B. SOUTH FORK - EAU CLAIRE RIVER

i. Overview

The South Fork of the Eau Claire River watershed is the largest HUC-10 within the Eau Claire River Watershed and encompasses parts of three Wisconsin counties: Clark (94 percent), Eau Claire (5 percent) and Taylor (1 percent). Located in the far eastern part of the watershed, the South Fork includes Mead Lake, Rock Dam Lake, Black Creek, and Hay Creek (not to be confused with other Black and Hay Creeks in the larger HUC-8). Mead Lake is the only water body within the Eau Claire River Watershed with an improved and enforceable TMDL; this TMDL establishes a pollutant loading limit for phosphorus. The watershed is composed of primarily county forest in the southern half and the northern half is used for agriculture. There are several thousand acres of wetlands and the watershed is located in two ecological landscapes: Forest Transition and the Central Sand Plains.

ii. Population & Land Use

Population in the watershed is estimated around 2,524 people with around 1,190 housing units. The two largest developed areas in this watershed include the towns of Withee - population 966 and Reseburg - population 776 (U.S. Census 2010).

The watershed is comprised primarily of forest and cropland. The growing season in this part of the state is long enough that agriculture is viable, although climatic conditions are not as favorable as in southern Wisconsin. The historic vegetation of the Forest Transition was primarily northern hardwood forest. These northern hardwoods were dominated by sugar maple and hemlock, and contained some yellow birch, red pine and white pine.

Forested areas consist primarily of northern hardwoods and aspen, with smaller amounts of oak and lowland hardwoods. The eastern portion of the Ecological Landscape differs from the rest of the area in that it remains primarily forested, and includes some ecologically significant areas. Throughout the Ecological Landscape, small areas of conifer swamp are found near the headwaters of streams, and associated with lakes in kettle depressions on moraines.

The historic vegetation of the area included extensive wetlands of many types, including open bogs, shrub swamps, and sedge meadows. Prairies, oak forests, savannas and barrens also occurred in the Ecological Landscape. An area of more mesic forest with white pine and hemlock was found in the northwest portion, including a significant pinery in eastern Jackson County. Most of the historic wetlands were drained early in the 1900s and are now used for vegetable cropping. The forested portion is

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**WATERSHED OVERVIEW (LC16)**

<table>
<thead>
<tr>
<th>BASIC INFO</th>
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<tbody>
<tr>
<td>Watershed Size:</td>
</tr>
<tr>
<td>Stream Miles:</td>
</tr>
<tr>
<td>Lake Acres:</td>
</tr>
<tr>
<td>Wetland Acres:</td>
</tr>
<tr>
<td>Trout Waters:</td>
</tr>
<tr>
<td>Population:</td>
</tr>
<tr>
<td>Pop/Sq Mile:</td>
</tr>
</tbody>
</table>

**LAND USE (LC16)**

<table>
<thead>
<tr>
<th>USGS 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
</tr>
<tr>
<td>Cropland</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Urban/Developed</td>
</tr>
<tr>
<td>Pastureland</td>
</tr>
<tr>
<td>Water</td>
</tr>
</tbody>
</table>
mostly oak-dominated forest, followed by aspen and pines. A minor portion is maple-basswood forest and lowland hardwoods.

iii. Water Quality

OUTSTANDING, EXCEPTIONAL, AND ASNRI WATERS

The South Fork—Eau Claire River Watershed has no designated Outstanding or Exceptional Resource Waters. As shown on the inset map, this watershed does include 9.6 miles of Class II, and 13.9 miles of Class III trout streams. Many of the larger rivers and streams, or parts thereof, are also designated as ANRSI waters due to the existence of endangered, threatened or other animal or plant species of concern.

Nearly all tributaries in the South Fork Eau Claire River Watershed are meeting their potential use as a warm water fishery. There are two impoundments, Mead Lake and Rock Dam Lake that support a warm water sport fishery and other recreational activities.

IMPAIRED WATERS

*South Fork/EC River - 29.12 miles (Impaired)*

South Fork Eau Claire River is considered a Cool-Cold Headwater, Cool-Cold Mainstem, Cool-Warm Mainstem and is currently impaired and proposed for 303d listing due to one or more pollutants and associated water quality impacts.

The South Fork Eau Claire River from headwaters to Mead Lake miles downstream was assessed during the 2016 listing cycle and total phosphorus sample data overwhelmingly exceed 2016 WisCALM listing criteria for the Fish and Aquatic
Life use. Biological impairment was observed (i.e. at least one macroinvertebrate or fish Index of Biotic Integrity (IBI) scored in the poor condition category) for the segment that extends from just south of Cth 29 up to the headwaters.

**Mead Lake - 310.27 acres (Impaired)**

Mead Lake is a eutrophic soft-water impoundment of the South Fork of the Eau Claire River with a surface area of 320 acres and a maximum depth of 16 feet. Mead Lake was placed on Wisconsin’s 1998 list of impaired waters due to impairments caused by excessive sediment and phosphorus. Mead Lake has good populations of walleye, bass, musky, and panfish. The shoreline of Mead Lake is highly developed with seasonal cabins and homes. The Clark County Forestry and Parks Department owns and operates the dam that creates the impoundment. They also own and operate a 71 site campground, swimming beach, and a day-use picnic playground area.

TMDLs have been established for phosphorus and sediment, which address three impairments in Mead Lake: degraded habitat, excess algal growth, and pH exceedances. The recommended seasonal (growing season) reduction written into the TMDL for Mead Lake, and based on the monitoring and modeling work, is a 30% reduction of sediment and a 30% reduction of phosphorus inputs to Mead Lake. Such reductions should decrease the frequency and intensity of algal blooms and improve the water quality of Mead Lake.

**Rock Dam Lake - 125 acres (Impaired)**

Rock Dam Lake is an impoundment of Hay Creek in Clark County. Flooding in 1993 damaged the dam and drained most of the lake. While the lake was drained, some landowners dredged small areas around their docks. After Clark County repaired the dam, bass and northern pike were stocked by WDNR fisheries staff. Due to the scarcity of lakes in this region, this impoundment is an important recreational resource to the area.

Rock Dam Lake became 303d listed in 1998 for impairments due to one or more pollutants that include mercury. It has a surface area of 125 acres and a maximum depth of 10 feet. It is classified as being eutrophic and is it has a limited warm water sport fishery, with bass and panfish the primary species. The watershed is primarily forested with numerous wetlands. The shoreline on the lake is highly developed. The Clark County Forestry and Parks Department operates a 150 site campground, swimming beach, and picnic areas on the lake.

Rock Dam Lake was assessed during the 2014 and 2016 listing cycles and total phosphorus sample data exceeded WisCALM listing thresholds for recreation. However, total phosphorus and chlorophyll data met thresholds for both Fish and Aquatic Life use.

**South Fork/Eau Claire River - 19 miles (Proposed)**

The South Fork of the Eau Claire River is proposed for listing due to total phosphorus pollutants which includes water quality use restrictions and a medium TMDL priority. Surface water quality in the South Fork Eau Claire River Watershed that drains to Mead
iv. Watershed Plans & Studies

MEAD LAKE MANAGEMENT PLAN (2010)

PLAN PURPOSE
This plan was created under a lake implementation grant by the Mead Lake and Watershed Partnership to implement and achieve the TMDL water quality goals established in 2008.

PLAN RECOMMENDATIONS
The recommendation of this plan are summarized in the Mead Lake and Watershed Partnership description later in subsection VI.

FINAL REPORT: MEAD LAKE TMDL IMPLEMENTATION LAKE PLANNING GRANT (2009-2010)

PROJECT PURPOSE
This report summarizes the activities completed under a lake implementation grant in 2009 and 2010 to help meet water quality goals established in the TMDL for Mead Lake. The project established a decision-making process for local citizen advocacy groups that led to the formation of the Mead Lake and Watershed Partnership (further described later in this section). Four primary activities were completed under the project:

- Sociological Surveys of 297 lake users, 116 lake property owners, and 171 watershed farmers.
- Literature Review that compiled existing data about Mead Lake and its watershed.
- Development of the Mead Lake Management Plan described previously.
- Four Educational Kiosks were erected at boat landings and picnic areas around the lake.

v. Other Watershed Projects & Activities

PHOSPHORUS AND SEDIMENT TOTAL MAXIMUM DAILY LOAD (TMDL) FOR MEAD LAKE, CLARK COUNTY, WISCONSIN (2008)

STUDY PURPOSE
The goal of this TMDL is to reduce external loadings of phosphorus and sediment by 30 percent to Mead Lake to address pH criteria exceedances, decrease algal blooms in summer, and address degraded habitat so Mead Lake can be improved for recreational purposes.

More specifically, the TMDL established a summer epilimnetic mean phosphorus goal of 93 ppb. This site-specific target represents an approximate 24% decrease in mean growing season P and a 34% decrease in mean chlorophyll levels. The phosphorus goal also corresponds to a 29 percent reduction in the amount of time the lake experiences summer algal bloom conditions in excess of 30 μg/L chlorophyll. A seasonal sediment reduction goal of 30% was also set for the TMDL.

However, the TMDL phosphorus goal for Mead Lake was set prior
to the existence of statewide phosphorus standards for Wisconsin. The 2010 phosphorus rule set a total phosphorus goal of 40 ug/L for lakes like Mead. The TMDL may need to be updated to address this goal.

The establishment of the TMDL also required development of an implementation plan (see below) and water quality monitoring. While there are currently no point sources discharging in the Mead Lake watershed, the TMDL does influence any future point-source or non-point source permitting.

MEAD LAKE WATERSHED TMDL IMPLEMENTATION - PHASE I: LAKES 319 INCREMENTAL PROJECTS (2011)

PROJECT PURPOSE
This grant-funded project began Phase I implementation of the Mead Lake Total Maximum Daily Load and is largely facilitated through the Clark County Land Conservation Department. Implementation actions included:

• Preliminary Watershed Inventory
• Field Assessment of Potential Sites
• Prioritization of Sites for Conservation Implementation
• Public Involvement
• Design and Permitting
• Construction and Inspection
• Maintenance and Monitoring

AQUATIC INVASIVES GRANT (2011)

PROJECT PURPOSE
The Friends of Beaver Creek Reserve (BCR), in conjunction with BCR’s Citizen Science Center (CSC), proposes to continue coordination of Clean Boats, Clean Waters (CBCW) outreach and monitoring at boat landings on 18 lakes and the St. Croix River in Chippewa, Clark, Dunn, Eau Claire and St. Croix Counties. Key project elements to include: 1) Funding for Regional AIS Coordinator, CSC Director, and four Watercraft inspector positions; 2) Travel and registration costs associated with staff training and CBCW activities; 3) Outreach to lake associations and garden centers; 4) Other outreach events and signage; 5) Water access inventory, and 6) Rearing Purple Loosestrife Beetles.

RUNOFF MANAGEMENT PROJECT (2013)

PROJECT PURPOSE
Provide 70% cost-sharing to assist in addressing inadequate manure storage sources of direct runoff to Mead Lake, the South Fork of the Eau Claire River, and waters of the state cited in the Notice of Intent issued by the Department of Natural Resources.

vi. Lake Districts & Associations

MEAD LAKE DISTRICT
See District Summary Sheet

MEAD LAKE AND WATERSHED PARTNERSHIP
See Partnership Summary Sheet

ROCK DAM LAKE ASSOCIATION
See Association Summary Sheet
The Mead Lake District was founded in 2000 and is responsible for assisting with the planning and management of Mead Lake in Clark County, Wisconsin. The Mead Lake District monitors the clarity of their lake using a secchi disk and volunteers have been monitoring the lake since 1996.

**Recent Projects & Lake Management Activities Include:**
- Grants - Lake Planning Grant
- Grants - Lake Protection Grant
- Monitoring - Water Clarity
- Newsletters
- Ordinances - Septic Ordinance
- Plans - Lake Management Plan
- Shoreland Restoration/Protection
- Watercraft Inspection

To address water quality, the District and its members have been active participants and supporters of the Mead Lake and Watershed Partnership described on the following page. This includes development and implementation of the Mead Lake Management Plan.
MEAD LAKE AND WATERSHED PARTNERSHIP

The Mead Lake & Watershed Partnership’s mission is to create and implement strategies to raise awareness of the interdependent link between people, land and water, and to protect and restore Mead Lake and its watershed in order to preserve the ecological, recreational and aesthetic value of these resources for future generations. The Mead Lake and Watershed Partnership formed in 2008 after more than seventy residents of the Mead Lake watershed met in Greenwood to discuss their concerns, and how to protect the lake.

In 2010 the Partnership completed the Mead Lake Management Plan, which included the following goals and recommendations:

Goal 1: Improve water quality and decrease the frequency and intensity of algae blooms, by decreasing sediment and phosphorus inputs to the lake.

- Develop a comprehensive watershed restoration and protection strategy (i.e., 9-key element plan).
- Apply for lake protection grants to target sources of phosphorus and sediment loading.
- Groundwater testing.
- Education on the sources of P and sediment, and management techniques.

Goal 2: Increase natural vegetation to produce biologically productive shore land that minimizes erosion and enhances natural aesthetics.

- Survey current lakeshore riparian conditions
- Installation of Vegetated Shoreland Buffers

Goal 3: Maintain healthy fishery with desirable species, and a diverse native aquatic plant community.

- Create a new lake bathymetric and physical habitat map.
- Promote and develop a more self-sustaining fishery.
- Education on the state of the fishery and how to maintain its health

The plan included additional goals and recommendations regarding the prevention of invasive and exotic species and the provision of safe, diverse recreational opportunities for all. The Partnership has not met regularly since 2013.
The Rock Dam Lake Association was founded in 1993 and is responsible for assisting with the planning and management of Rock Dam Lake in the Town of Foster in western Clark County, Wisconsin. The Rock Dam Lake Association monitors the clarity of their lake using a secchi disk and volunteers have been monitoring the lake since 1995.

ROCK DAM LAKE ASSOCIATION

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