
Oak Creek
Watershed Restoration Plan
Stakeholder Group Meeting
September 29, 2021
Speakers:
Laura Herrick, PE, CFM – Chief Environmental Engineer
Joseph Boxhorn, Ph.D. – Principal Planner
Aaron Owens – Senior Planner
Megan Beauchaine – Planner
SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION
KENOSHA·MILWAUKEE·OZAUKEE·WAUKESHA·WASHINGTON·WALWORTH·RACINE
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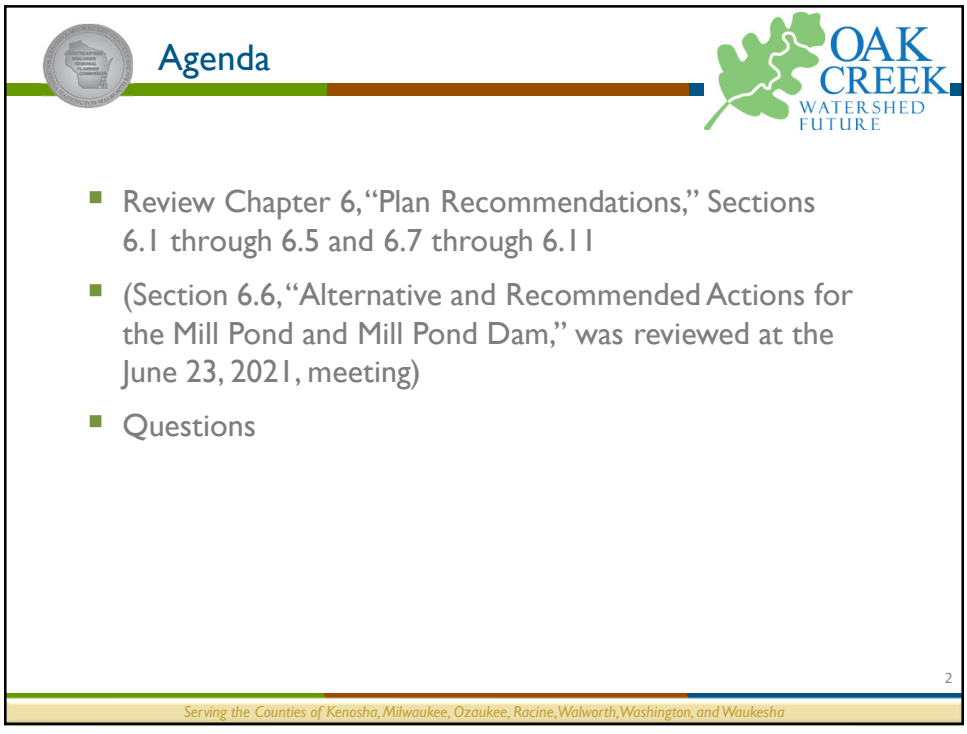
Agenda
OAK CREEK WATERSHED FUTURE
Review Chapter 6, "Plan Recommendations," Sections 6.1 through 6.5 and 6.7 through 6.11
(Section 6.6, "Alternative and Recommended Actions for the Mill Pond and Mill Pond Dam," was reviewed at the June 23, 2021, meeting)
Questions
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Chapter 6

OAK CREEK WATERSHED FUTURE

- This chapter describes:
  - Plan recommendations
    - General recommendations related to water quality, habitat, recreational access, targeted flooding
    - Recommendations for specific projects
  - Public awareness and participation element
  - Measuring progress and success
  - Implementation
  - Required technical and financial assistance

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Recommendations

- General recommendations
  - Most apply over the whole watershed
  - Provide guidance for the management of natural resources in the watershed
- Specific projects
  - The plan identifies and recommends over 400 specific projects
  - These partially implement the general recommendations
- Example stormwater management projects

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Recommended Projects

Table 6.1
Site Specific Management Measures for the Oak Creek Watershed

ID Number (see Maps 6.1 –6.15)[1]	Focus Areas Addressed[2]	Site Information: Location	Latitude	Longitude	Municipality	Owner	Management Action	Annual Pollutant Reductions: TSS (pounds)	Total Phosphorus (pounds)	Fecal Coliform Bacteria (trillion cells)	Total Nitrogen (pounds)	BOD (pounds)	Key Project Partners	Costs (dollars)[3]: Capital	Annual O&M	Potential Funding Sources[4]	Priority[5]
Oak Creek Watershed-Wide Projects (OCW)																	
OCW-01	WQ	Watershed-wide	n/a	n/a	City of South Milwaukee	n/a	Review and audit municipal code and ordinances to assess barriers to implementing green infrastructure	--	--	--	--	--	City of South Milwaukee	10,500	--	2, 10, , 27, 47, 52, 57, 65, 67	Medium
OCW-02	WQ	Watershed-wide	n/a	n/a	Municipalities, Milwaukee County	Municipalities, Milwaukee County	Develop and implement written dry-weather screening procedures for MS4 outfalls	--	--	--	--	--	Municipalities, Milwaukee County	--	--	57, 65, 66, 67	High
OCW-03	WQ	Watershed-wide	n/a	n/a	Municipalities, Milwaukee County	Municipalities, Milwaukee County	Develop and implement written procedures for investigating and responding to suspected or known illicit discharges into MS4s	--	--	--	--	--	Municipalities, Milwaukee County	--	--	57, 65, 66, 67	High
OCW-04	WQ	Watershed-wide	n/a	n/a	Municipalities, Milwaukee County	Municipalities, Milwaukee County	Develop and implement a system for tracking and completing long-term inspections, maintenance, and enforcement of all public and private post-construction stormwater BMPs	--	--	--	--	--	Municipalities, Milwaukee County	--	--	50, 57, 67	High
OCW-05	WQ	Watershed-wide	n/a	n/a	Municipalities, Milwaukee County	Municipalities, Milwaukee County	Develop and implement a written salt application or salt reduction strategy	--	--	--	--	--	Municipalities, Milwaukee County	--	--	27, 52, 57, 65, 67	High
OCW-06	WQ	Watershed-wide	n/a	n/a	Municipalities, Milwaukee County, MMIA	Municipalities, Milwaukee County, MMIA	Annually calibrate deicing and anti-icing equipment	--	--	--	--	--	Municipalities, Milwaukee County, MMIA	--	--	--	High
OCW-07	WQ	Watershed-wide	n/a	n/a	Municipalities, Milwaukee County	Municipalities, Milwaukee County	Develop action benchmarks for bacteria for IDDE screening	--	--	--	--	--	Municipalities, Milwaukee County	--	--	10, 22, 52, 57, 65, 67	High
OCW-08	WQ	Watershed-wide	n/a	n/a	Municipalities, Milwaukee County	Municipalities, Milwaukee County	Develop an inventory and map of potential sources of fecal indicator bacteria for MS4	--	--	--	--	--	Municipalities, Milwaukee County	--	--	10, 22, 52, 57, 65, 67	High
OCW-09	WQ	Watershed-wide	n/a	n/a	Municipalities, Milwaukee County	Municipalities, Milwaukee County	Develop a fecal indicator bacteria elimination plan for MS4	--	--	--	--	--	Municipalities, Milwaukee County	--	--	10, 22, 52, 57, 65, 67	High
OCW-10	WQ, SWF	Watershed-wide	n/a	n/a	Municipalities, Milwaukee County	Milwaukee County	Develop and execute a pilot project that evaluates an innovate BMP design or contracting mechanism for stormwater-related services	--	--	--	--	--	Milwaukee County	--	--	13, 14, 25, 31, 44, 45, 57, 67	Medium
Grant Park Ravine Assessment Area (GPR)																	
GPR-01	H, WQ	Oak Creek estuary area adjacent to Grant Park Beach parking lot	42.90657	-87.84223	City of South Milwaukee	Milwaukee County and City of South Milwaukee	Consider restoration of estuary area to improve habitat and aesthetics with native plan installations and potentially converting backwater areas to wetland estuary habitat	--	--	--	--	--	Milwaukee County and City of South Milwaukee	--	--	3, 4, 5, 6, 7, 8, 9, 10, 11, 15, 16, 20, 21, 22, 23, 24, 25, 26, 45, 46, 52	Medium

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Recommended Projects

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Recommended Projects

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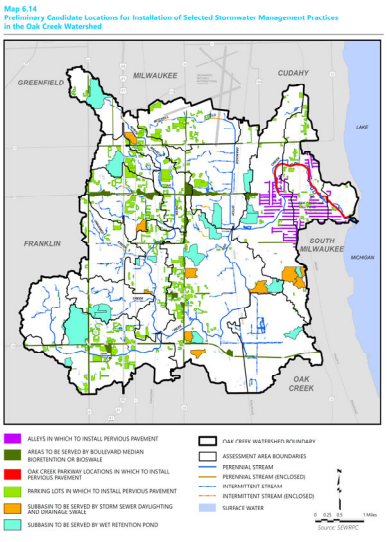
Example Stormwater Projects

- Conducted a preliminary screening to identify areas where several stormwater management practices could be installed
- Developed preliminary designs for several types of practices
  - Wet retention ponds
  - Removing storm sewers and installing swales
  - Bioswales in boulevard medians
  - Bioretention in boulevard medians
  - Pervious pavement in parking lots, alleys, and parking lanes of parkway



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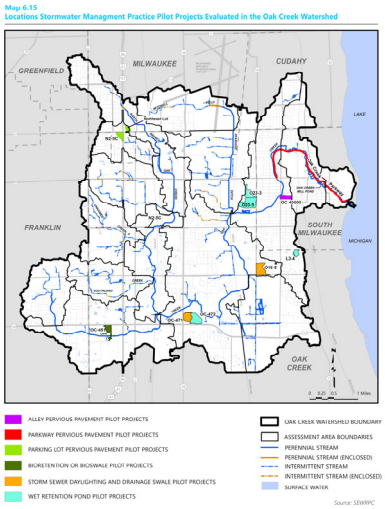
Example Stormwater Projects

- Estimated costs and pollutant load reductions
- The goal was to demonstrate the feasibility, potential, and benefits of these types of projects and to encourage communities to develop similar projects throughout the watershed
- Some are included as recommended projects



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Water Quality Recommendations
OAK CREEK WATERSHED
Leaf and Yard Waste Management Programs
Improve Winter Deicing Practices to Reduce Salt Use
Regular Inspections of Stormwater Control Measures
Tracking Systems for Stormwater Control Measure Maintenance
Trash and Litter Control Programs
DOGS
Enact and Enforce Pet Litter Ordinances
Control Nuisance Waterfowl as Needed
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Water Quality Recommendations
OAK CREEK WATERSHED FUTURE
Enact and Enforce Bans on Coal-tar Pavement Sealants
NOTICE
Post Fish Consumption Advisories
Take Back My Meds
MKE
SAFELY DISPOSE OF MEDICINES
Continue Collection Programs for Expired and Unused Medications
Home HazMat COLLECTION
KEEP IT OUT OF OUR WATER
Continue Household Hazardous Waste Collection Programs
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Water Quality Recommendations

Install Green Infrastructure

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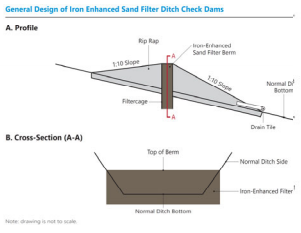
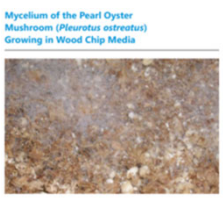
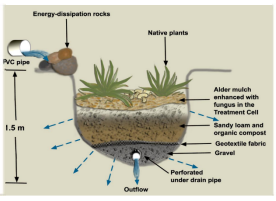
Water Quality Recommendations

Iron-Enhanced Sand Filters to Treat Phosphorus



Test and Apply Innovative Methods to Treat Stormwater Runoff





Mycoremediation—Fungi Added to Stormwater Practices—to Treat Bacteria

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Actions to Improve Habitat Quality

- Maintain and Re-Establish Natural Surface Water Hydrology
- Protect, Restore, Expand, and Connect Riparian Buffers
- Protect, Preserve, and Restore Environmentally Sensitive Areas
- Restore the Quality and Diversity of Instream Habitat
- Mitigate Negative Impacts Associated with Climate Change
- Reduce Trash and Debris Within Stream Channels and Riparian Areas

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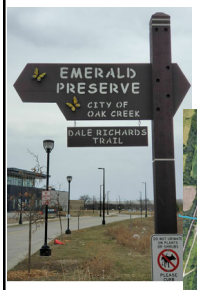
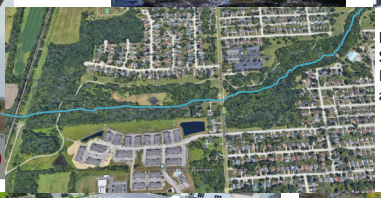
Re-Establish Natural Surface Water Hydrology

OAK CREEK WATERSHED FUTURE

Reduce Runoff Volume and Velocity and Increase Infiltration

Protect and Enhance Natural Landscape Elements to "Slow Water Down"





Promote Stormwater Reuse, Storage, and Infiltration

Green Schoolyards

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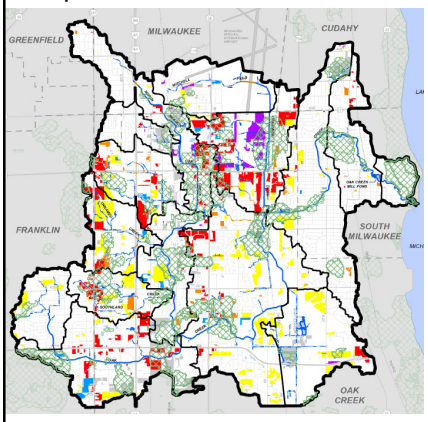
Re-Establish Natural Surface Water Hydrology

OAK CREEK WATERSHED FUTURE

Protect Areas of High Groundwater Recharge Potential

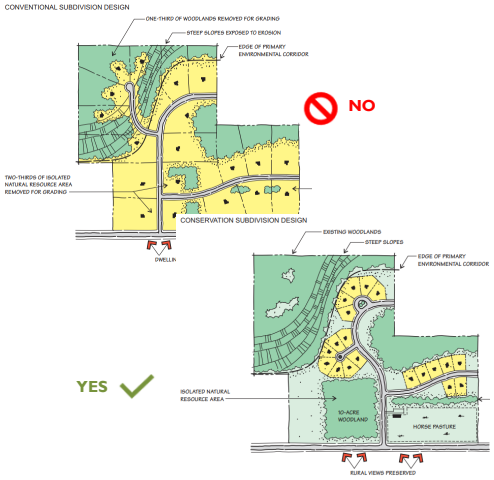
Map 6.30



>Reduce Impact of Existing Urban Development on Groundwater Recharge Quantity and Quality

>Special Considerations and Pollution Reduction Measures for Areas with High GW Recharge Potential

Avoid Development in the Best Remaining Groundwater Recharge Areas



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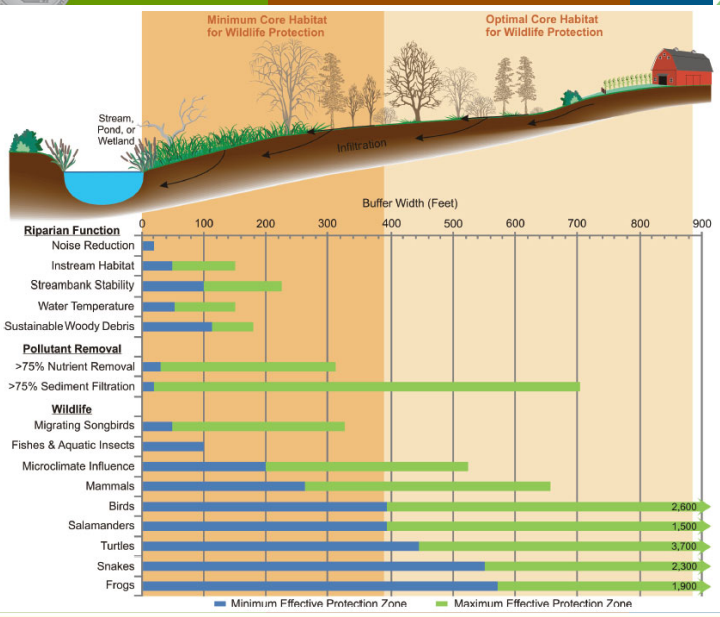
Protect, Restore, Expand, and Connect Riparian Buffers



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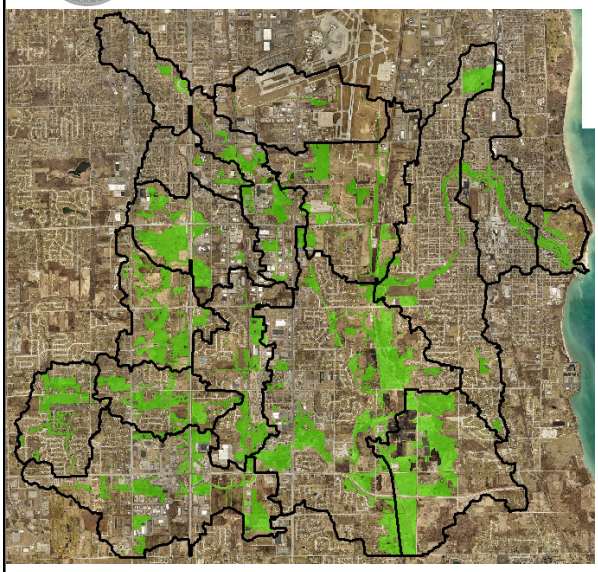
Protect, Restore, Expand, and Connect Riparian Buffers



First Identified Existing Riparian Buffer Areas within the Watershed

- Using 2015 digital orthophotographs
- Delineated areas adjacent to waterways that consisted of contiguous "natural" lands that were not separated from the waterways by roads, parking lots, other development, or agricultural fields
- Existing riparian buffers mostly consist of woodlands, wetlands, grasslands, prairies, and other open lands adjacent to waterbodies

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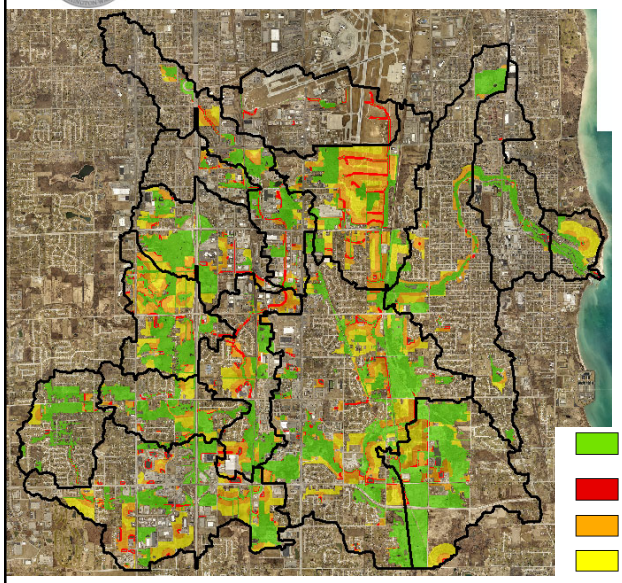
Protect, Restore, Expand, and Connect Riparian Buffers



Next Identified Areas That Could Potentially Become Riparian Buffers

- Areas that are currently not developed in urban uses, but that are not currently in natural, undisturbed vegetative cover and thus do not provide beneficial water quality or habitat functions
- These are areas that can be targeted for restoration and reconnected contiguously to existing riparian buffers
- Defined by their widths and potential protection functionality

EXISTING RIPARIAN BUFFERS (DELINEATED BY SEWRPC STAFF USING 2015 DIGITAL ORTHOPHOTOGRAPHY)
75-FOOT MINIMUM RECOMMENDED BUFFER WIDTH
400-FOOT MINIMUM CORE HABITAT WIDTH FOR WILDLIFE PROTECTION
1,000-FOOT OPTIMAL CORE HABITAT WIDTH FOR WILDLIFE PROTECTION

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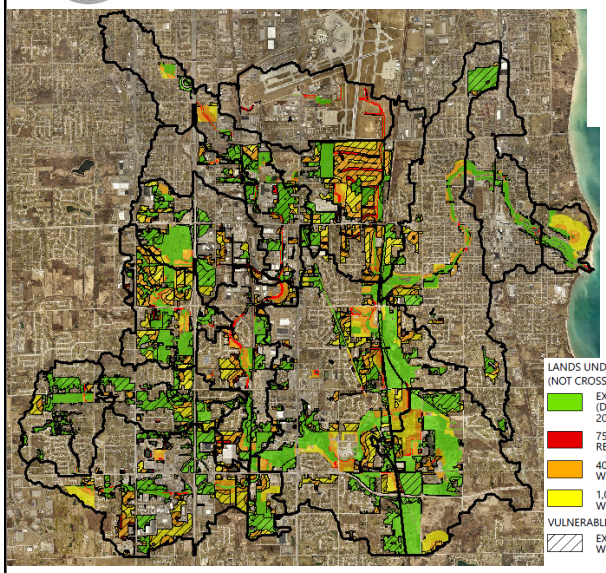
Protect, Restore, Expand, and Connect Riparian Buffers



Lastly, Identified Areas Considered to be Vulnerable to Development

- These are areas that are not protected through regulations and are not already in public ownership
- These areas may be higher priority to protect prior to urban development and/or considered for preservation when planning for urban development

LANDS UNDER SOME FORM OF PROTECTION (NOT CROSS HATCHED)
EXISTING RIPARIAN BUFFERS (DELINEATED BY SEWRPC STAFF USING 2015 DIGITAL ORTHOPHOTOGRAPHY)
75-FOOT MINIMUM RECOMMENDED BUFFER WIDTH
400-FOOT MINIMUM CORE HABITAT WIDTH FOR WILDLIFE PROTECTION
1,000-FOOT OPTIMAL CORE HABITAT WIDTH FOR WILDLIFE PROTECTION
VULNERABLE LANDS (CROSS HATCHED)
EXISTING OR POTENTIAL RIPARIAN BUFFER LANDS WITH NO FORM OF PUBLIC INTEREST OWNERSHIP

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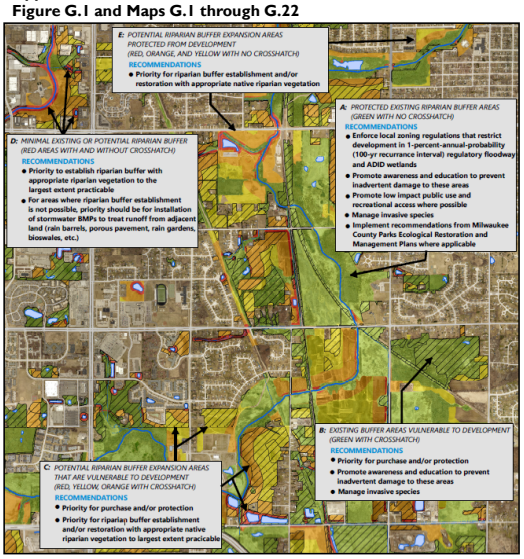
Protect, Restore, Expand, and Connect Riparian Buffers

OAK CREEK WATERSHED FUTURE

Appendix G
Figure G.1 and Maps G.1 through G.22



LANDS UNDER SOME FORM OF PROTECTION (NOT CROSS HATCHED)
- EXISTING RIPARIAN BUFFERS (DELINEATED BY SEWRPC STAFF USING 2015 DIGITAL ORTHOPHOTOGRAPHY)
- 75-FOOT MINIMUM RECOMMENDED BUFFER WIDTH
- 400-FOOT MINIMUM CORE HABITAT WIDTH FOR WILDLIFE PROTECTION
- 1,000-FOOT OPTIMAL CORE HABITAT WIDTH FOR WILDLIFE PROTECTION

VULNERABLE LANDS (CROSS HATCHED)
- EXISTING OR POTENTIAL RIPARIAN BUFFER LANDS WITH NO FORM OF PUBLIC INTEREST OWNERSHIP

1. Manage and Restore Existing Riparian Buffers
2. Protect What Currently Exists (Vulnerable Existing Buffers Have Highest Priority)
3. Establish New Riparian Buffers to Greatest Extent Possible with Minimum Target of 75-foot Width From Water's Edge and Optimal Goal of a 1,000-foot width (or greater)
4. Establish Connections/Corridors Between Buffer Areas

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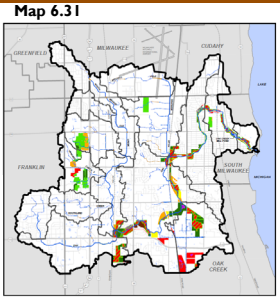
Preserve, Restore, Expand, and Connect Wildlife Habitat

OAK CREEK WATERSHED FUTURE

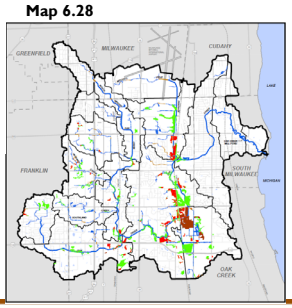
Protect, Preserve, and Restore Environmentally Sensitive Areas

Map 6.31



Recommended Projects from MCP's Ecological Restoration and Management Plans
- RAPID RESPONSE INVASIVE REMOVAL
- RAPID RESPONSE INVASIVE REMOVAL AND FOREST STAND IMPROVEMENT
- REFORESTATION
- FOREST STAND IMPROVEMENT
- GRASSLAND MANAGEMENT
- GRASSLAND RESTORATION
- SHRUB MANAGEMENT
- SHALLOW-WATER WILDLIFE AREA

Map 6.28



Areas to be Considered for Wetland Restoration
- AREAS CONSIDERED BY WDNR TO BE POTENTIALLY RESTORABLE WETLANDS
- AREAS CONSIDERED BY WDNR TO BE POTENTIALLY RESTORABLE WETLANDS THAT ARE CURRENTLY BEING CULTIVATED
- FARMED WETLANDS

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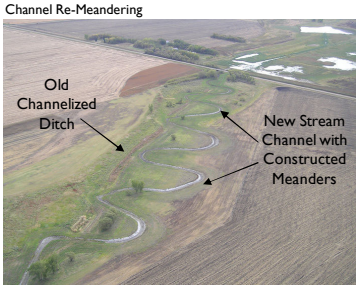
Restore the Quality and Diversity of Instream Habitat

OAK CREEK WATERSHED FUTURE

Installation of Natural Channel Design Elements:
Naturalized Meanders, Grade Control, Constructed Riffle Habitats

Channel Re-Meandering



Cross Vein/Grade Control

Constructed Riffle

Add Large Boulders

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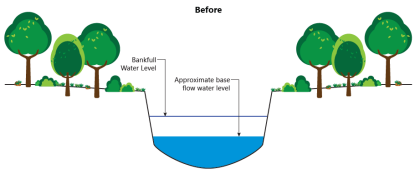
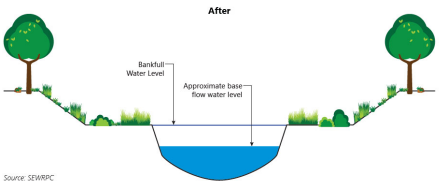
Restore the Quality and Diversity of Instream Habitat

OAK CREEK WATERSHED FUTURE

Re-Establish Connections Between Streams, Floodplains, and Adjacent Wetlands





Disconnected from Floodplain

Connected Floodplain

Oak Creek

Underwood Creek - Wauwatosa

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Restore the Quality and Diversity of Instream Habitat

OAK CREEK WATERSHED FUTURE

Example Project and Success Story: Reconnection of Floodplain and Stream Channel Restoration and at IH-94 County Highway G

2000 – Before Restoration

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Restore the Quality and Diversity of Instream Habitat

OAK CREEK WATERSHED FUTURE

Example Project and Success Story: Reconnection of Floodplain and Stream Channel Restoration and at IH-94 County Highway G

Design & Construction

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Restore the Quality and Diversity of Instream Habitat

OAK CREEK WATERSHED FUTURE

Example Project and Success Story: Reconnection of Floodplain and Stream Channel Restoration and at IH-94 County Highway G

2017 – Post Restoration

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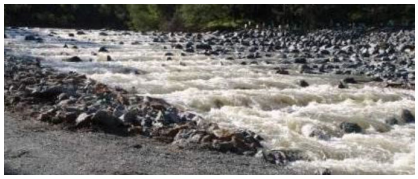
Restore the Quality and Diversity of Instream Habitat

OAK CREEK WATERSHED FUTURE

Remove Impediments to Aquatic Organism Passage

Elevation Drop

Rock Ramp Retrofit



Excessive Culvert Length

Install Strategically Placed Boulder Resting Spots

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Restore the Quality and Diversity of Instream Habitat

OAK CREEK WATERSHED FUTURE

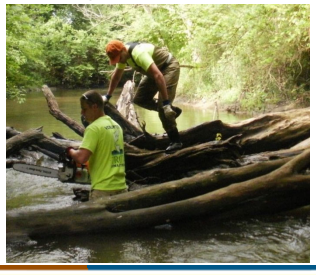
Remove Impediments to Aquatic Organism Passage

Insufficient Water Depths/Oversized Culverts

Retrofit Low-Flow Channel

Large Woody Debris Jams

Selectively Remove Parts of Woody Debris to Open Passage Lanes



Restore the Quality and Diversity of Instream Habitat

OAK CREEK WATERSHED

Considerations for Culvert Design and Placement

Source: Minnesota Department of Natural Resources

Source: Department of Fish and Game, Massachusetts Stream Crossings Handbook, June 2012

Restore the Quality and Diversity of Instream Habitat

OAK CREEK WATERSHED FUTURE

Address Excessive Streambank and Streambed Erosion

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Restore the Quality and Diversity of Instream Habitat

OAK CREEK WATERSHED FUTURE

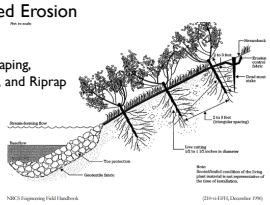
Address Excessive Streambank and Streambed Erosion

Table 6.14
Alternative Streambank Stabilization Practices

Instream Practices
Vanes or J-Hook Vanes
Cross Vanes
Streambank Treatment
Bank Shaping and Planting
Branch Packing
Brush Mattresses
Coconut Fiber Roll
Dormant Post Plantings
Vegetated Gabions
Joint Plantings
Live Cribwalls
Live Stakes
Live Fascines
Log, Rootwad, and Boulder Revetments
Multi-stage Channel Design/Restoration
Riprap
Stone Toe Protection
Tree Revetments
Vegetated Geogrids

Source: AECOM, City of Racine, and SEWRPC

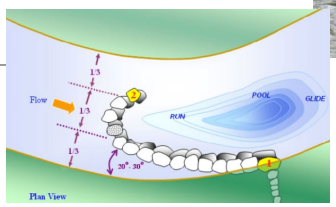
Bank Shaping, Planting, and Riprap



Bank Shaping, Planting, and Coconut Fiber Rolls

Log Deflector

J-Hook Vein



Cross Vein

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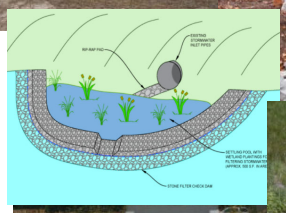
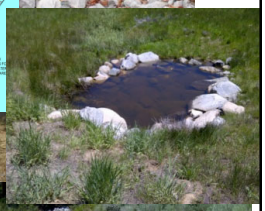
Restore the Quality and Diversity of Instream Habitat

Repair, Replace, or Retrofit Failing Stormwater Outfalls





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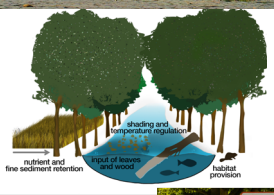
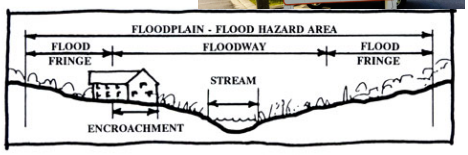
Reduce Negative Impacts of Climate Change

- Slow Down, Detain, and Treat Runoff
- Reduce Peak Stream Flows
- Maintain Shallow Groundwater Levels
- Promote Actions to Reduce Warming of Aquatic Habitats
- Consider Strengthening Floodplain Ordinances





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Reduce Trash and Debris Within Stream Channels and Riparian Areas

- Community-Oriented Cleanup Days
- Place and Maintain Additional Trash Receptacles Along Trails, Parkways, and Parks
- Continue and Expand Large Trash Pick-Up Days
- Continue Household Hazardous Waste Collections Electronic Recycling Options

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Flooding Recommendations

- As opportunities arise, the remaining insurable structures in the regulatory Oak Creek floodplain should be voluntarily acquired/removed or floodproofed
- Road crossings impacted by the regulatory floodplains should be elevated or modified as part of improvement projects
- Flooding solutions should be evaluated on a case-by-case basis
- Rainfall runoff should be retained onsite to mitigate stream and stormwater flooding
- Sufficient undeveloped land should be maintained in the watershed for infiltration and flood storage

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Flooding Recommendations

Flooded Structure Removal – Greenhouses at Forest Hill Ave. and Oak Creek mainstem

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Flooding Recommendations
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Recreational Access and Use Recommendations

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Recreational Access and Use Findings

1. Major recreational uses of the watershed include walking, hiking, biking, and fishing
2. The public has expressed a desire for improved quality and increased extent of trails within the watershed
3. The Milwaukee County Parks has proposed adding about six miles of trails to the Oak Leaf Trail system within the watershed
4. The public has expressed a desire for educational signage
5. The presence of a poor-quality fishery upstream from the Mill Pond dam

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Recreational Use Recommendations

1. Maintain and Improve Parks and Parkway Systems in Watershed

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Recreational Use Recommendations

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2. Land Acquisition for Recreational Facilities

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Recreational Use Recommendations: Trails

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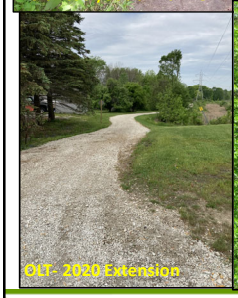

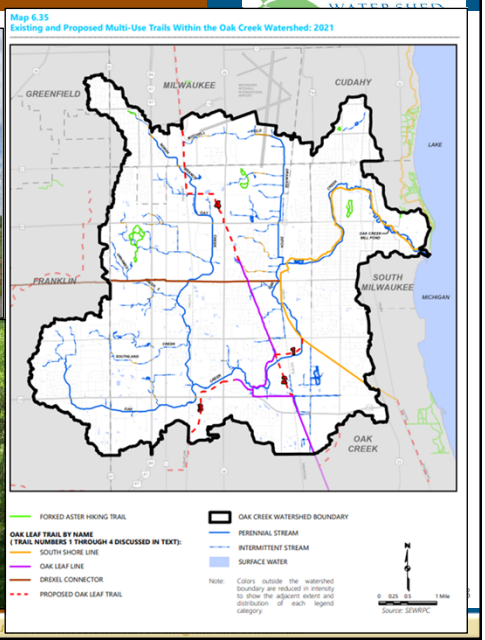

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Recreational Use Recommendations

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4. Improve Recreational Fishing Access

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Recreational Use Recommendations

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5. Recreational Facilities

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Recreational Use Recommendations

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6. Accessibility of Recreational Facilities to People with Disabilities

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Information and Education Element

- Objectives
  - Make elected officials, local government and agency staff, landowners, businesses, nongovernmental organizations, and the public aware of the plan and of recommendations that they could implement
  - Encourage adoption of the plan
  - Provide information on how to maintain stormwater management practices
  - Measure and evaluate the effectiveness of the information and education element
- The information and education element incorporates existing regional information and education efforts

Information and Education Element

Table 6.20
Information and Education (I&E) Element Matrix for the Oak Creek Watershed Restoration Plan

Education Action*	Target Audience	Communication Vehicles	Schedule	Lead (Supporting) Organizations	Outcomes, Implementation Goals, Behavior Changes	Estimated Cost
(A) Educate elected officials about the completed plan and encourage them to: 1. Adopt the plan 2. Amend municipal, codes, ordinances, and comprehensive plans to recognize recommendations in the plan	Elected officials	Distribute copies of the plan and the brochure summarizing the plan Schedule meetings and presentations on the plan and its recommendations as requested Include elected officials in presentations on stormwater best management practices	Late 2021-2023	Milwaukee County, watershed municipalities, RPW, SWWT, (SEWRPC), (WDNR), (MMSD)	5 meetings, presentations, and workshops between late 2021 and mid-2022 Knowledge of the components and recommendations in the plan Adoption of plan by the County and municipalities by 2022 Revisions to municipal codes and ordinances	I&E to elected officials and municipal staffs $10,000 (200 hours) Printed copies of plan and brochure $1,000
(B) Provide the watershed plan to the general public and news media, inform and educate them about water pollution; the hazards of and management of yard debris, pet waste, fertilizers, and yard chemicals as they relate to stormwater runoff and groundwater contamination; green infrastructure such as rain barrels and rain gardens, nonnative and invasive species; and recreational opportunities in the watershed Encourage the public to include appropriate plan recommendations in their activities and to request assistance	General public News media	Publish and distribute a brochure summarizing the plan Make copies of the plan, summary brochure and related materials available on the SEWRPC website Post links to the plan and related materials on the Root-Pike WIN, SWWT, WDNR, municipal and other websites Announce the plan and activities related to plan implementation through municipal, SEWRPC, Root-Pike WIN, and SWWT websites, social media, newsletters, and multimedia. Update the websites on an ongoing basis Issue news releases announcing the plan, its recommendations, and implementation activities Provide media interviews, photo opportunities and tours Maintain and expand the Respect Our Waters multimedia and community outreach campaign Maintain Fresh Coast Resource Center and website	Fall 2021 and at intervals marking implementation progress, major initiatives, photo opportunities, events, and other newsworthy developments Beginning 2021 and continuing through 2031, present periodically at the Clean Rivers, Clean Lake conference Beginning 2022 and continuing through 2031, workshops addressing topics related to action items B through I	Watershed municipalities, MMSD, RPW, SWWT, (Milwaukee County), (SEWRPC), (SEWISC)	Ten news releases issued between fall 2021 and 2031 Ten news stories aired between fall 2021 and 2031 200 brochures distributed by email or downloaded between fall 2021 and 2027 16 presentations and workshops from 2022 through 2031	Cost includes items B through I, which would be accomplished through a coordinated, multi-purpose program which would include the communication vehicles for each of those action items, and which share outcomes, except where additional outcomes are noted for an action item Staff activities $25,000 (500 hours)


Rename Mitchell Field Drainage Ditch
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High Priority Projects
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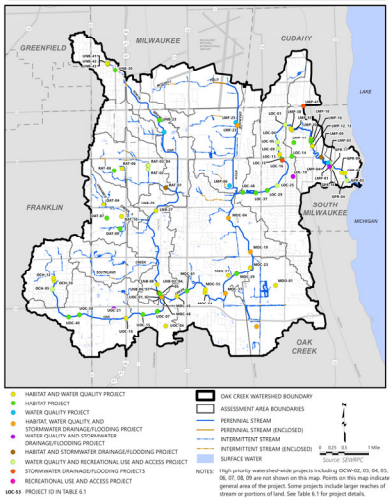
High Priority Projects Map

- 89 high priority projects in 13 categories of projects
- Prioritized based on several factors including
  - Pollutant load reductions
  - Cost
  - Severity of problem addressed
- Spread throughout the watershed

Map 6.36
Recommended High Priority Projects Within the Oak Creek Watershed



High Priority Projects Tables

Table 6.24
High Priority Debris Jam Modification Projects for the Oak Creek Watershed Restoration Plan[a,b]

Identification Number (see Maps 6.1-6.13)	Location	Management Action	Focus Areas Addressed	Potential Benefits	Capital Cost (dollars)	Key Project Partners
LMP-09	Oak Creek upstream of Mill Pond between the third and fourth Parkway crossing	Remove debris jam and sediment accumulations from main channel of Oak Creek and elevate channel invert of newly formed channel that is in close proximity to the Parkway road[c]	Habitat	Removes passage impediment, increases connectivity within Oak Creek; eliminates threat to Parkway road	--[d]	Milwaukee County
LMP-16	Oak Creek in Oak Creek Parkway north of Cherry Street (extended)	Remove or modify large woody debris jam	Habitat	Removes passage impediment, increases connectivity within Oak Creek	--[d]	Milwaukee County
LMP-18	Oak Creek in Oak Creek Parkway upstream of Chicago Avenue and south of Walnut Street (extended)	Remove or modify large woody debris jam	Habitat	Removes passage impediment, increases connectivity within Oak Creek	--[d]	Milwaukee County and City of South Milwaukee
LOC-29	Oak Creek about 630 feet downstream of S. Pennsylvania Avenue	Remove or modify large woody debris jam	Habitat	Removes passage impediment, increases connectivity within Oak Creek	--[d]	Milwaukee County and City of South Milwaukee
LOC-37	Oak Creek about 520 feet upstream from S. Pennsylvania Avenue	Remove or modify large woody debris jam	Habitat	Removes passage impediment, increases connectivity within Oak Creek	--[d]	Milwaukee County, City of Oak Creek, and MMSD[e]
LOC-48	Oak Creek about 650 feet downstream of the confluence with the Mitchell Field Drainage Ditch	Remove or modify large woody debris jam	Habitat	Removes passage impediment, increases connectivity within Oak Creek	--[d]	Milwaukee County, City of Oak Creek, and MMSD[e]

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Measuring Plan Progress

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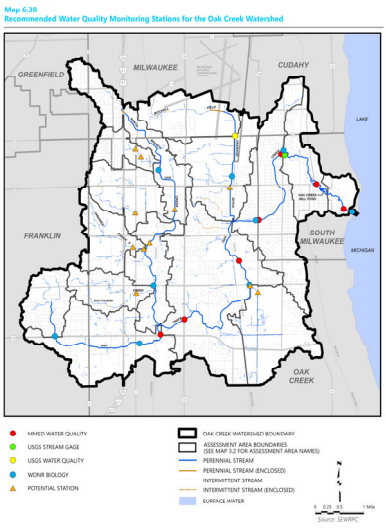
- Continue and expand water quality, habitat, and biological monitoring
  - MMSD, USGS, WDNR, and Milwaukee County Parks continue current efforts
  - Add eight water quality sampling stations
  - Evaluate Mill Pond sediment for contaminants
- Collate, analyze, and interpret monitoring data every 10 years
- Track and evaluate implementation of plan recommendations
  - Milwaukee County Environmental Services to track
  - Advisory Group to evaluate



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Milestones

Table 6.38
Implementation Milestones for the Oak Creek Watershed Restoration Plan

Category	Action	Milestones
Specific Projects Listed in Table 6.1	High Priority Projects (90 projects)	35 percent of projects initiated by the end of 2026 50 percent of projects completed by the end of 2031 65 percent of projects completed by the end of 2036 75 percent of projects completed by the end of 2041 90 percent of projects completed by the end of 2046 100 percent of projects completed by the end of 2051
	Medium and Low Priority Projects (316 projects)	5 percent of projects initiated by the end of 2026 15 percent of projects completed by the end of 2031 30 percent of projects completed by the end of 2036 40 percent of projects completed by the end of 2041 50 percent of projects completed by the end of 2046 65 percent of projects completed by the end of 2051 100 percent of projects completed after 2051
Water Quality: Urban Nonpoint Source Pollution Control	1. MS4 Illicit Discharge Detection and Elimination Program Modifications	Modifications completed by all seven MS4s by the end of 2026
	2. Development and Implementation of BMP Maintenance Tracking Systems	Systems implemented by all seven MS4s by the end of 2026
	3. Iron-Enhanced BMP Pilot Projects	1 project installed by the end of 2026 3 projects installed by the end of 2031

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Plan Implementation

- Recommend that local units of government adopt the plan
- Identify organizations that may have a role in implementation
  - Local governments
  - Federal, State, regional, and local agencies
  - Nongovernmental
- Discuss maintaining and revising the plan
  - Nine key element plans have expiration dates
  - The plan will need to be updated and reapproved in the future
- Schedule – full implementation over 30 or more years

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Implementation Schedule

Table 6.39
Implementation Schedule for General Recommendations of the Oak Creek Watershed Restoration Plan

Recommendation	Level of Implementation	Date to Complete Implementation	Comments
Water Quality: Urban Nonpoint Source Pollution Control Measures			
General Recommendations	--	Ongoing	There are also specific project recommendations that address these
MS4 IDDE Program Modifications[a]	Full	2026	Because implementation of this recommendation will require changes to the communities' MS4 discharge permits, it is anticipated that implementation will occur as part of the regular reissuance of the permits
Development of BMP maintenance tracking systems	Full	2026	
Iron-enhanced BMP Pilot Projects	1 project 3 projects	2026 2031	
Water Quality: Green Infrastructure Installation			
Implementation of MMSD Green Infrastructure Plan	48 percent 77 percent 100 percent	2026 2031 2035	Implementation schedule for MMSD green infrastructure plan is given in Table 6.10
Municipal Code Audit for City of South Milwaukee	--	2026	
Implementation of South Milwaukee Urban Forestry Plan	400 removals, 1,250 plantings	2031	
Develop and Implement Green Infrastructure Tracking System	Full	2026	

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Plan Costs

Table 6.40
Summary of Estimated Capital Costs for the Oak Creek Watershed Restoration Plan

Title	Cost (dollars)[a]
MMSD Green Infrastructure Plan through 2031[b]	131,260,000
City of South Milwaukee Urban Forestry Plan through 2031	917,000
Specific Projects in Table 6.1	65,828,300
Recreational Access and Use Recommendations	3,120,000
Monitoring Recommendations through 2031	2,012,700
Information and Education Element through 2031	106,000
Mill Pond and Dam Element[c]	542,000-12,410,000
Total	203,739,000-215,537,000

[a] *All costs are given in 2019 dollars.*

[b] *The capital cost of full implementation of the MMSD green infrastructure plan for the portions of the Oak Creek watershed that are located within the MMSD service area through 2035 is estimated as $170,241,000.*

[c] *The capital costs related to the Mill Pond and Dam are dependent upon the management alternative selected by Milwaukee County for implementation.*

Source: Milwaukee Metropolitan Sewerage District, City of South Milwaukee, SEWRPC

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Funding Programs

Table 6.42
Potential Funding Programs to Implement Recommendations of the Oak Creek Watershed Restoration Plan

ID	Administrator of Grant Program	Name of Funding Program(s)	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Cycle/Deadline	Contact Information
1	Captain Planet Foundation (CPF)	Small Grants Program (i.e., "ecoTech" and "ecoSolution" grants)	U.S.-based schools and nonprofit organizations with an annual operating budget of less than $3 million	1. Projects that provide hands-on environmental opportunities for youth 2. Projects that use the environment for applied and STEM learning 3. Projects that have real environmental outcomes 4. Projects that inspire youth and communities to participate in environmental stewardship activities	Grants range between $500 and $2,500	Two cycles: 1. September 15 through January 15 2. March 15 through July 15	info@captainplanetfdn.org (404) 522-4270
2	Charles Stewart Mott Foundation	Environmental Program (i.e., "Addressing the Freshwater Challenge" and "Special Initiatives")	Nonprofit conservation and environmental organizations	1. Projects that seek to strengthen the environmental community 2. Projects that implement effective public policies related to water conservation in the Great Lakes region	Grants - no maximum given	None	mott.org email: info@mott.org (800) 238-5651
3	Clif Bar Family Foundation	Clif Bar Family Foundation Small Grants	Nonprofit organizations	Projects that use a holistic approach toward: 1. Creating healthy food systems 2. Increasing outdoor activity 3. Reducing environmental health hazards 4. Building stronger communities	Average assistance of $7,000 provided	February 1 June 1 October 1	clifbarfamilyfoundation.org email: familyfoundation@clifbar.com (510) 596-6383
4	Cornell Douglas Foundation	Cornell Douglas Foundation	Environmental organizations	Funding areas include: 1. Environmental health and justice 2. Land conservation 3. Sustainability of resources 4. Watershed protection 5. Financial literacy for elementary and high school students	Grants range between $15,000 and $50,000	Announced by Foundation	cornelldouglas.org (301) 229-3008 email: cdf@cornelldouglas.org

PRELIMINARY DRAFT

Next Steps

- Stakeholder written comments for the Plan due by October 15, 2021
- Plan document completion late November 2021
- Stakeholder meeting to roll out completed plan on December 8, 2021
- Submit plan to WDNR for nine key element review mid-December 2021

Website and Contact Information

- Communication
  - SEWRPC website for comments and final Plan documents

  www.sewrpc.org/OakCreekWRP

- Contact
  - Laura Herrick – Chief Environmental Engineer
    262-953-3224 or lherrick@sewrpc.org

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Questions

- Questions

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Restore the Quality and Diversity of Instream Habitat

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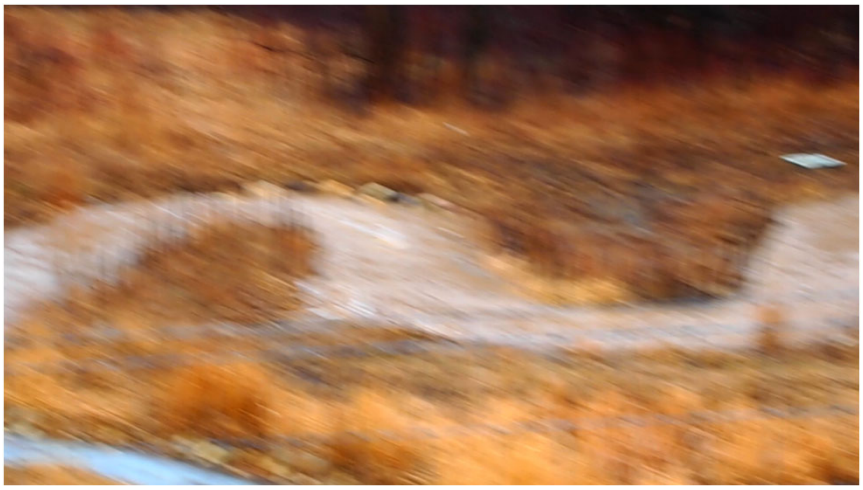
Installation of Natural Channel Design Elements:
Naturalized Meanders, Grade Control, Constructed Riffle Habitats



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Restore the Quality and Diversity of Instream Habitat

OAK CREEK WATERSHED FUTURE

Installation of Natural Channel Design Elements:
Naturalized Meanders, Grade Control, Constructed Riffle Habitats

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