# Root River Watershed Restoration Plan Progress Report

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Southeastern Wisconsin
Regional Planning Commission

SEWRPC
Serving the counties of
Kenosha, Milwaukee,
Ozaukee, Racine, Walworth,
Washington, and Waukesha

#159794

# Partners and Funding Agencies

Wisconsin Coastal Management Program

sweet water
SOUTHEASTERN WISCONSIN WATERSHEDS TRUST, INC.

Watershed Initiative Network
WIN
ROOT-PIKE

MMSD
Preserving The Environment • Improving Water Quality

Municipalities and Counties of the Root River Watershed

Southeastern Wisconsin Regional Planning Commission

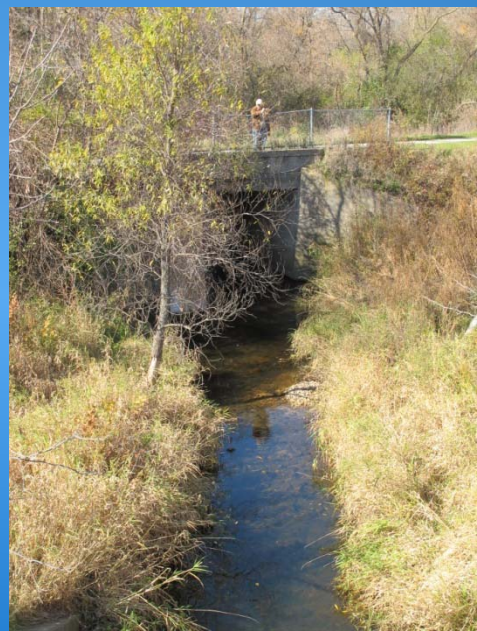
Racine County Wisconsin
Since 1836

The Fund for Lake Michigan

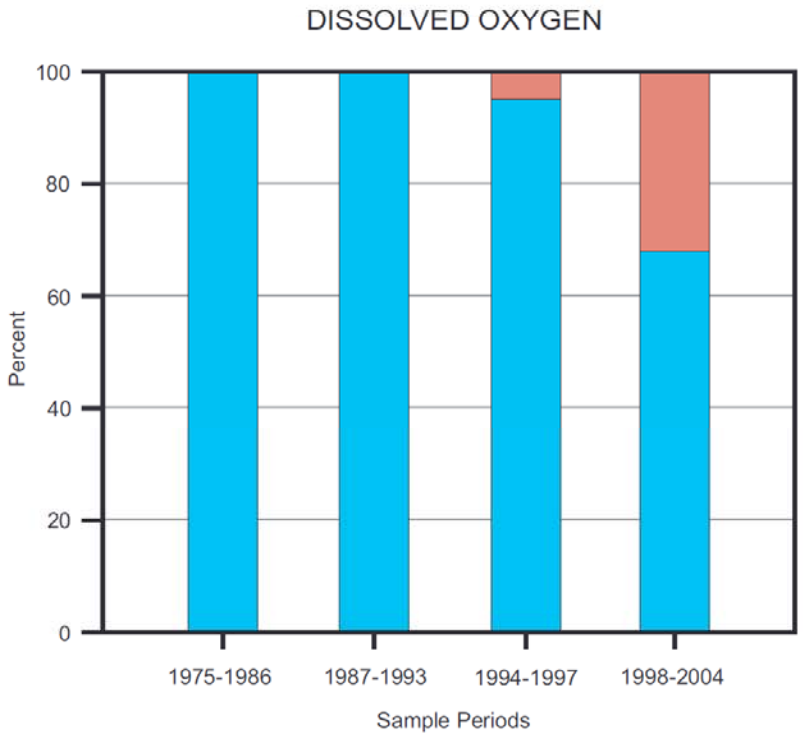
# Background

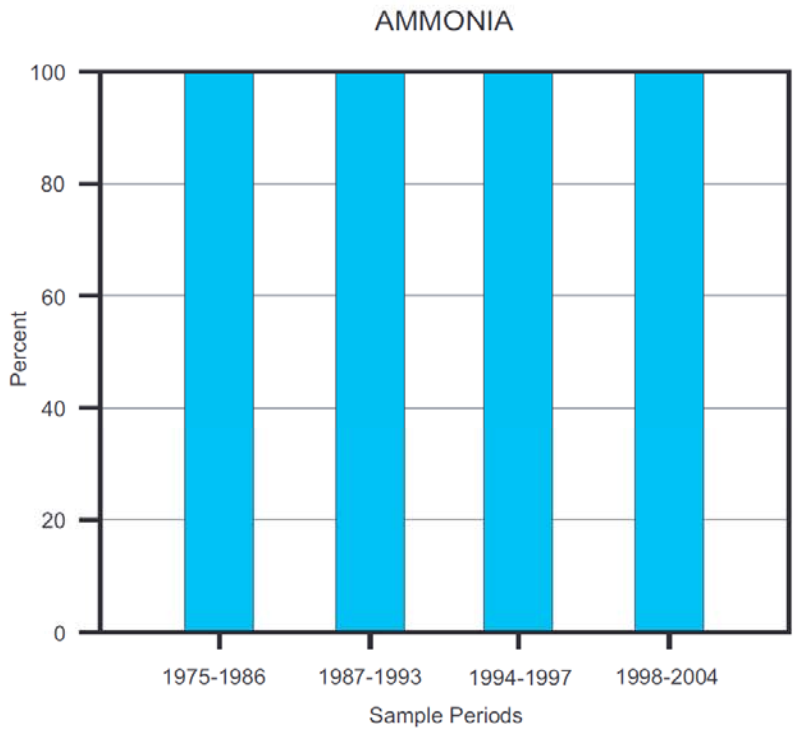
# Issues Identified in the Findings of the Regional Water Quality Management Plan Update (RWQMPU) and Other Recent Planning Efforts

- Impairments related to low dissolved oxygen
- Impairments due to fish consumption advisories
- High fecal indicator bacteria concentrations
- Poor quality fishery upstream of Horlick Dam
- Fragmentation of terrestrial habitat
- Streambed and streambank erosion
- Access to the River
- Invasive species



# Proportions of Samples Meeting Water Quality Criteria

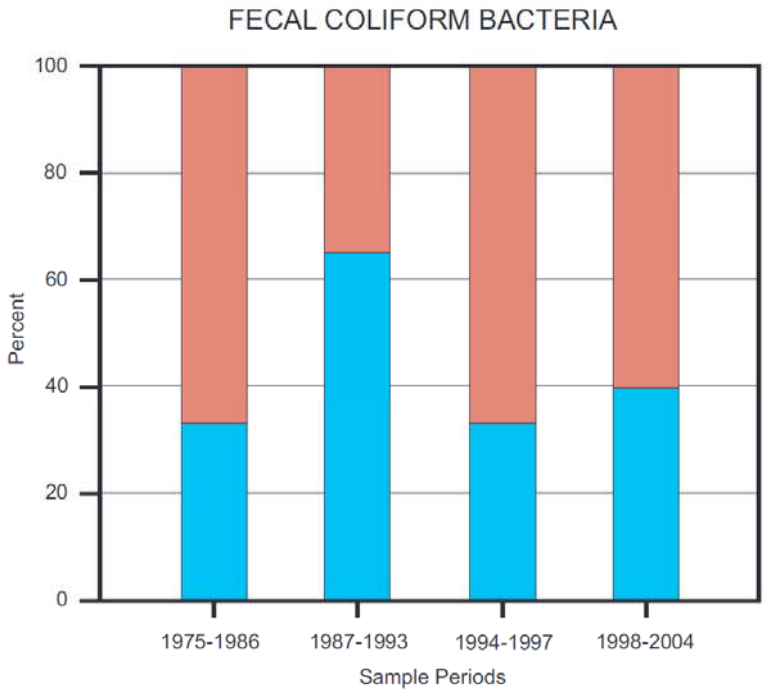


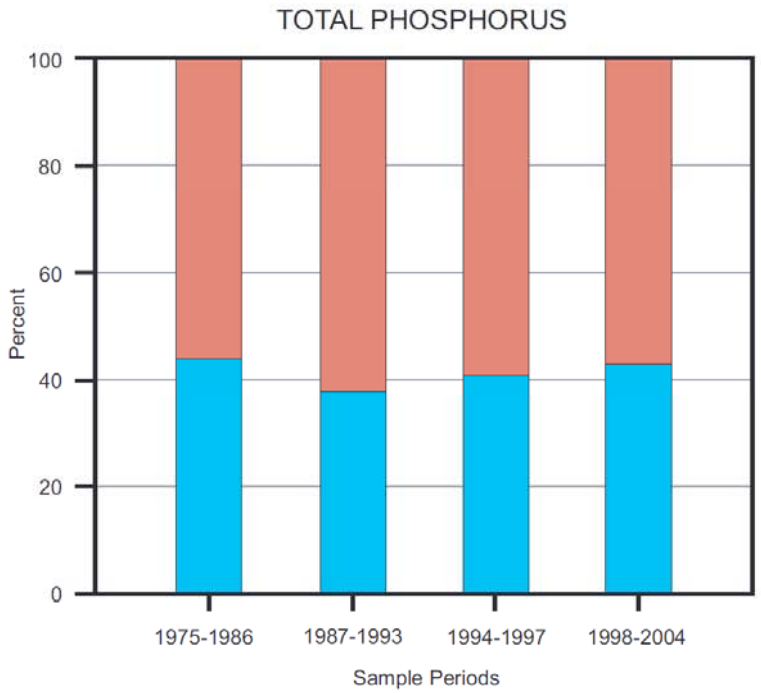




Samples Not Meeting Water Quality Standards and Criteria

Samples Meeting Water Quality Standards and Criteria

# Proportions of Samples Meeting Water Quality Criteria



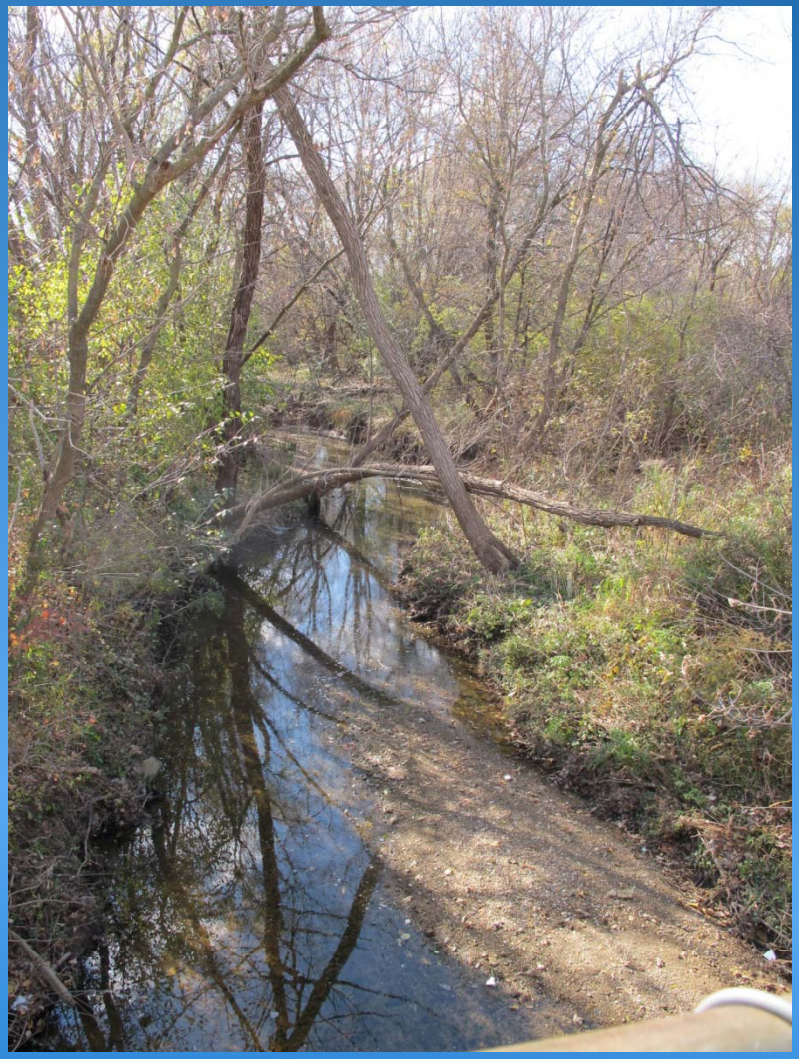




Samples Not Meeting Water Quality Standards and Criteria

Samples Meeting Water Quality Standards and Criteria

# General Plan Goal—Refine and Detail RWQMPU

- Identify a set of focus issues to address over a relatively short time frame
  - Tractable
  - Three to five focus issues
  - Five year time frame
  - Make improvements



# Plan Approach

1. Summarize Recommendations of the Regional Water Quality Management Plan Update (RWQMPU)
2. Evaluate Implementation of the RWQMPU
3. Inventory Recent and Ongoing Projects, Programs, and Initiatives and Integrate these Into Recommendations
4. Review and Refine Initially Identified Focus Issues
5. Characterize the Watershed Concentrating on Features Related to the Focus Issues

# Plan Approach

6. Identify Targets to be Achieved by the End of the Plan Period
7. For Each Target, Identify Actions to be Taken
8. Identify Foundation Actions
9. Present Actions in Addition to those Recommended in the RWQMPU
10. Develop an Implementation Strategy

# Focus Issues

1. Water Quality
2. Recreational Use and Access
3. Habitat Conditions
4. Flooding

# Focus Issues

1. Water Quality
   - Examples → Nutrients, sediment, chloride
2. Recreational Use and Access
   - Examples → Bacteria, access points, fishery quality
3. Habitat Conditions
   - Examples → Buffers, connectivity, passage barriers, invasive species
4. Flooding

# Summarizing the Recommendations of the Regional Water Quality Management Plan Update

# Recommendations of the Regional Water Quality Management Plan Update

- Land Use (5)

# Recommendations of the Regional Water Quality Management Plan Update

- Land Use (5) → **R**, **H**, **F**

# Recommendations of the Regional Water Quality Management Plan Update

- Land Use (5) → **R**, **H**, **F**
- Point Source Abatement (9)

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- Land Use (5) → **R**, **H**, **F**
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- Rural Nonpoint Source Controls (11)

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# Recommendations of the Regional Water Quality Management Plan Update

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- Point Source Abatement (9) → **W**, **R**
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- Urban Nonpoint Source Controls (10)

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- Land Use (5) → **R**, **H**, **F**
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# Recommendations of the Regional Water Quality Management Plan Update

- Land Use (5) → **R**, **H**, **F**
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- Urban Nonpoint Source Controls (10) → **W**, **R**, **(H)**
- Instream Water Quality Measures (9)

# Recommendations of the Regional Water Quality Management Plan Update

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- Inland Lake Water Quality (3)

# Recommendations of the Regional Water Quality Management Plan Update

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- Inland Lake Water Quality (3) → **W**, **R**, **H**
- Auxiliary Water Quality Measures (12)

# Recommendations of the Regional Water Quality Management Plan Update

- Land Use (5) → **R**, **H**, **F**
- Point Source Abatement (9) → **W**, **R**
- Rural Nonpoint Source Controls (11) → **W**, **R**, **H**, **(F)**
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- Auxiliary Water Quality Measures (12) → **W**, **R**, **H**
- Groundwater Management (4)

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# Recommendations of the Regional Water Quality Management Plan Update

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- Groundwater Management (4) → **W**, **H**
- Water Use Objectives (2)

# Recommendations of the Regional Water Quality Management Plan Update

- Land Use (5) → **R**, **H**, **F**
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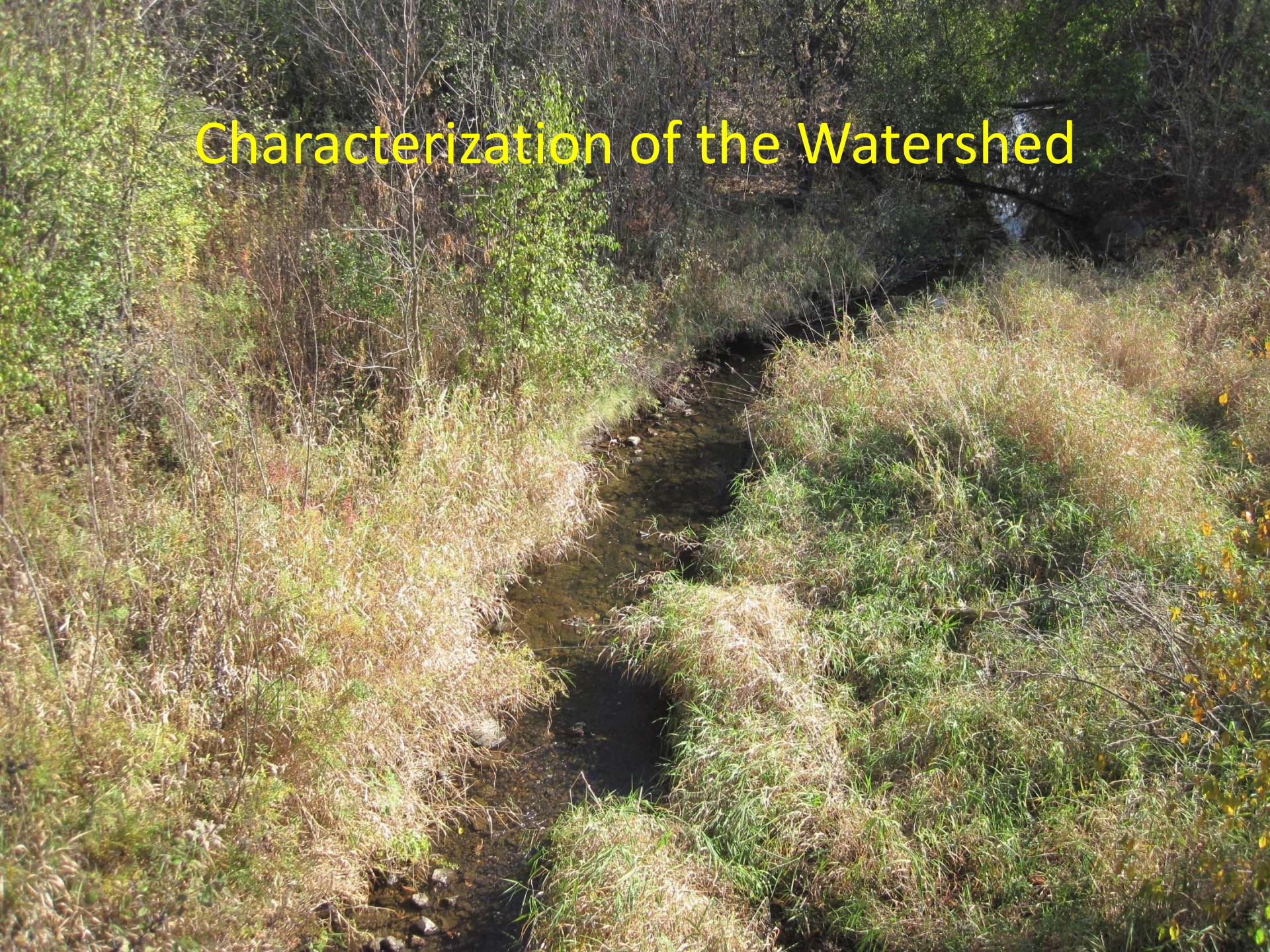
- Water Use Objectives (2) → **W**, **R**, **H**


Characterization of the Watershed

# Characterization of the Watershed

- Examine watershed on finer scale than was done in the RWQMPU
- Examine those factors that are most closely related to the focus issues
- Update and expand upon those analyses that are most closely related to the focus issues

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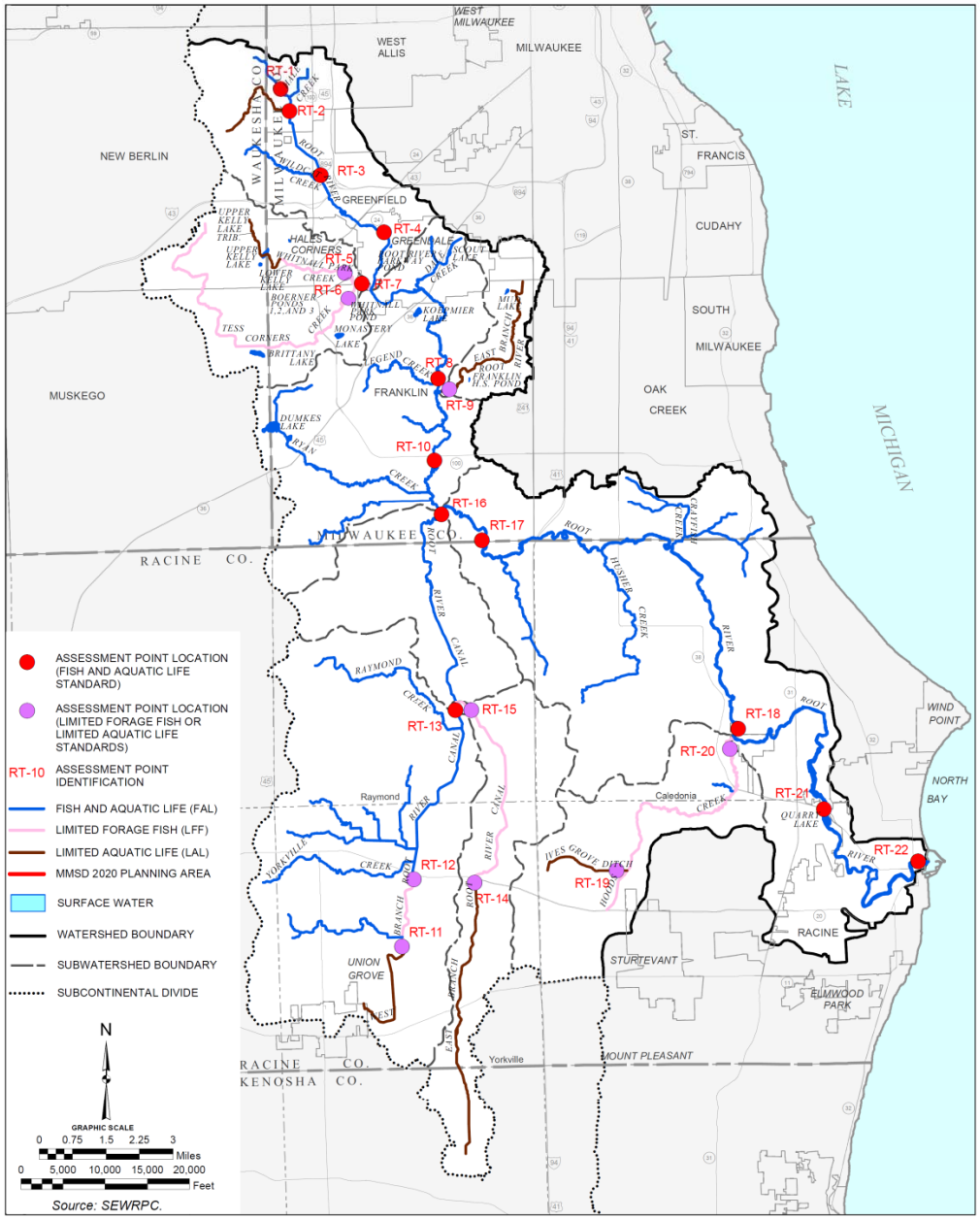
- Examine watershed on finer scale than was done in the RWQMPU
- Examine those factors that are most closely related to the focus issues
- Update and expand upon those analyses that are most closely related to the focus issues
- First step → Divide the watershed into subunits for assessment and analysis → Assessment Areas

Starting point was to examine the assessment points used to evaluate the model results from the RWQMPU

- Defined the contributing areas
- Looked to see whether they could be consolidated

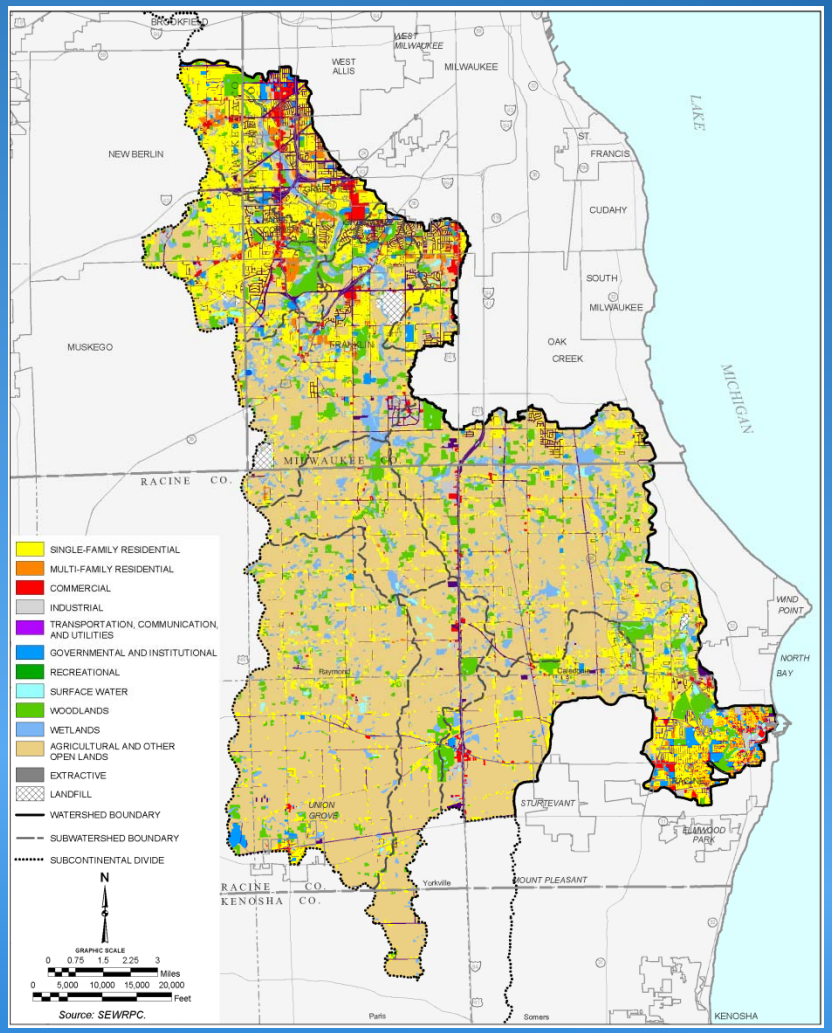
Map 2

ASSESSMENT POINTS WITHIN THE ROOT RIVER WATERSHED FOR THE RECOMMENDED WATER QUALITY MANAGEMENT PLAN



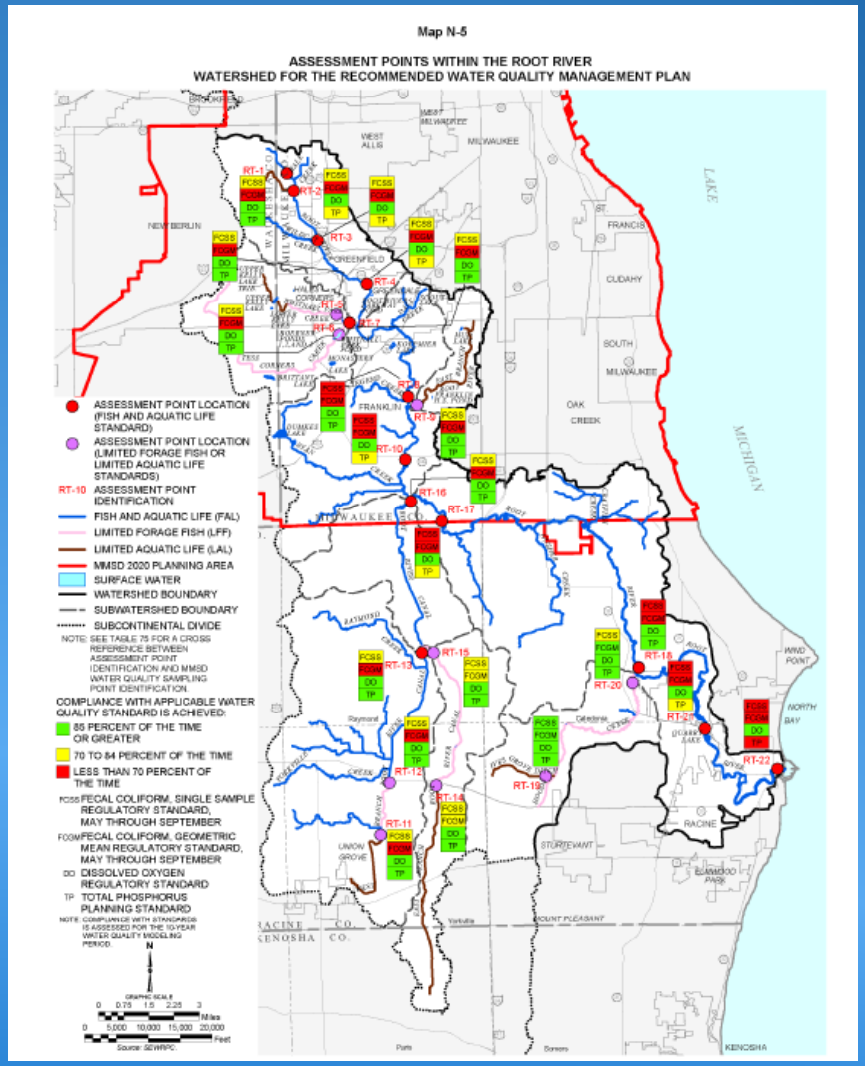
# Defining Assessment Areas

- Existing land use



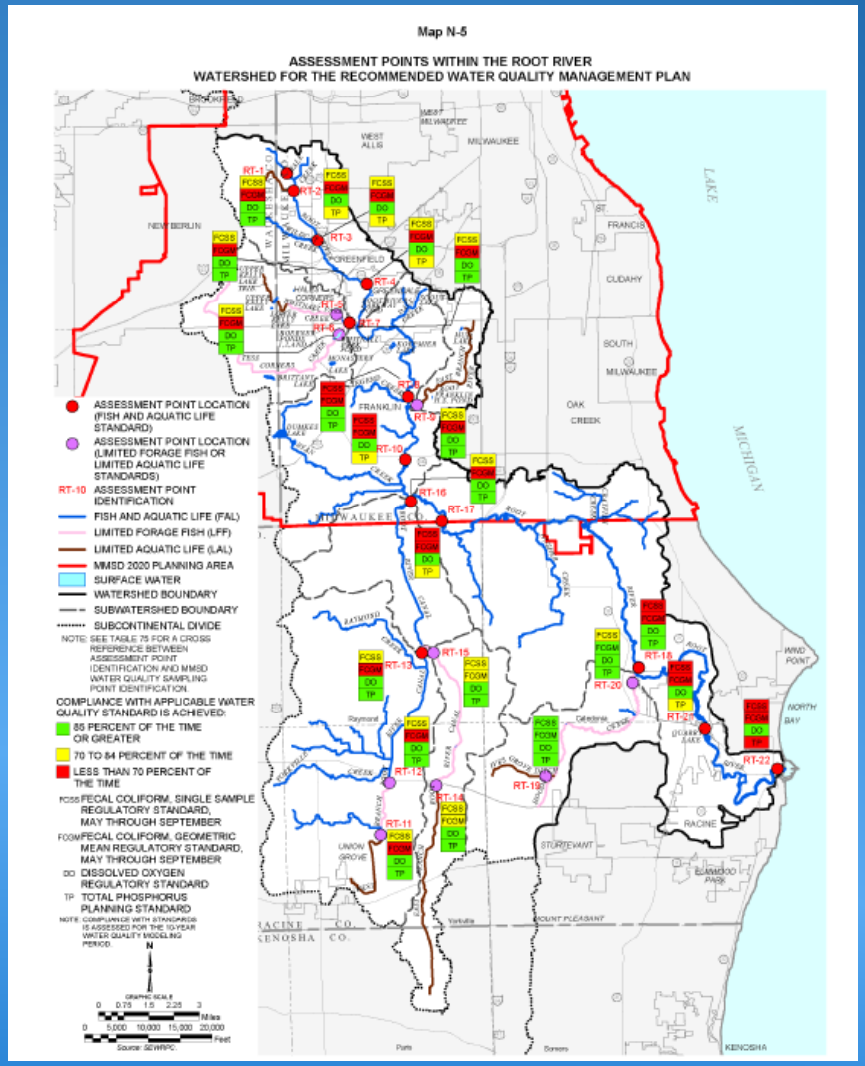
# Defining Assessment Areas

- Existing land use
- Expected 2020 achievement of water quality criteria



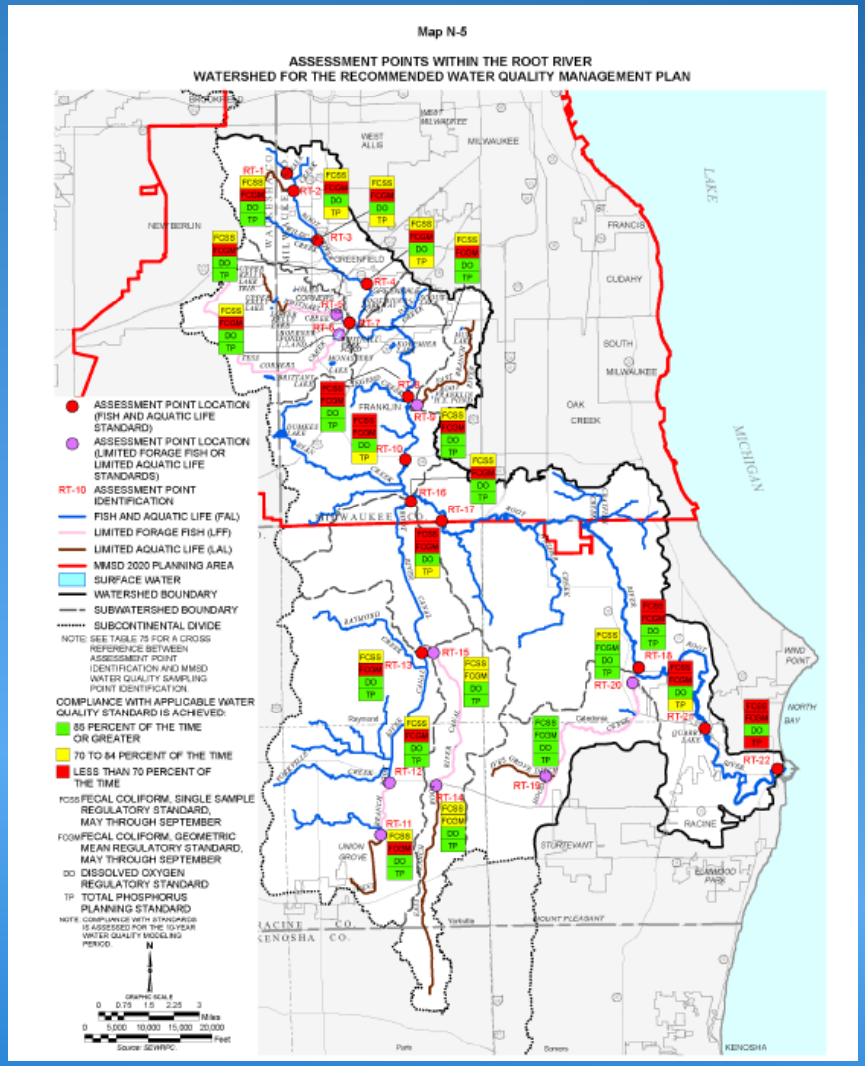
# Defining Assessment Areas

- Existing land use
- Expected 2020 achievement of water quality criteria
- Planned 2035 land use



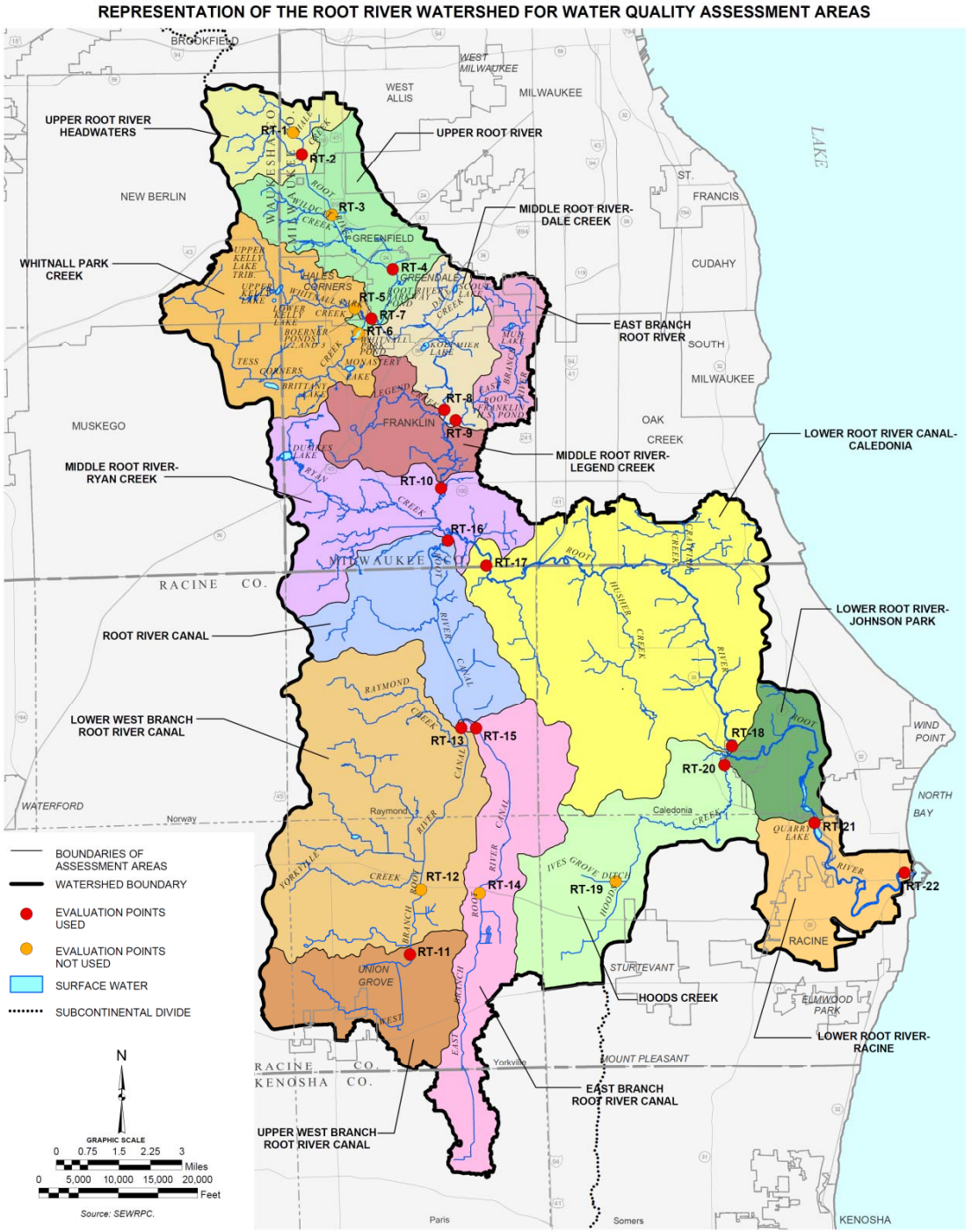
# Defining Assessment Areas

- Existing land use
- Expected 2020 achievement of water quality criteria
- Planned 2035 land use
- Adjacency/flow relationship

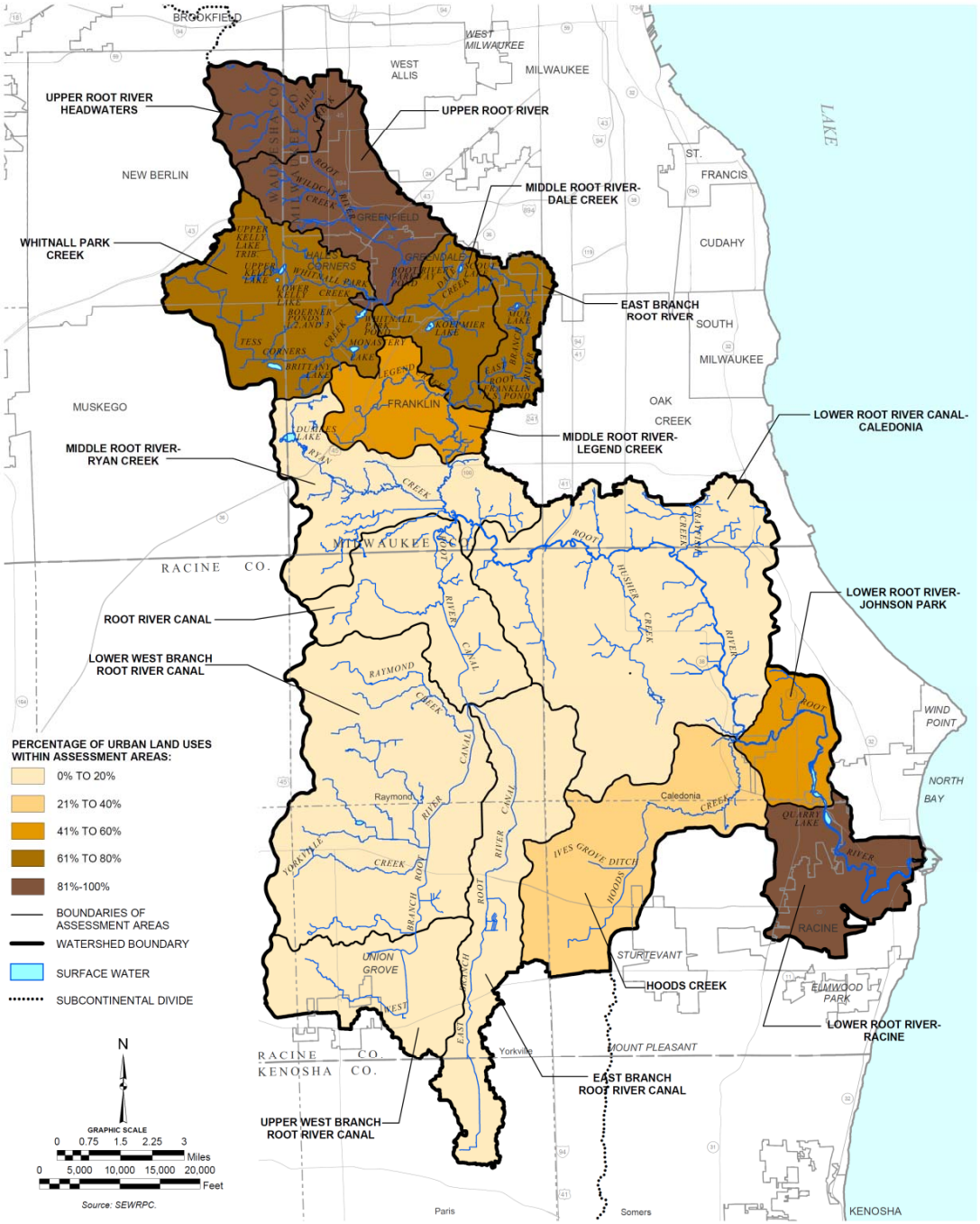


# Assessment Areas

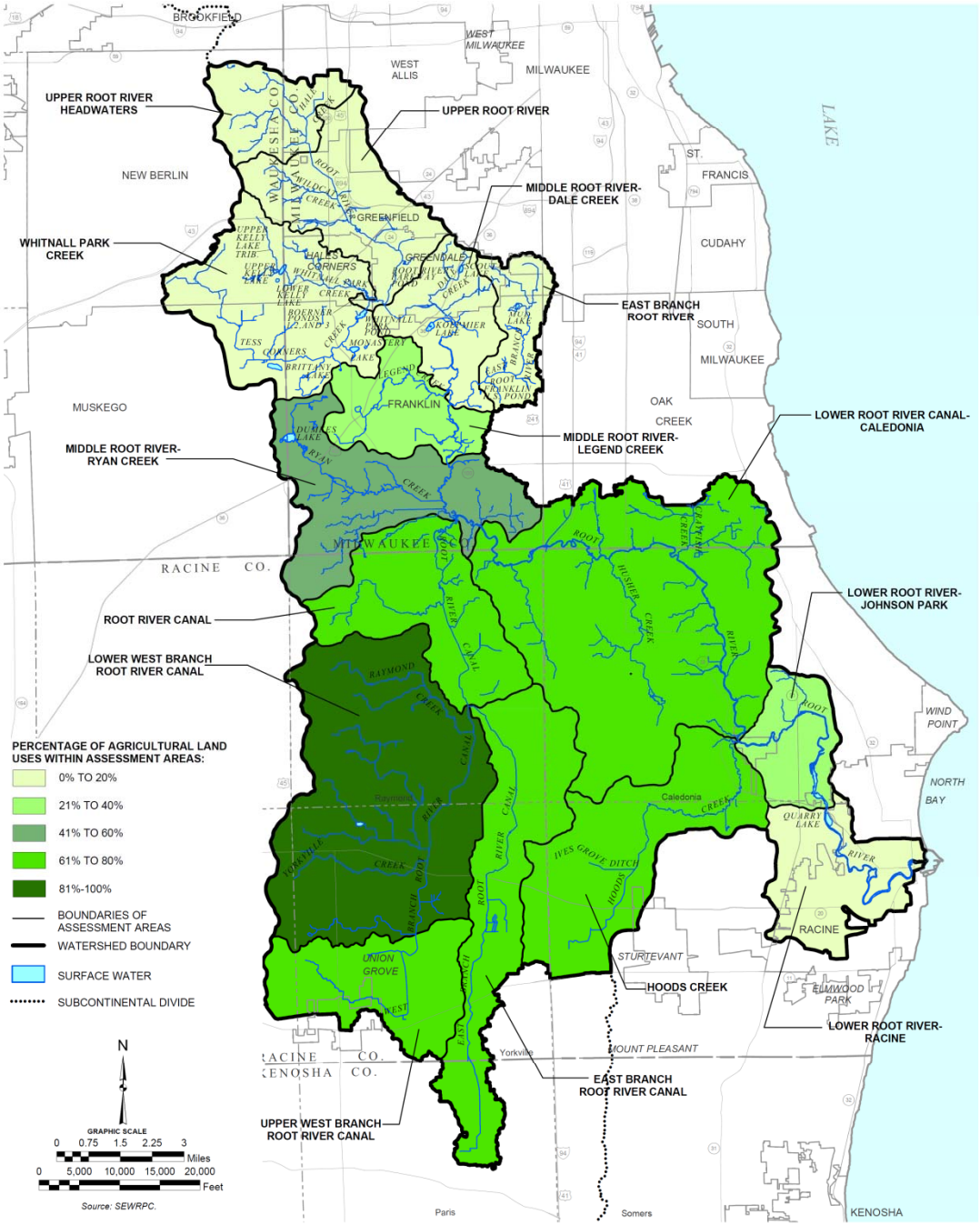
- 15 Assessment areas
- Correspond to subwatersheds or portions of subwatersheds
- Use for geographic analysis of the watershed



# URBAN LAND USES WITHIN ASSESSMENT AREAS IN THE ROOT RIVER WATERSHED: 2000



# AGRICULTURAL LAND USES WITHIN ASSESSMENT AREAS IN THE ROOT RIVER WATERSHED: 2000



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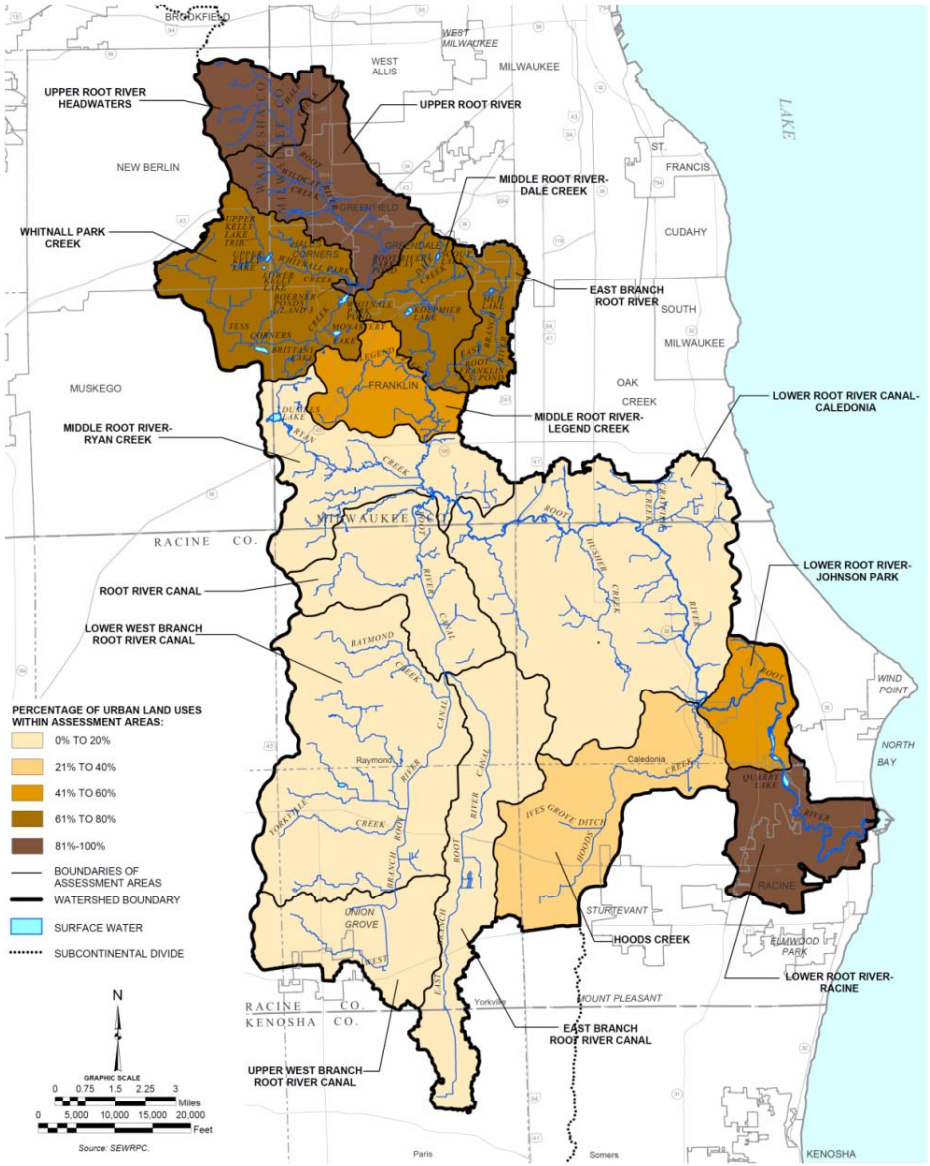
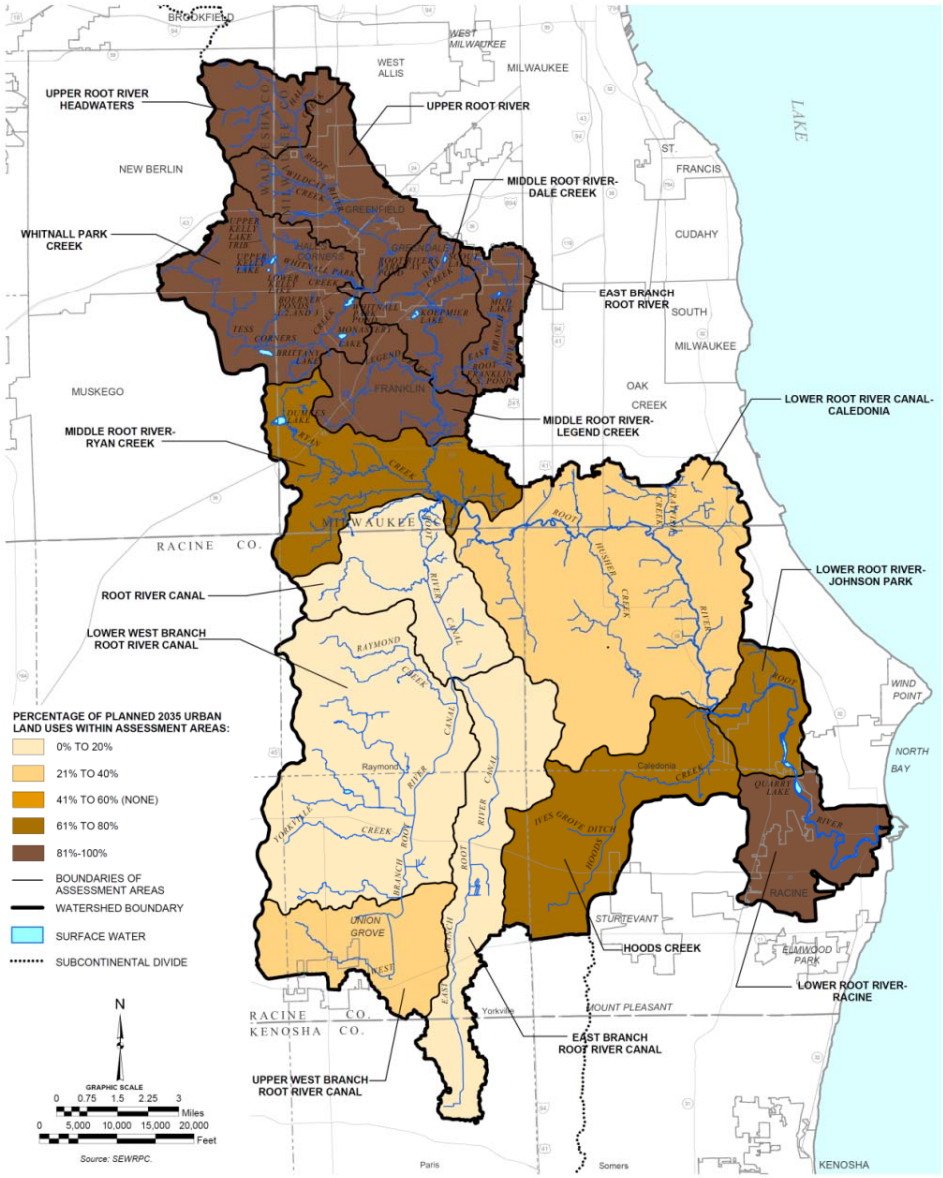


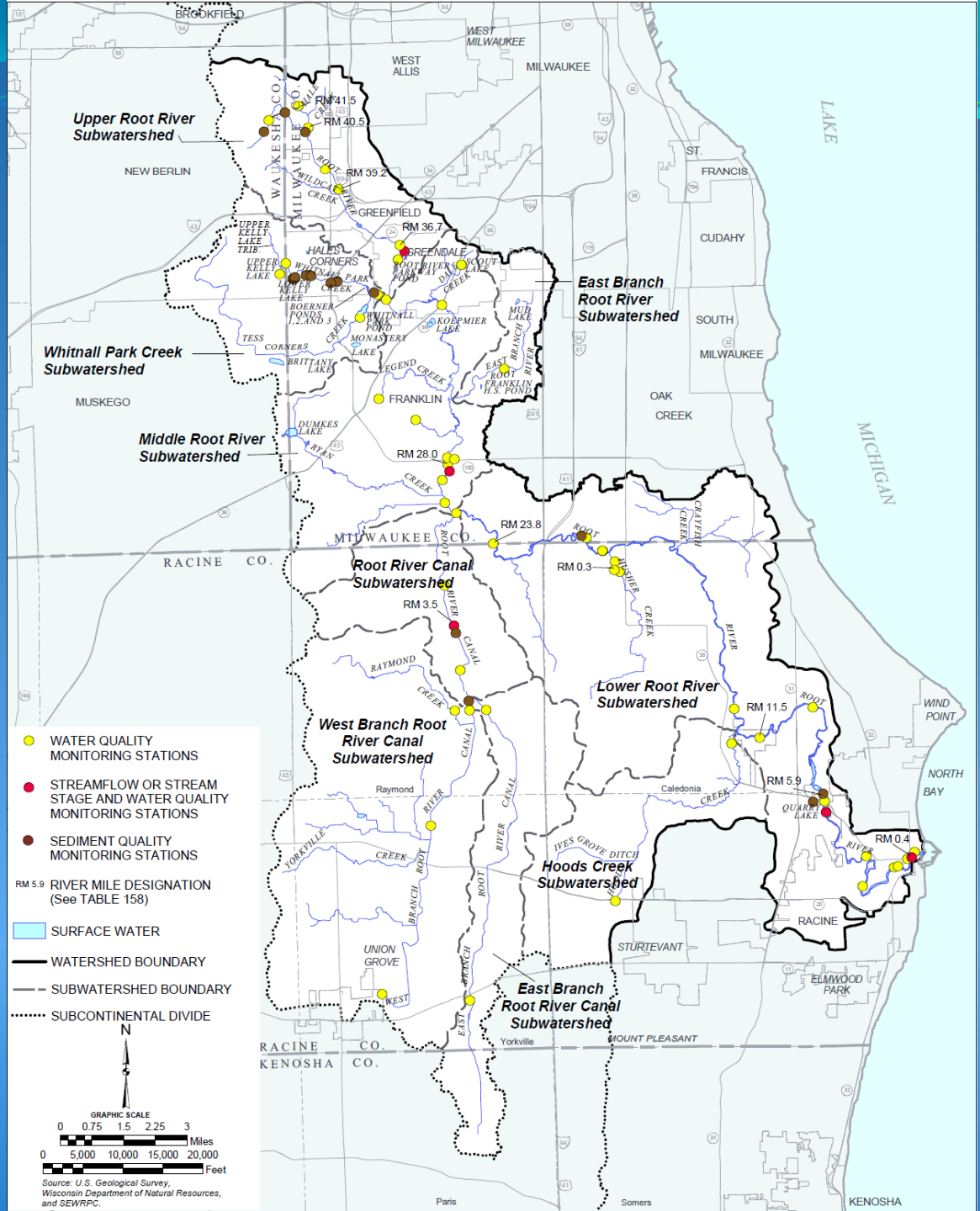

## PLANNED URBAN LAND USES WITHIN ASSESSMENT AREAS IN THE ROOT RIVER WATERSHED: 2035



# Preliminary Water Quality Results

# Preliminary Water Quality Results Dissolved Oxygen

| | 1998-2004 | | 2005-2011 | |
|---|---|---|---|---|
| | Percent Samples 5.0 mg/l or above | Samples | Percent Samples 5.0 mg/l or above | Samples |
| Watershed | 66.5 | 731 | 91.4 | 1,721 |


Upper Root River Subwatershed
Whitnall Park Creek Subwatershed
Middle Root River Subwatershed
East Branch Root River Subwatershed
Root River Canal Subwatershed
West Branch Root River Canal Subwatershed
Lower Root River Subwatershed
Hoods Creek Subwatershed
East Branch Root River Canal Subwatershed
RM 41.5
RM 40.5
RM 39.2
RM 36.7
RM 28.0
RM 23.8
RM 0.3
RM 3.5
RM 11.5
RM 5.9
RM 0.4
BROOKFIELD
WEST MILWAUKEE
WEST ALLIS
MILWAUKEE
NEW BERLIN
GREENFIELD
GREENDALE
FRANCIS
CUDAHY
SOUTH MILWAUKEE
OAK CREEK
FRANKLIN
MUSKEGO
MILWAUKEE CO.
RACINE CO.
KENOSHA CO.
RACINE
STURTEVANT
ELMWOOD PARK
MOUNT PLEASANT
Yorkville
Raymond
Caledonia
UNION GROVE
Paris
Somers
KENOSHA
WIND POINT
NORTH BAY
LAKE MICHIGAN
WATER QUALITY MONITORING STATIONS
STREAMFLOW OR STREAM STAGE AND WATER QUALITY MONITORING STATIONS
SEDIMENT QUALITY MONITORING STATIONS
RM 5.9 RIVER MILE DESIGNATION (See TABLE 158)
SURFACE WATER
WATERSHED BOUNDARY
SUBWATERSHED BOUNDARY
SUBCONTINENTAL DIVIDE
N
GRAPHIC SCALE
0 0.75 1.5 2.25 3 Miles
0 5,000 10,000 15,000 20,000 Feet
Source: U.S. Geological Survey, Wisconsin Department of Natural Resources, and SEWRPC.

# Preliminary Water Quality Results Dissolved Oxygen

| | 1998-2004 | | 2005-2011 | |
|---|---|---|---|---|
| | Percent Samples 5.0 mg/l or above | Samples | Percent Samples 5.0 mg/l or above | Samples |
| Watershed | 66.5 | 749 | 91.4 | 1,882 |
| Milwaukee County | 60.4 | 386 | 63.8 | 406 |
| Racine County | 70.0 | 363 | 99.1 | 1,476 |

# Preliminary Water Quality Results
# Total Phosphorus

| | 1998-2004 | | 2005-2011 | |
|---|---|---|---|---|
| | Percent Samples 0.075 mg/l or below | Samples | Percent Samples 0.075 mg/l or below | Samples |
| Watershed | 24.0 | 549 | 21.0 | 509 |

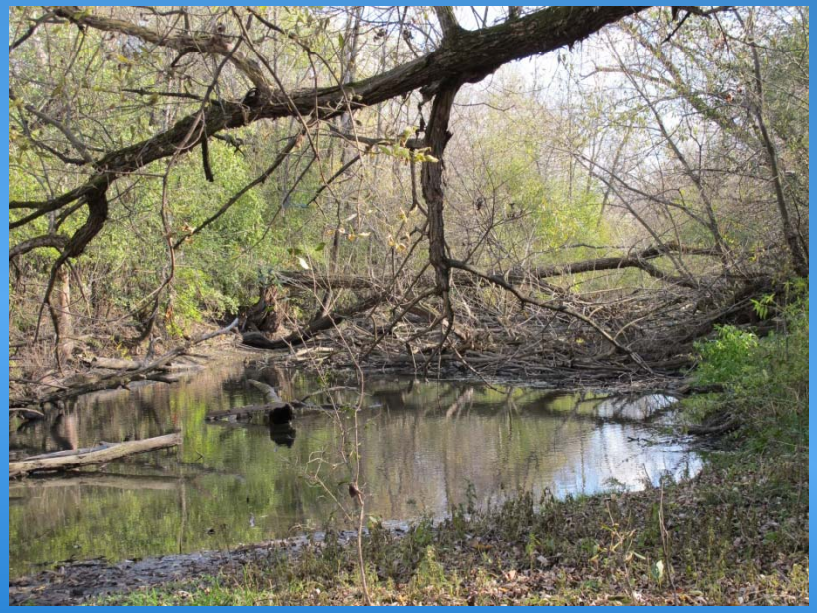
# Ongoing Efforts

- Characterize the Watershed Concentrating on Features Related to the Focus Issues
- Inventory Recent and Ongoing Projects, Programs, and Initiatives and Integrate these Into Recommendations

- Need you to provide
  - Information about these
  - Plans
  - Descriptions of projects

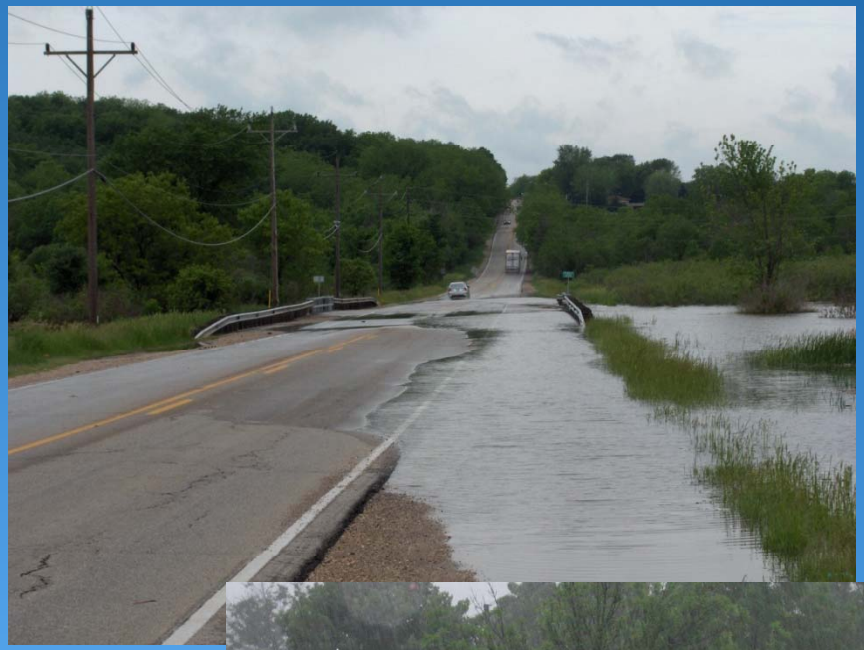
# Project Web Site

- http://www.sewrpc.org/SEWRPC/Environment/Root-River-Watershed-Restoration-Plan.htm
  - Presentations from RRRPG meetings
  - Draft chapters as they are completed
  - Comment screen



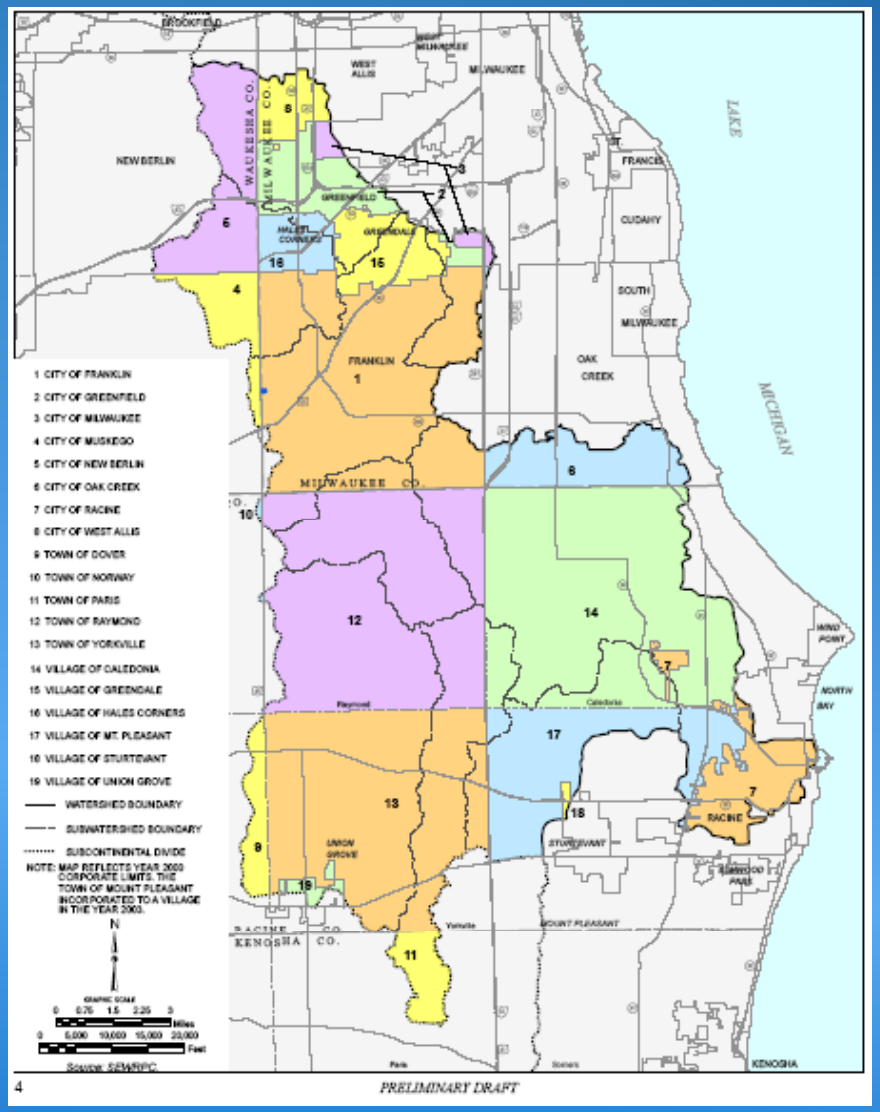
# Root River Watershed: Racine County Stormwater and Flooding Inventory

- Review and map identified problems in Racine County based on input from municipalities
  - Focus on flooding of habitable buildings and roadways and railways
- Characterize the nature of reported problems to the degree possible (e.g., stormwater-related, overflow from stream or river)
- Recommend priorities and levels of funding for future studies of case-by-case alternatives to mitigate specific high priority problems



# Root River Watershed: Racine County Stormwater and Flooding Inventory

- Racine County
- City of Racine
- Villages of
  - Caledonia
  - Mt. Pleasant
  - Sturtevant
  - Union Grove
- Towns of
  - Dover
  - Norway
  - Raymond
  - Yorkville



# Root River Watershed: Racine County Stormwater and Flooding Inventory

- Locations of stormwater and flooding problems
  - Dates of flooding
  - Number of buildings affected
  - Depths of flooding
  - Nature of flooding (e.g., basement, first floor, roadway)
  - Available flood damage costs
  - Proposed, or implemented, measures to address problems
- Pertinent reports, studies, and ordinances
- Some information already obtained by SEWRPC during preparation of the *Racine County Hazard Mitigation Plan Update: 2010-2015*

# Root River Watershed: Stormwater Runoff Pollution

- WDNR provided WinSLAMM information for all municipal separate storm sewer system (MS4) permitted communities
  - Milwaukee, Racine, and Waukesha Counties
  - All cities and villages except Union Grove (no MS4 permit)
  - All towns, except Dover, Norway, Raymond, and Yorkville (no MS4 permit)