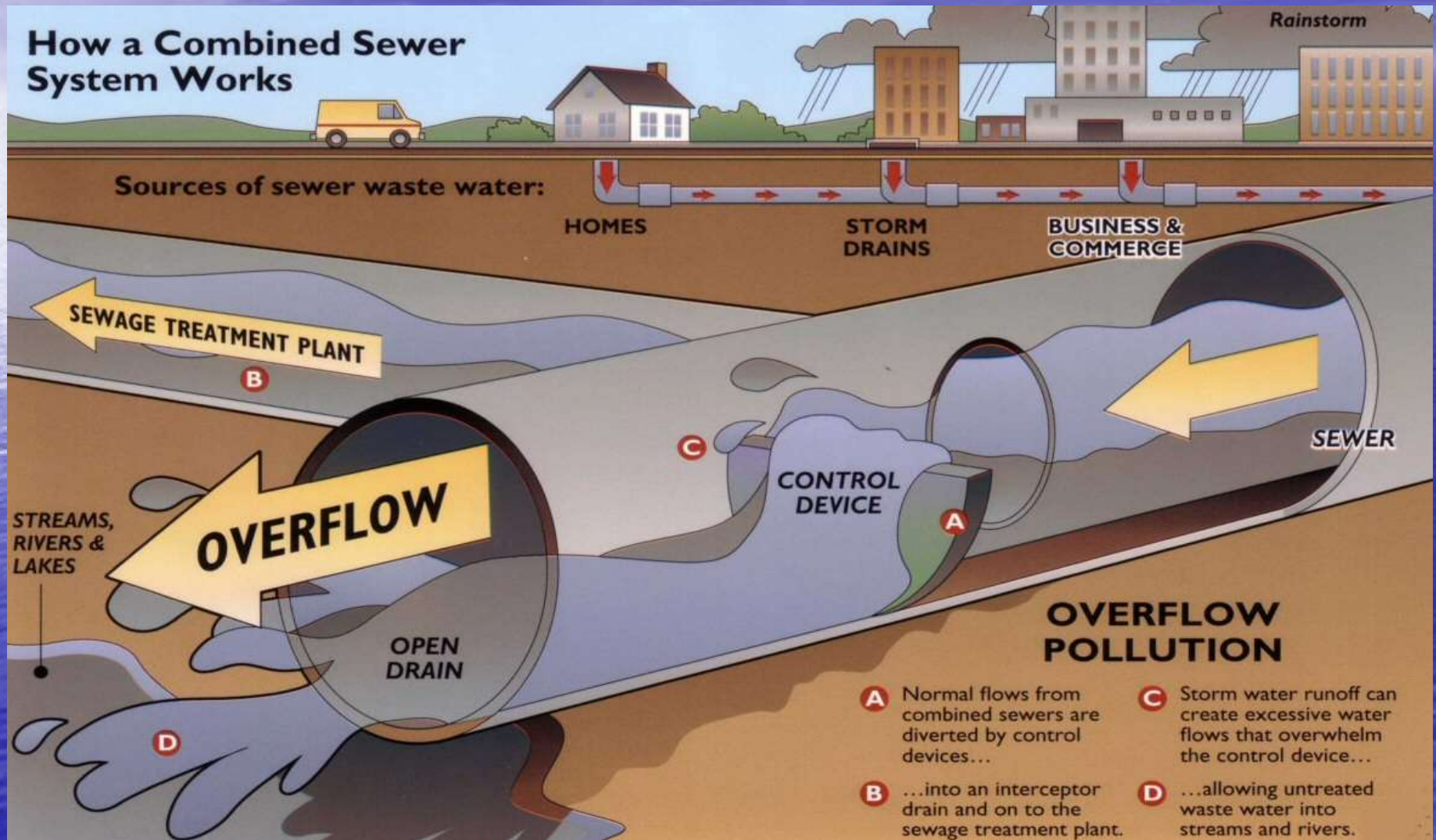
The beach consists of a 200-yard strip of sand at the base of Munjoy Hill. Its waters are on the rocky side.

Officials are eyeing a June 14 grand opening ceremony for the beach. They've got plenty to do between now and then.

First of all, there are rats to eliminate. Rollins said in the beach's dirtier days, "literally hundreds" of the rodents lived in a stone retaining wall which separates the beach from an adjacent railroad bed. Their numbers, however, have since declined to several dozen.

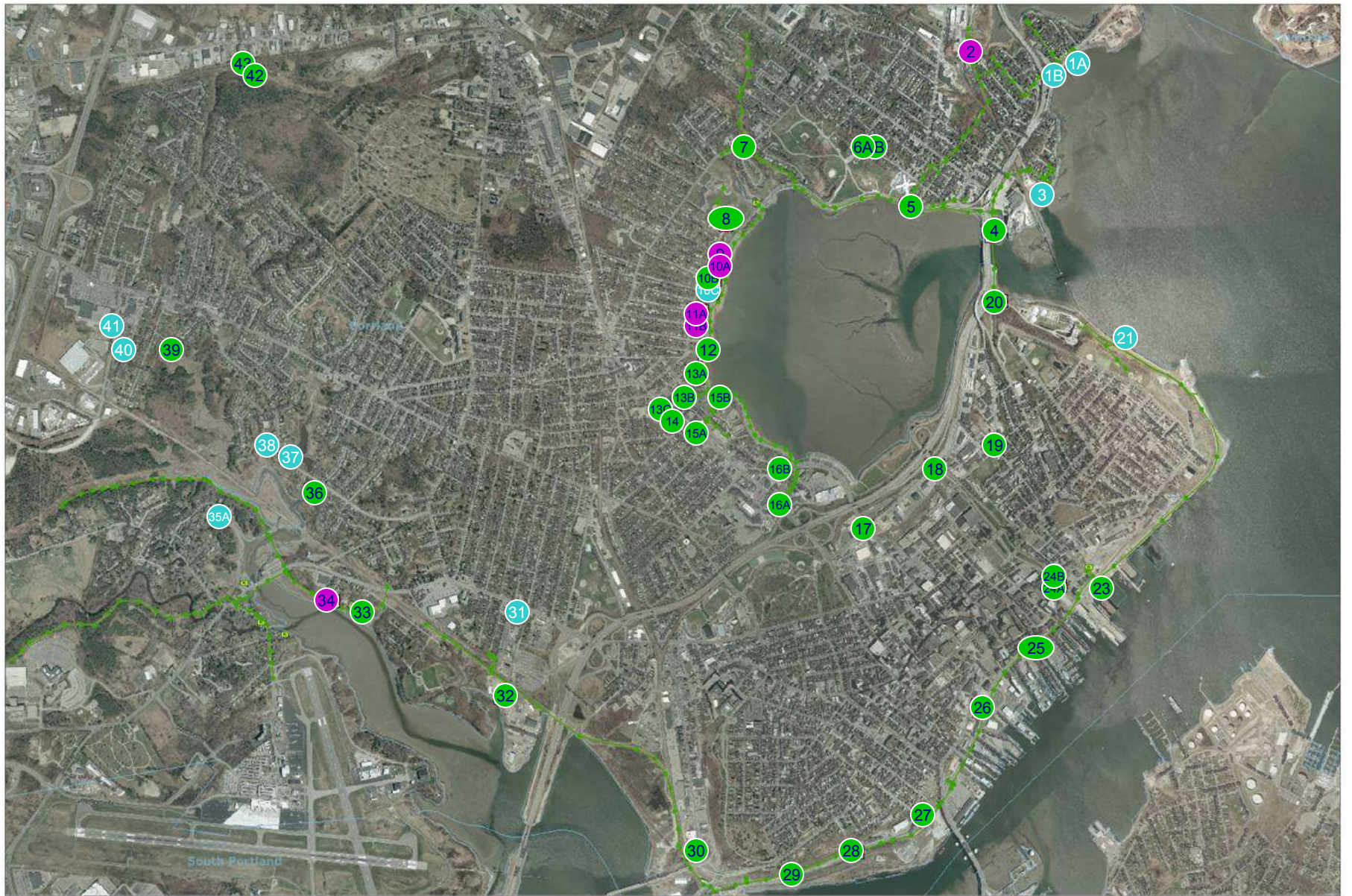
A crew from the city's rodent control

CSO Basics



City of Portland

- Portland has 33 CSO's
 - PWD holds license for 21 CSO's
 - City of Portland holds license for 12 CSO's
 - PWD owns most interceptors in the City
 - City of Portland owns the collectors



Remote metering

Block Data

Closed

Sewer Separation Past and Present

- CH2M Hill Master Plan – 1993
- DeLuca-Hoffman Associates June 20, 1997
 - City of Portland Combined Sewer Overflow Abatement
 - 5 Year Implementation Schedule 1997-2001
- DeLuca-Hoffman Associates February 5, 2003
 - City of Portland Tier II Combined Sewer Overflow Abatement
 - 8-Year Implementation Plan
- CDM Tier 3 Plan (2011-??)

CSO Regulatory Inventory

Outfall No.	Outfall Name	Owner	Receiving Water	Year Closed
1A	Veranda Street	PWD	Casco Bay	2001
1B	Olympia Street	PWD	Casco Bay	2001
2	Arcadia Street	PWD	Presumpscot Est	
3	Berwick Street	PWD	Casco Bay	2001
4	Tukey's Bridge Siphon	PWD	Casco Bay	
5	Randal Street	PWD	Back Cove	
6A	Johansen Street #1 (Front @)	City	Back Cove	
6B	Johansen Street #2 (@ Front)	City		
7	Ocean Avenue	PWD	Back Cove	
8	Clifton Street	PWD	Back Cove	
9	George Street	PWD	Back Cove	
10A	Austin Street	PWD	Back Cove	
10B	Mackworth Street	PWD		
10C	Parsons Street	PWD		
11A	Chenery Street	PWD	Back Cove	
11B	Codman Street	PWD		
12	Vannah Avenue	PWD	Back Cove	
13A	Belmont Street	City	Back Cove	
13B	Forest Ave. @ Ashmont St.	City		
13C	Ashmont Street @ Forest Ave.	City		
14	Forest Ave @ Coyle's Gully (GLB)	City	Back Cove	
15A	Forest Ave. @ Dartmouth St.	City	Back Cove	Raised 2005
15B	Dartmouth Ave. @ Baxter Blvd.	PWD		
16A	Forest Ave. @ Bedford St.	City	Back Cove	Raised 2005
16B	Bank Street	PWD		
17	Preble St. @ Marginal Way	City	Back Cove	
18	Franklin Art. @ Marginal Way	City	Back Cove	
19	Diamond @ MW (Fox @ Anderson)	City	Back Cove	Raised 2003
20	Northeast P.S.	PWD	Casco Bay	
21	Quebec Street	PWD		1995
22	Sewage Treatment Plant			NA
23	India Street	PWD	Portland Harbor	
24A	Franklin Art. @ Fore St.	City	Portland Harbor	
24B	Franklin Art. @ Middle St.	City		
25	Long Wharf	PWD	Portland Harbor	
26	Maple Street @ Commercial St	City	Portland Harbor	
27	Clark Street	PWD	Portland Harbor	
28	Emery Street	PWD	Portland Harbor	
29	West Commercial Street	PWD	Fore River	
30	St. John Street	PWD	Fore River	
31	Congress St. @ Sewall St.	City	Fore River	1993
32	Thompson Pt. P.S.	PWD	Fore River	
33	Fore River P.S.	PWD	Fore River	
34	Brewer Street	PWD	Fore River	
35A	Stroudwater Road	PWD	Fore River	2007
36	Capisic Pond Dam Overflow	City	Fore River	
37	Mayer Road	City	Capisic Brook	1993
38	Brighton Ave. @ Capisic Creek	City	Capisic Brook	1998
39	Rowe Street (Hillcrest)	City	Fore River	
40	Sagamore Village Overflow	City	Capisic Brook	1993
41	Holm Avenue	City	Capisic Brook	1996
42	Warren Avenue 60"	City	Capisic Brook	
43	Warren Avenue 24"	City	Capisic Brook	



City of Portland Projects

- Tier 1 Projects
- Tier 2 Projects
 - 75 projects
 - Fall Brook
 - 25 Remain
 - Capisic Brook
 - 7 Remain





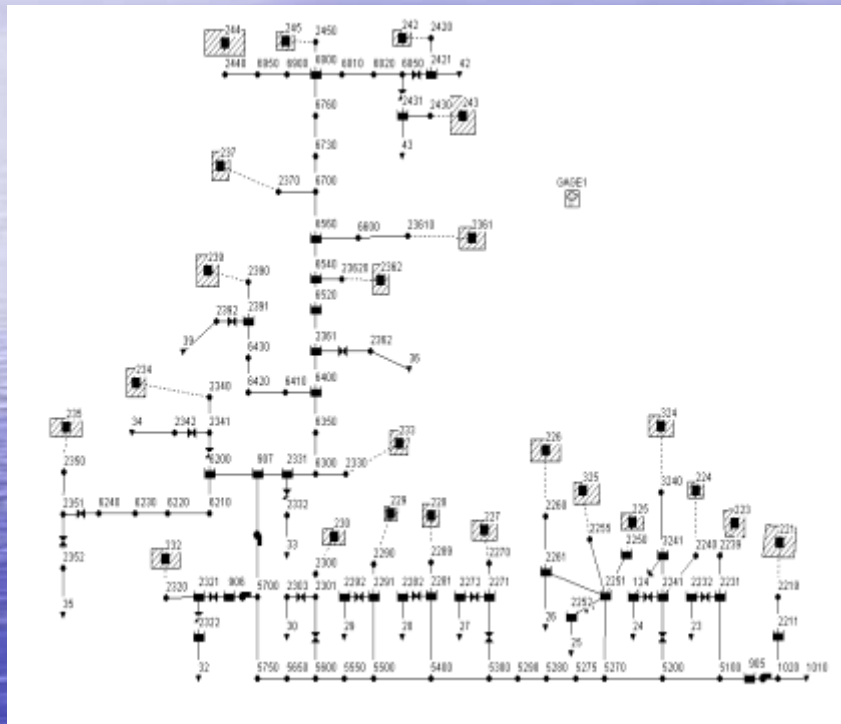


1994	\$4,743,000
1995	\$873,000
1996	\$2,216,000
1997	\$2,049,000
1998	\$4,462,000
1999	\$2,173,000
2000	\$6,200,000
2001	\$2,482,000
2002	\$2,171,000
2003	\$4,932,000
2004	\$3,077,000
2005	\$3,931,000
2006	\$1,980,000
2007	\$3,824,000
2008	\$2,259,000
2009	\$12,216,757
Total:	\$47,372,000

- Total Cost of CSO Abatement to Date



SWMM Model



Block Data

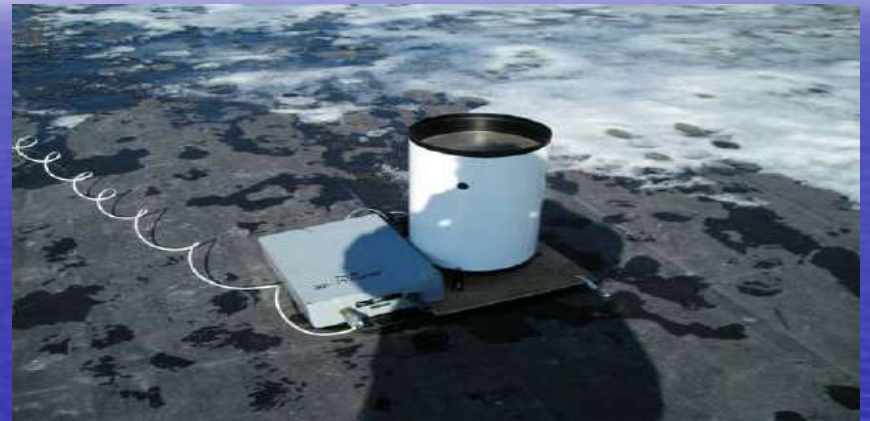




FLOWAssessment
WATER/SEWER MONITORING SYSTEMS

Rain Gauges

- PWD owns six rain gauges
 - 4 in Portland
 - 2 in Westbrook
 - NOAA data from Jetport
- Collects five minute data





FLORIDA/ASSESSMENT



FLOW/Assessment
SOLUTIONS



Ultrasonic Depth and Velocity on incoming flow

Pressure Sensor installed on weir wall

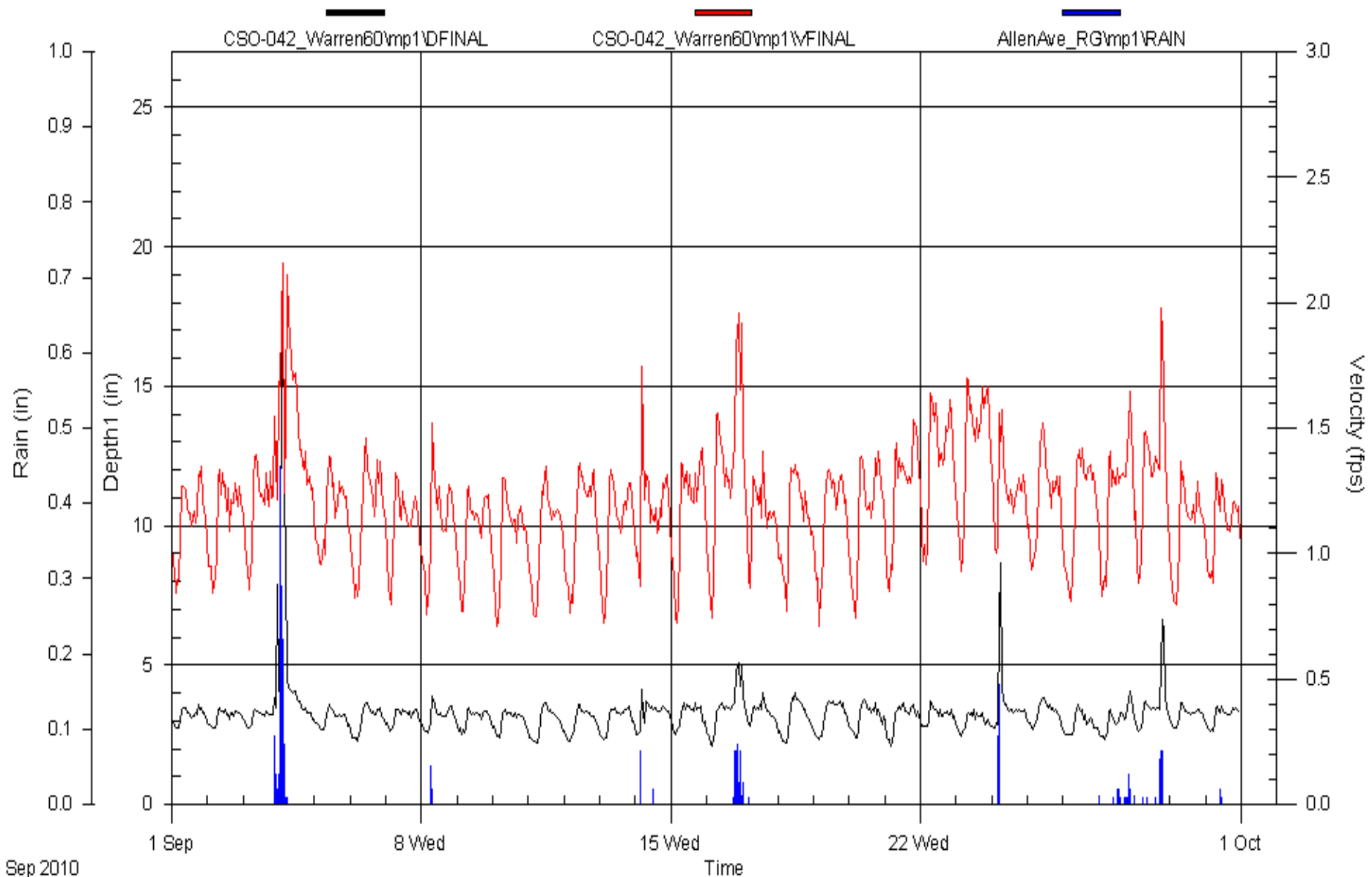


Portland Water District

CSO 042 Warren 60"

Rain Total 2.47 in

Pipe Height: 60.00

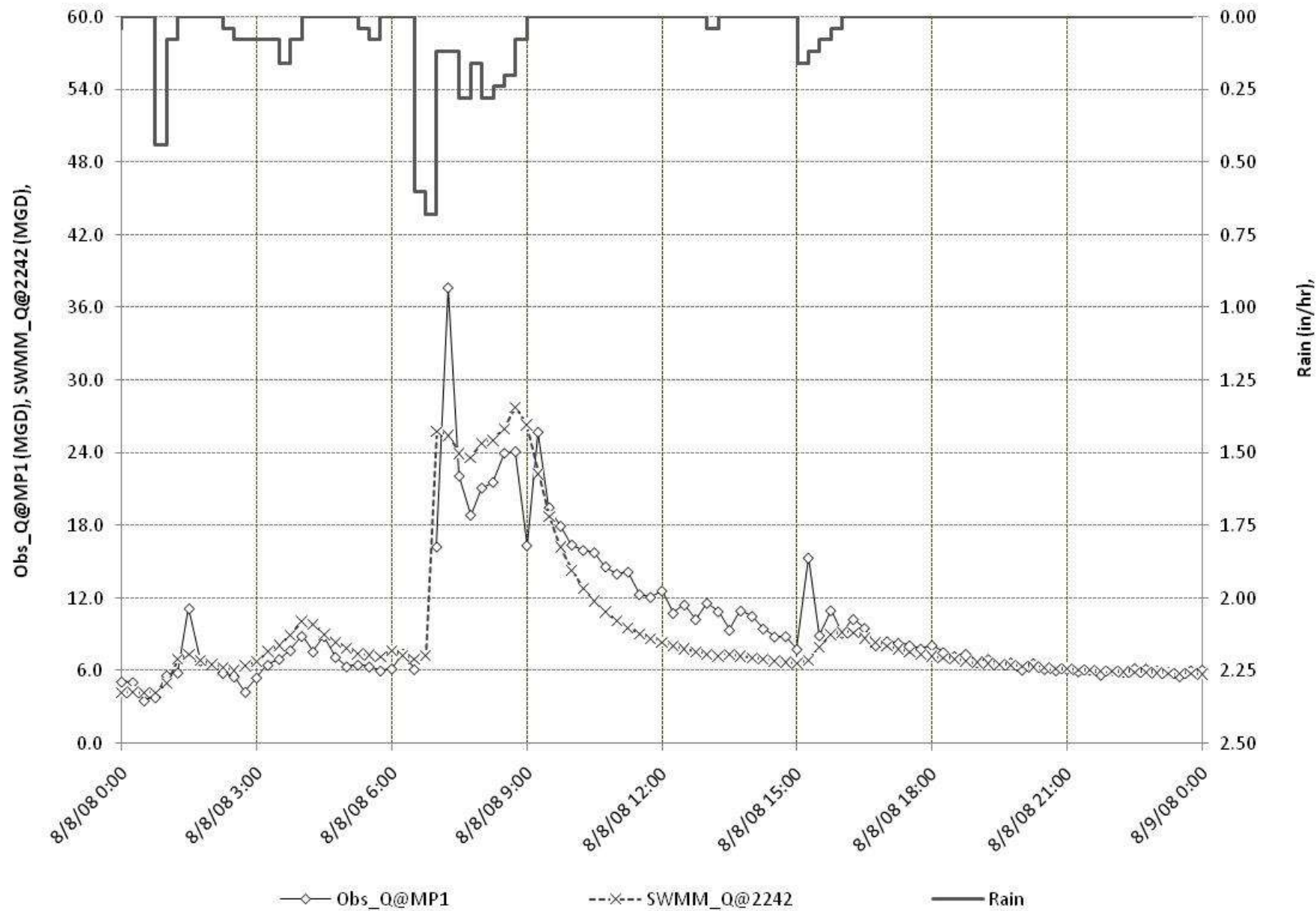


CSO 010 Mackworth Street

Portland Water District



Ocean Ave (84"), CSO 007 - MP1





Top 10 Portland CSO's

- Preble 15.78%
 - Long Wharf 10.35%
 - Capisic 9.26%
 - Warren 60" 8.98%
 - Ocean Avenue 8.57%
 - Marginal Way 7.80%
 - Randall Street 7.15%
 - India Street 5.48%
 - Vannah Ave 4.89%
 - Dartmouth – 4.58%
 - Total of 82.86% CSO Volume for 2009
 - Total Gallons – 872,751,281
- Ocean Avenue 12.29%
 - Northeast 10.93%
 - Long Wharf 10.11%
 - Marginal Way 9.60%
 - India Street 8.57%
 - Vannah Ave 7.63%
 - Preble Street 7.37%
 - Dartmouth 7.04%
 - Capisic 5.43%
 - Warren 60" 5.32%
 - Total of 84.29% CSO Volume for 2008
 - Total Gallons – 883,105,087

Things to take with you

- City of Portland and Portland Water District have a working relationship
- Real time monitoring more accurate to assist with long term planning for remediation
- CSO Volumes are being reduced.
- City of Portland using SRF funding allowing for more consistent funding for CSO projects.



