Long Creek Overview

A Creative Local Effort to Fund and Carry Out Restoration of an Urban Watershed

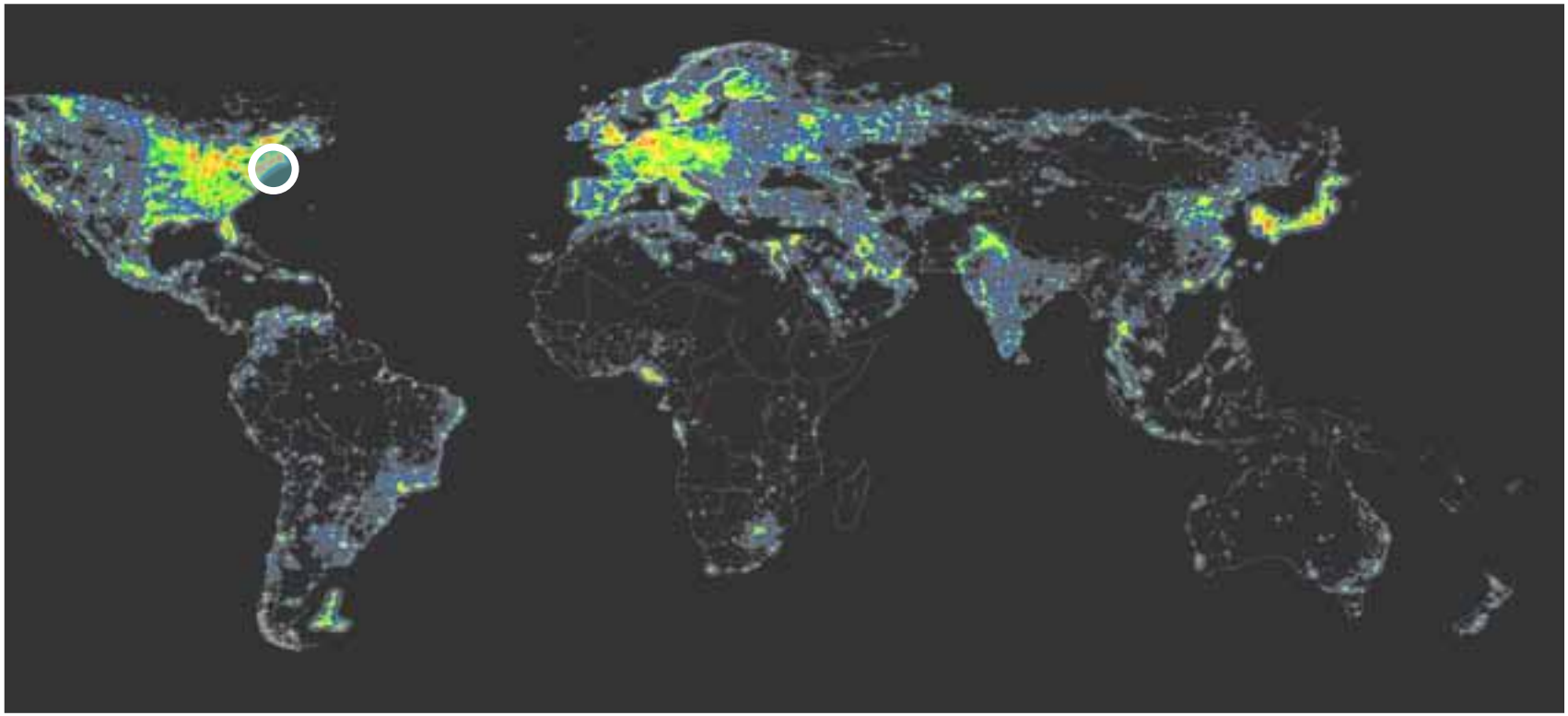
Curtis C. Bohlen, Casco Bay Estuary Partnership

Welcome to The Casco Bay Watershed

- 985 Square Miles
- 42 Municipalities
- 3% Maine's land area
  ~17% of population

You Are Here…

Brightness of the Night Sky



Source:
Istituto di Scienza e Tecnologia dell'Inquinamento Luminoso. http://www.lightpollution.it/worldatlas/pages/fig1.htm

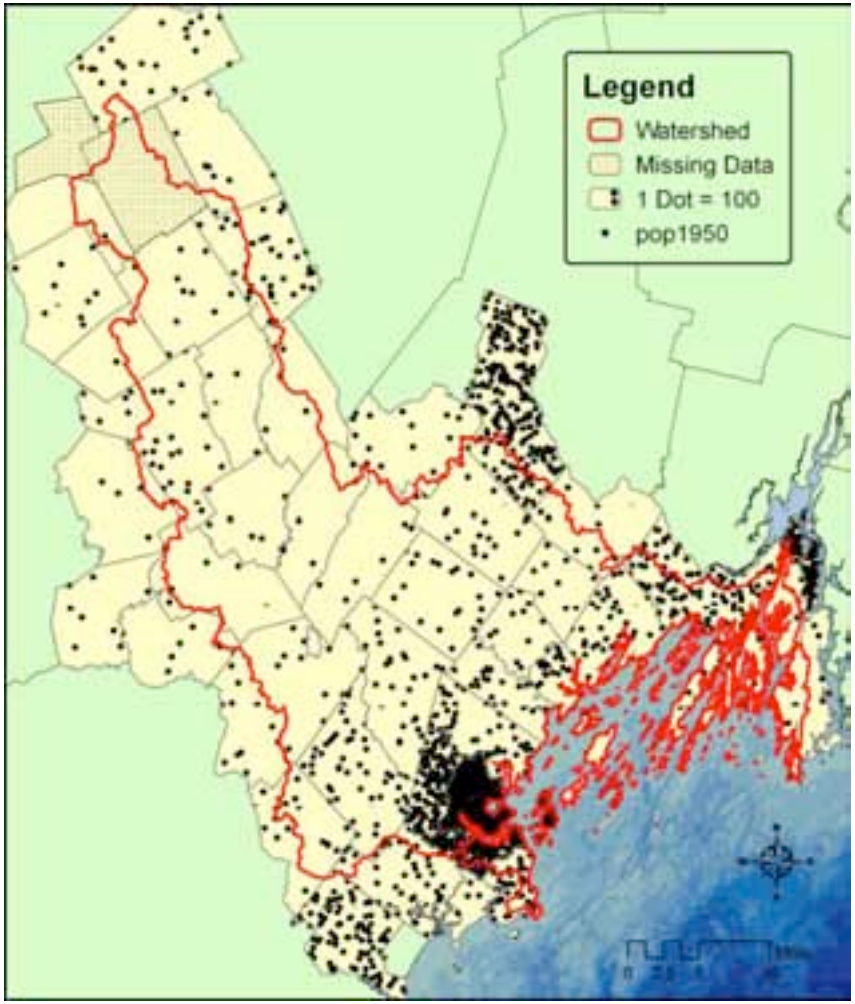
People Want to Be on the Coasts

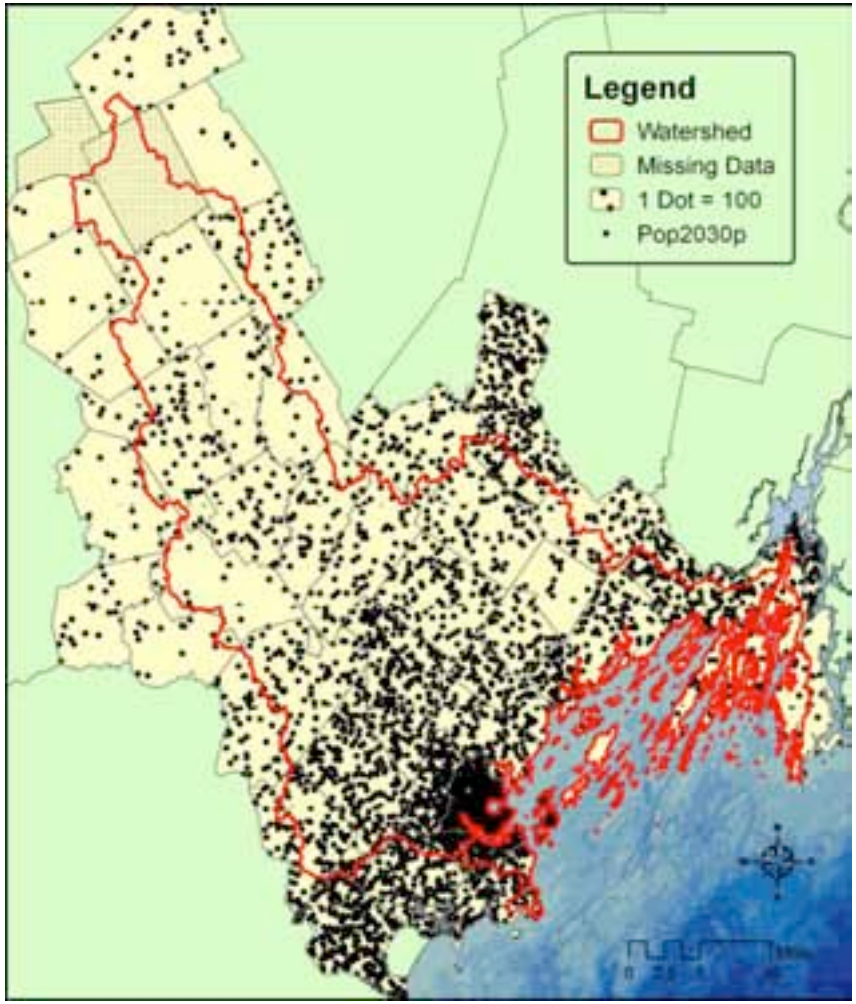
- Shore-adjacent Counties
  - 18% land
  - 36% population
  - 38% employment
  - 42% economic output

Housing on Portland's Waterfront

Source: Kildow, Colgan and Scorse. 2009. State of the U.S. Ocean and Coastal Economies 2009. National Ocean Economics Program. http://www.oceaneconomics.org/NationalReport/

What's Coming: Population Change 1950 - 2030



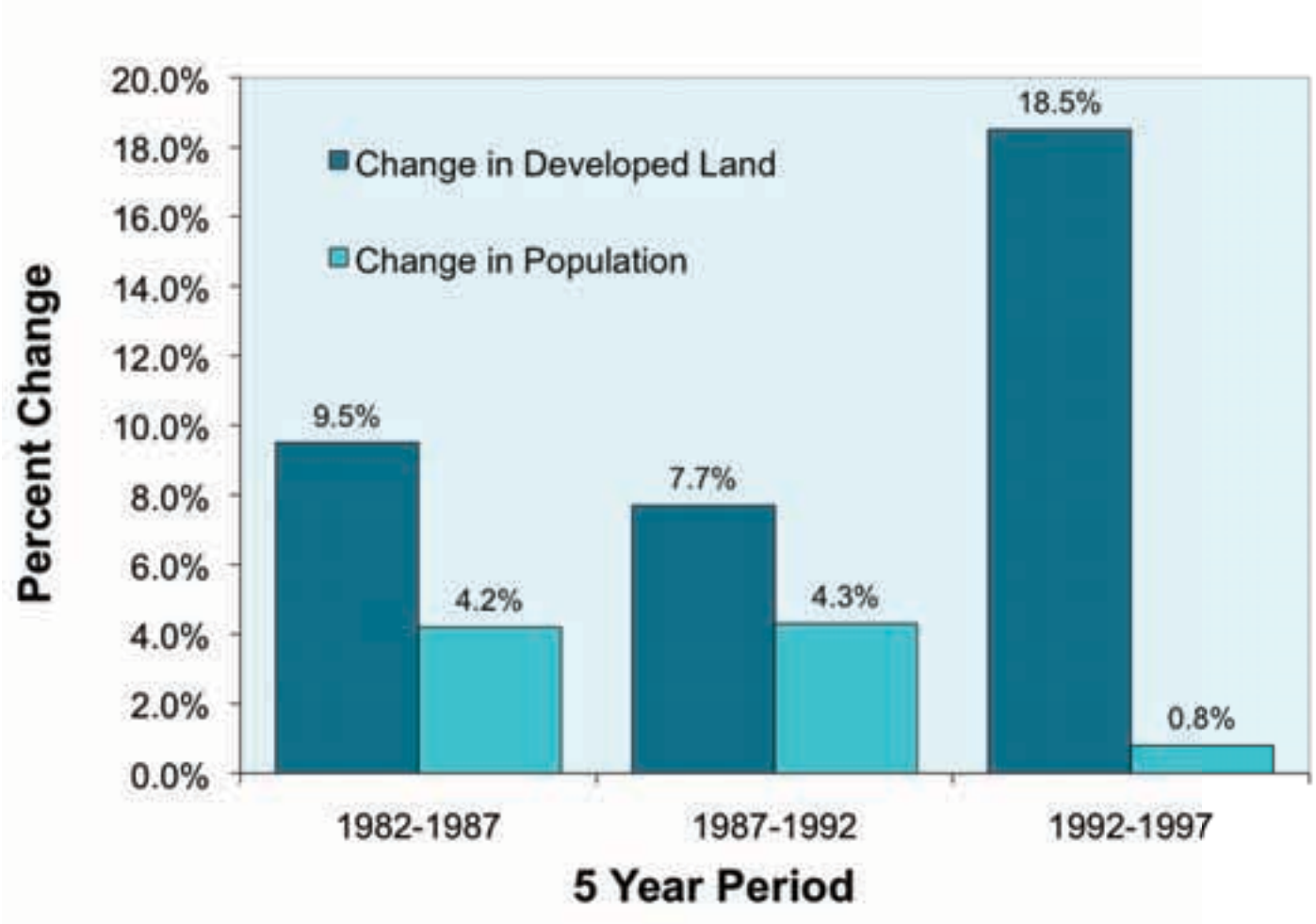


1950 : ~ 229,500

2005: ~ 363, 000

2030: ~405,500

Developed Land in Maine is Growing Faster than Population



Source: Land and Water Resources Council, SPO

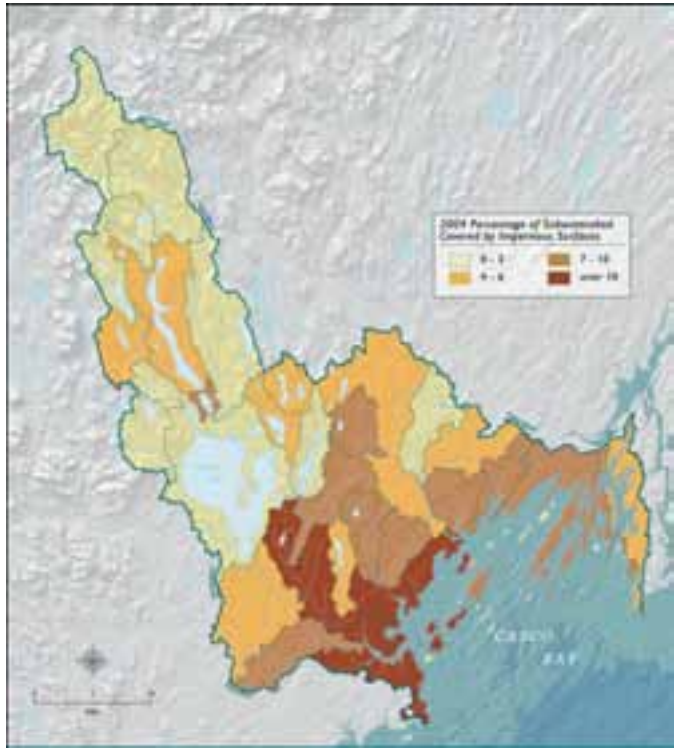
Upstream From Casco Bay

- Mostly forest
  - ~ 67% Upland Forest
  - ~ 5% Wetland
  - ~11% Developed
  - Only about 6% impervious surfaces
- ~230,000 people in the watershed (2000 census)
- A big difference between upper (forested) and lower (suburban) watersheds

Our Impaired Waters are Suburban

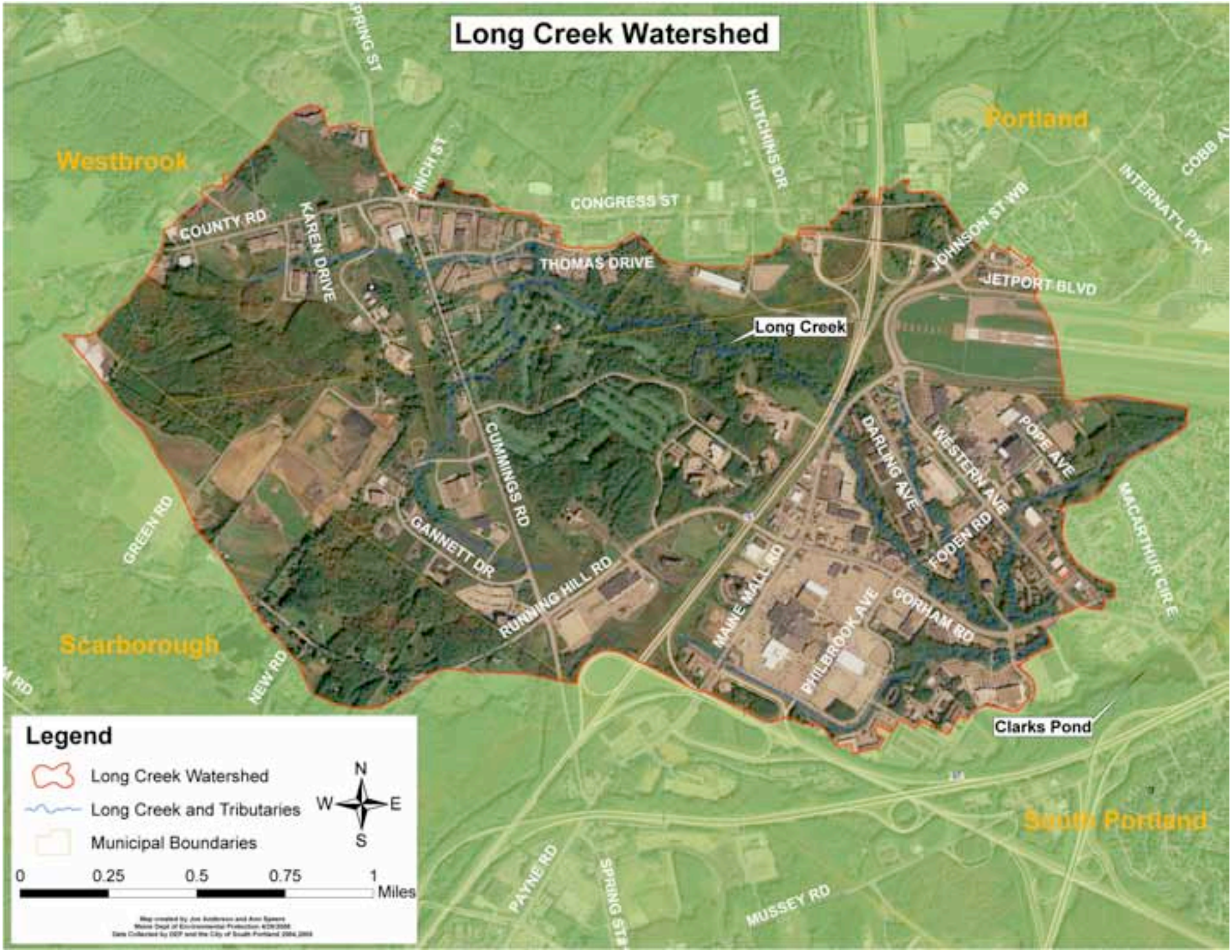
Impaired Waters 2010

Imperviousness By Watershed ca. 2000



Long Creek – an Urban Stream

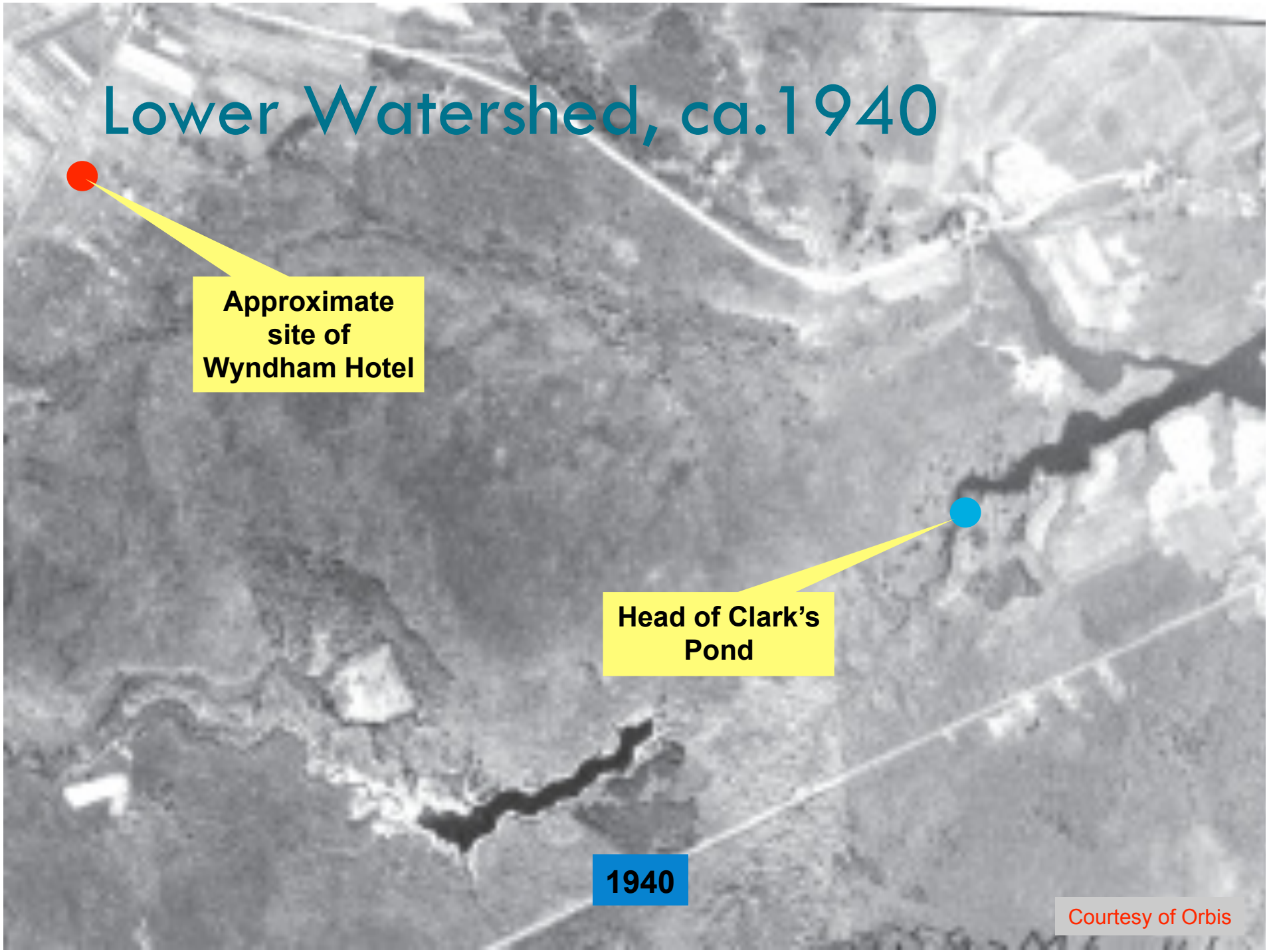
- Long Creek is
  - An "Urban Impaired Stream"
  - Degraded by urban runoff, but it lacks any industrial discharges
- Similar watersheds can be found nationwide
  - Effective tools are scarce
- Long Creek is a testing ground for creative solutions


Long Creek Watershed
Westbrook
Portland
Scarborough
South Portland
SPRING ST
FINCH ST
HUTCHINS DR
CONGRESS ST
COUNTY RD
KAREN DRIVE
THOMAS DRIVE
JOHNSON ST WB
INTERNAT'L PKY
COBB A
JETPORT BLVD
Long Creek
CUMMINGS RD
GANNETT DR
RUNNING HILL RD
GREEN RD
NEW RD
DARLING AVE
WESTERN AVE
POPE AVE
FODEN RD
MACARTHUR CIR E
MAINE MALL RD
PHILBROOK AVE
GORHAM RD
Clarks Pond
PAYNE RD
SPRING ST
MUSSEY RD
Legend
Long Creek Watershed
Long Creek and Tributaries
Municipal Boundaries
N
W
E
S
0
0.25
0.5
0.75
1
Miles

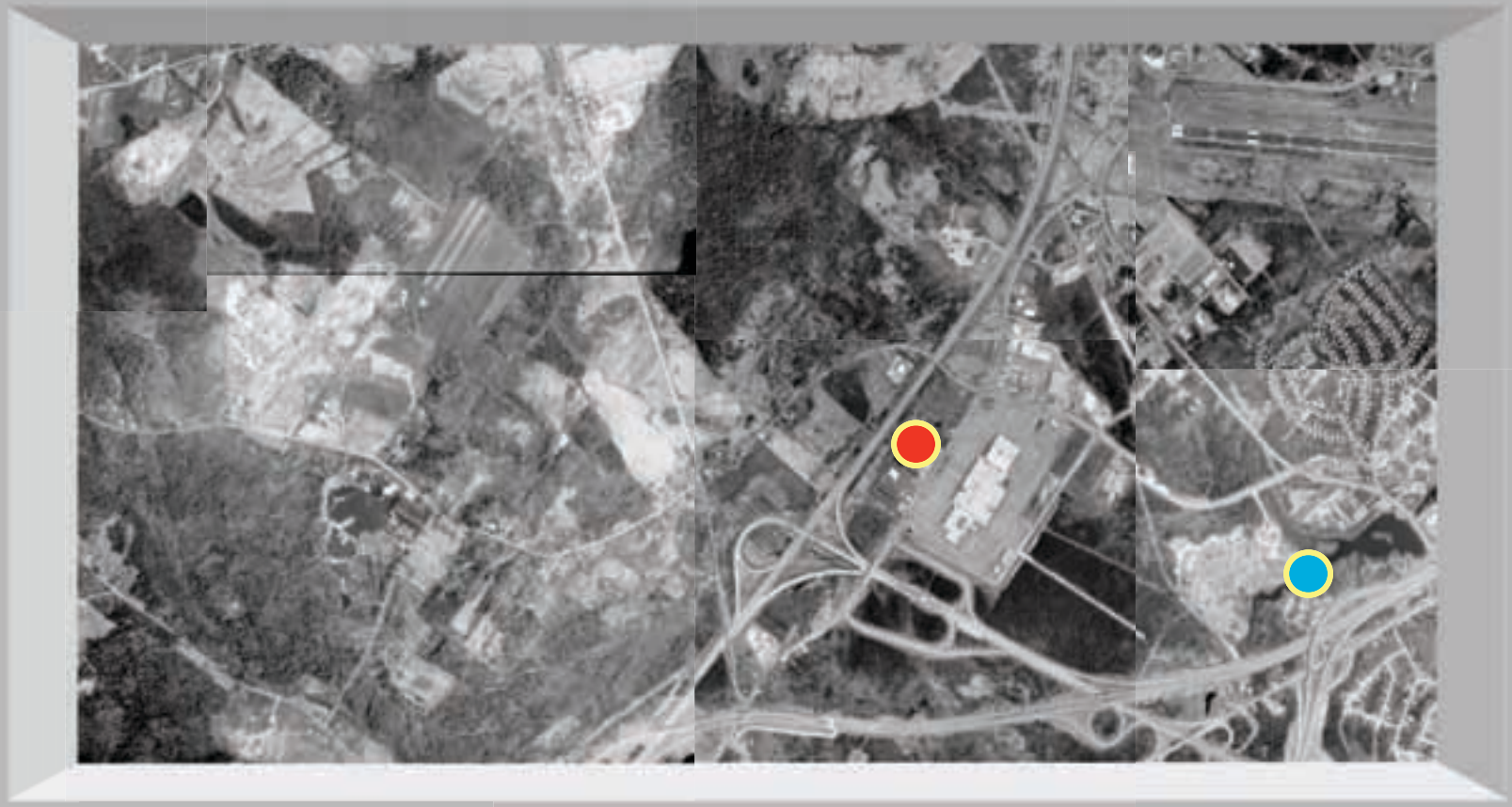
What's the Fuss?

- Moderately high impervious cover ~ 28%
- Long Creek does not meet state water quality standards
  - Fails invertebrate-based biological criteria
  - Dissolved oxygen is too low
  - Stream temperatures are too high
  - Toxic substances present in excessive amounts
  - Stream flow negatively altered by development
  - Lack of woody debris

Lower Watershed, ca.1940



Watershed, ca. 1976

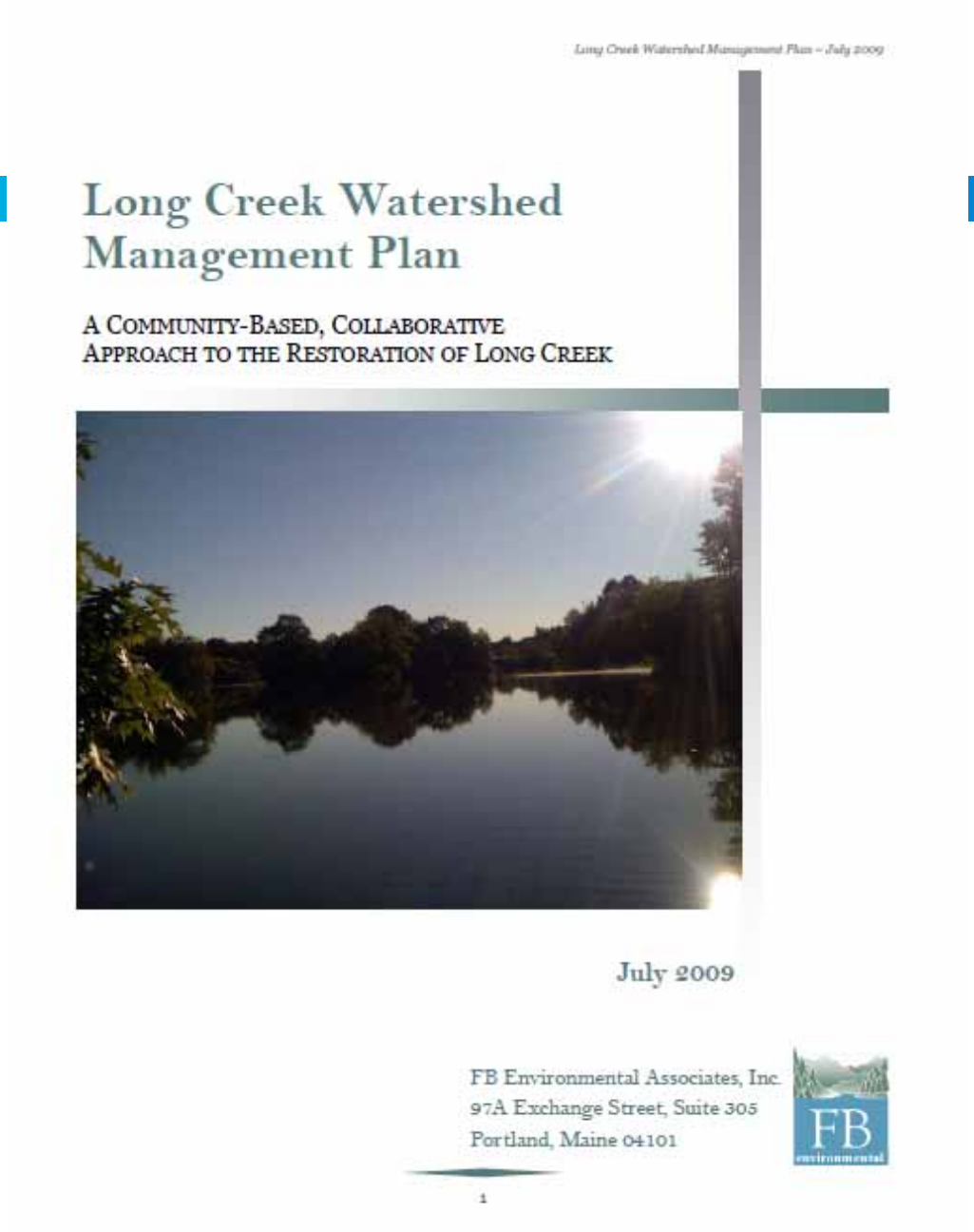


Watershed, ca. 1995

Source: Greater Portland Council of Governments /
James Sewall Co. (Portland, ME)

What to do?

- Traditional approaches for protecting water quality have not been effective
  - Planning and regulatory tools have not protected the stream
  - Stormwater control devices have been required at construction for nearly two decades.
- Today: developed landscape, most without effective stormwater management.
- Likely to take millions to retrofit the entire watershed, and millions more for maintenance and operations to help protect water quality



- Two year planning process
- Professionally facilitated
- Significant stakeholder involvement
- Detailed “to do” list

Costs…

- Current 10 year budget ~ $14 million
  - BMP construction and maintenance
  - Stream restoration
  - Good housekeeping practices
  - Inspection and maintenance
  - Monitoring
  - Administration

“Residual Designation Authority”

- Conservation Law Foundation petitioned EPA in 2008
- EPA can require CWA permits for certain stormwater discharges (Section 402(p))
- Final RDA determination 10/29/2009
  - Land owners with > 1 acre IC required to get NPDES Permits for their stormwater discharges

From RDA to Funding

- Landowners (public or private) with > 1 ac IC can choose
  - Individual Permit
  - General Permit
- GP based on participation in **Long Creek Watershed Management District**
- "Participating Landowner Agreement" sets up contractual obligations – key obligations are
  - Funding
    - $3000 per acre IC per year
  - Easements for priority projects

What is LCWMD?

- A non-profit corporation created expressly to manage stormwater in the watershed
- A quasi-municipal corporation created under the authority of four municipalities
- A board appointed by town councils, with representatives from businesses, towns, non-profits

Collective Solutions Produce Savings

- LCWMD solution (GP)
  - $3,000 per acre IC per year
- Individual solution (IP)
  - "Chapter 500" standards
  - Estimated to cost $6,000 to $10,000 per acre IC per year
- But IP costs vary parcel by parcel, so landowners were encouraged to do their own analysis

Why is This Less Costly?

- Fund priority actions, not all actions
- Fund cost-effective options before less cost-effective ones
- Best solutions often cross property boundaries
- Can tackle collaborative and high payoff projects like stream restoration
  - Generally could not be required of individual permittees
- Access grants and SRF low interest loans

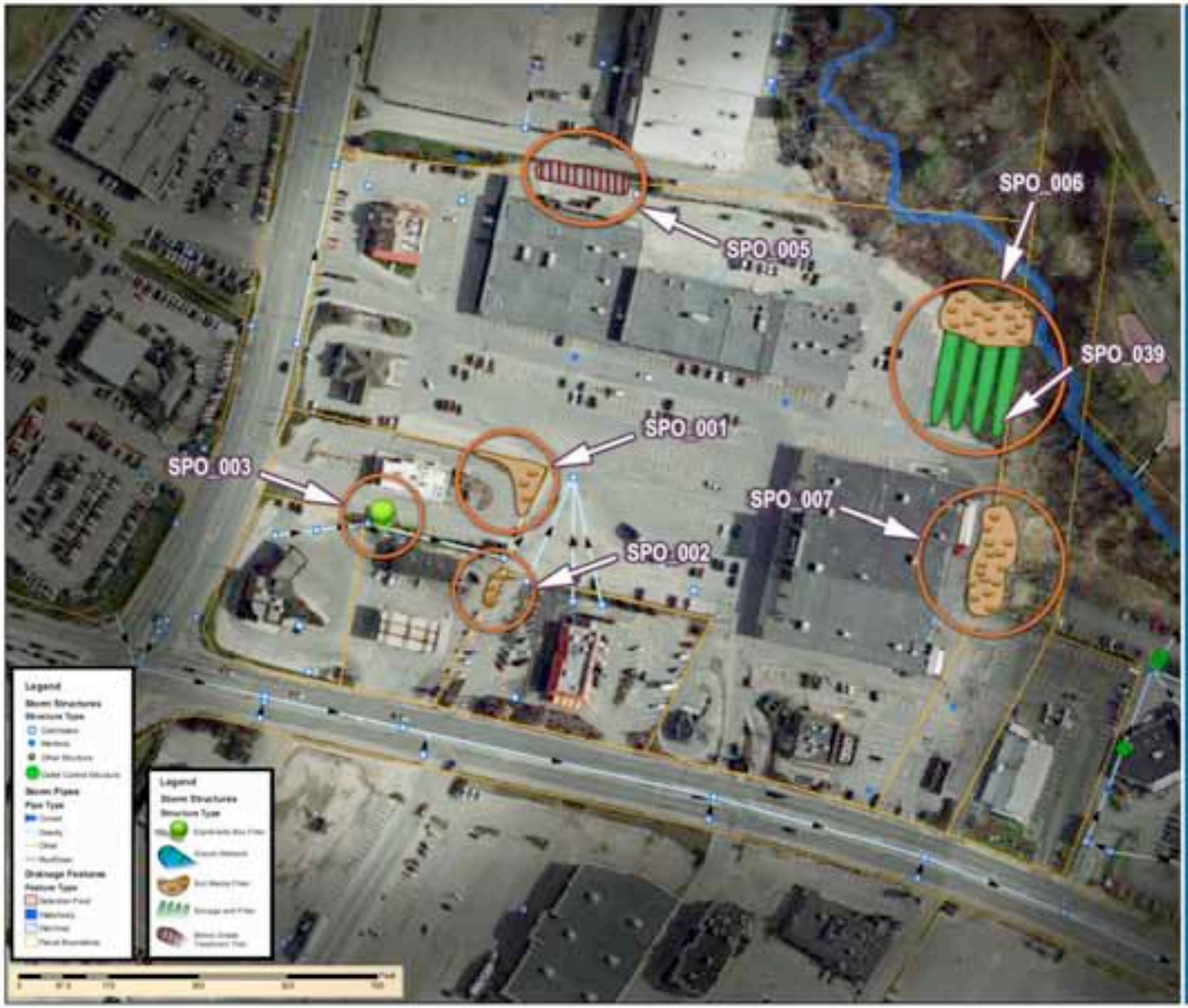
Current status

- LCWMD exists, with (most) permits in force
  - "Designated" impervious area (included under RDA) represents about 85% of IC in the watershed
  - 93% of that acreage has been "signed up" with the LCWMD or is in the process of doing so
  - Only a few properties are seeking individual permits
  - Some owners are working to reduce IC on their properties to under one acre
- Significant construction already underway via access to ARRA funds through SRF
- ~ 1.4 million annual budget

2009 Construction Phillbrook Ave

- Projects identified via the L.C. planning process
- Construction along Philbrook Ave. last summer

2010 Project: Mall Plaza Stormwater Retrofit



CATCHMENT A1-05

Catchment Characteristics

DEP ID A1-05
Size 14 acres
Impervious Cover Breakdown
Rooftop 25% (3.4 acres)
Parking 75% (10.3 acres)
Roadway 0% (0 acres)

Existing Stormwater Management System – No
Stormwater Infrastructure Ownership – Private

Opportunity Overview

Tier 1: Provide "end of the pipe" below grade storage and filtration for primary catchment area. Include development of surface soil media filter during construction of below grade system in same location.
Tier 2: Implement additional water quality retrofits in other portions of catchment area to enhance function of Tier 1 system.
Tier 3: Integrate Tier 1 and Tier 2 designs to reach ideal treatment threshold for entire parcel. Install soil media filter for Dick's rooftop runoff (currently outside of catchment area).

Tier	Retrofit ID#	Estimated Cost
1	SPO_006 SPO_039	$460,000
2	SPO_001 SPO_002 SPO_003 SPO_005	$165,000
3	Integration of Tier 1 and Tier 2 SPO_007	$170,000

Considerations

Detailed survey and engineering evaluation of existing storm drain infrastructure near outlet will be necessary to determine appropriate options for stormwater treatment system in this area. SPO_005 assumes sufficient depth of adjacent storm drain to install a below grade water quality filter system.

Mall Plaza Stormwater Treatment

Private ownership and an existing CMP easement necessitated easements to access, alter and ultimately maintain the property.

- Phase I - Installation of Soil Media Filters
- Impervious Cover Treated: 11 acres
- Cost

Engineering	$99,471
Construction	$578,959
Administration and Legal	$22,388
Total	**$700,818**

- Cost/acre treated $63,711

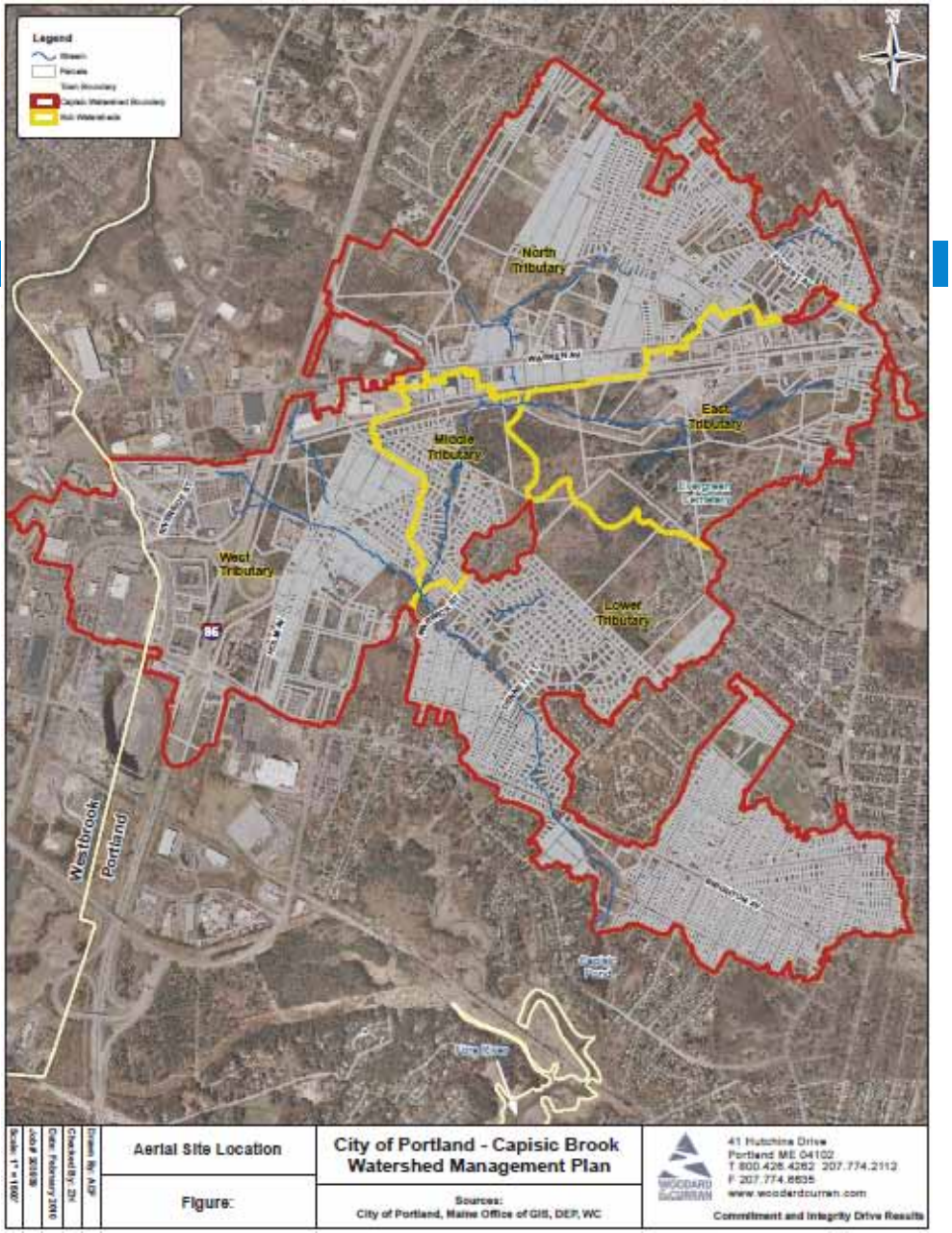
Maine Mall Road Pervious Pavement

Other Work

- Estalblishing contracts for street sweeping, catch basin cleanout etc.
- Building the institution
  - Legal structure, bylaws, bookkeeping etc.
  - Learning how to do all the things we envisioned in the early stages
    - Respond to landowner requests for modification of the plan
    - Calculate and apply credit for O&M activities taken on by landowners (reduced fees)
- Developing designs for riparian plantings
- Ongoing engineering review of sites

Will this Model Work Elsewhere?

- Requires
  - Largely commercial watershed
  - Willingness to seek common solutions, not end up in court
- Most Maine impaired streams don't look like Long Creek



Capisic Brook's watershed is largely residential

Don't learn the wrong lessons from Long Creek

- Regulation is necessary but not sufficient
- You need a lot more
  - Planning, good facilitation
  - Commitment to seek solutions that work
  - Time to establish trust, understand needs of businesses
  - Patience

Curtis Bohlen
Director, Casco Bay Partnership
cbohlen@usm.maine.edu