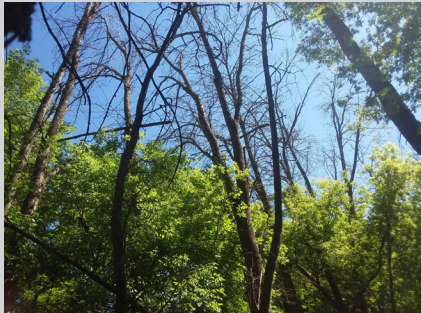


Inventory and Assessment of Culverts, Bridges, and Stormwater Outfalls



SEWRPC staff has completed an inventory and assessment of all stream crossings on the mainstem of Oak Creek, the North Branch of Oak Creek, and the Mitchell

Field Drainage Ditch. In total, 48 culverts and 34 bridges were assessed for general physical condition and for potential fish passage barriers. Locations of other potential fish passage impediments were also recorded—93 large woody debris jams, 13 weirs or drop structures, and the Mill Pond dam all potentially impact fish migration to varying degrees. In addition, general conditions have been assessed for 137 stormwater outfalls that discharge directly to the three main streams in the watershed.



Emerald Ash Borer Impacting Oak Creek Canopy



Ash trees killed by the Emerald Ash Borer line large stretches of riparian buffer along all three of the main streams surveyed within the Oak Creek watershed. Forest maintenance to remove dead trees may be necessary to avoid major woody debris accumulations within the stream channels and at road culverts and bridges.

Insufficient Riparian Buffer, Channelization, and Disconnected Floodplain

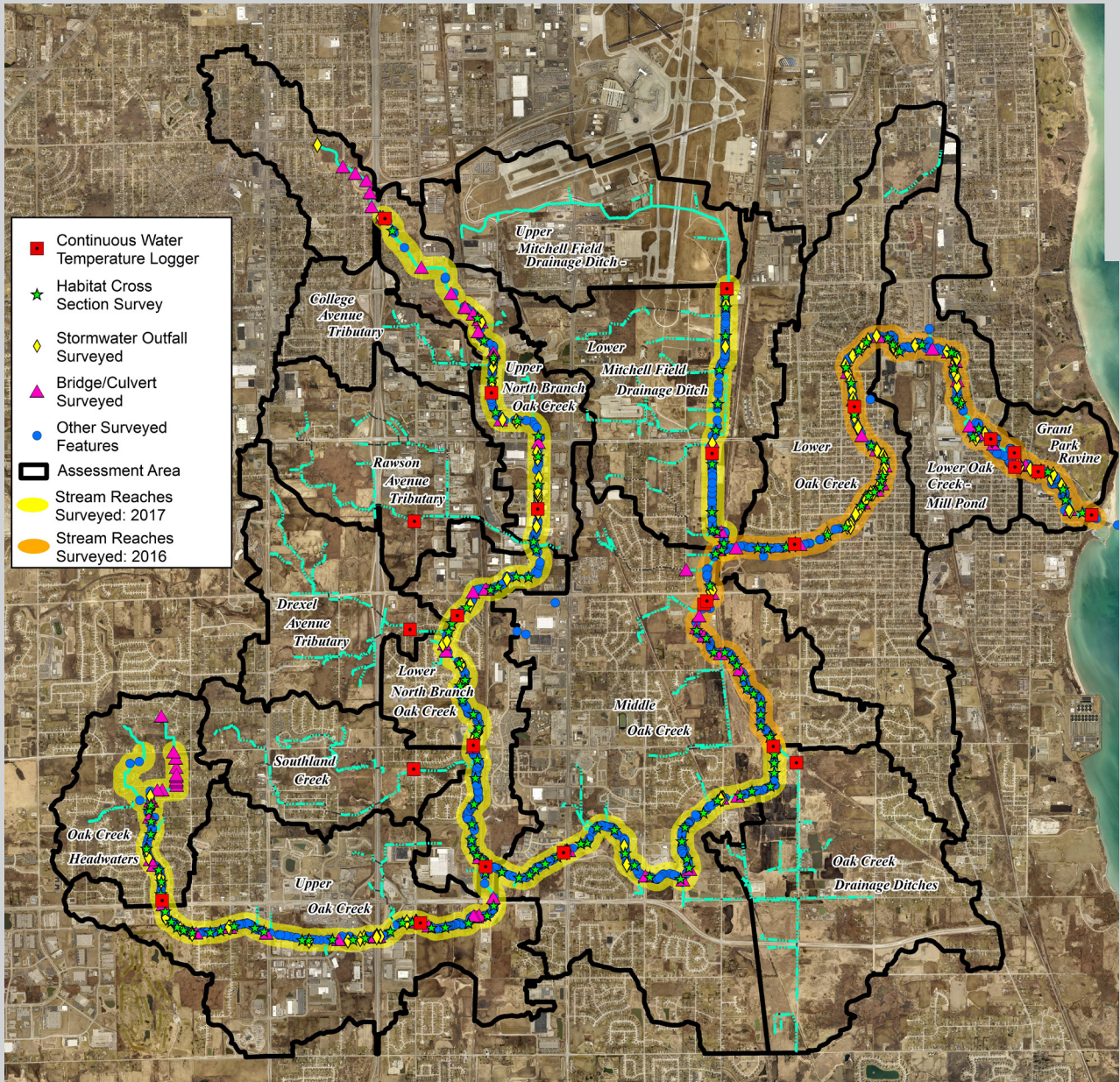


Much of the mainstem of the Oak Creek was found to have relatively intact riparian buffer corridors, thanks in most part to the Milwaukee County parkway system. Survey of the North Branch of Oak Creek and the Mitchell Field Drainage Ditch encountered more frequent stretches of stream with little or no riparian buffer protection (see upper right for North Branch and lower right for Mitchell Field Drainage Ditch). Riparian buffers help to filter nutrients and other pollutants carried by stormwater runoff before they reach waterways. This nutrient rich runoff can lead to excessive algal growth (see North Branch of Oak Creek, upper left). Riparian buffers also provide vital habitat for aquatic and terrestrial organisms. Channelization can lead to disconnected floodplains through incision, as shown above. Streams that are disconnected from their floodplain are more vulnerable to streambed and bank erosion and habitat degradation.

Oak Creek Watershed Restoration Plan

Instream Survey Progress Update-Fall 2017

SEWRPC staff has completed the instream survey of 13 miles of Oak Creek’s mainstem, 5.5 miles of the North Branch of Oak Creek, and 1.8 miles of the Mitchell Field Drainage Ditch. To facilitate analysis of the watershed on a finer scale, the Oak Creek watershed was divided into 15 unique “assessment areas” (see map below). These assessment areas correspond to groupings of subbasins and were determined based on multiple factors including contributing land areas, land use characteristics, and hydrologic and instream habitat characteristics. These assessment areas will be the basis for analysis of the watershed throughout the planning process.



Water Temperature Monitoring

Water temperature monitoring in streams throughout the Oak Creek watershed concluded in October 2017. Data loggers were simultaneously recording water temperatures every hour since May 2016 at 24 sites on the mainstem of Oak Creek, the North Branch of Oak Creek, the Mitchell Field Drainage Ditch, and several unnamed tributary streams (see monitoring locations on map above). This information will be essential to assess water quality criteria and to characterize aquatic communities.

Source: SEWRPC



Instream Habitat Assessment



Cross-section surveys were conducted at 163 sites along Oak Creek’s mainstem, the North Branch of Oak Creek, and the Mitchell Field Drainage Ditch. An additional 467 pool habitats and 342 riffle habitats were recorded to assess the overall distribution of instream habitat types. Pools are deep water areas with slower water velocities that serve as critical habitat for resting fish. Riffles are shallow water areas with higher water velocities and larger substrates that serve as critical spawning habitat for fish and important habitat for macroinvertebrates.

Important Biological, Hydrologic, and Geomorphic Features



The locations of notable features including groundwater seepages, tributary streams, drain tiles, trash, freshwater mussels, and other aquatic organisms were recorded and photographed. In the photo above SEWRPC staff stand on a beaver dam impounding a large amount of water on the Mitchell Field Drainage Ditch. The photo in the upper right shows a large native freshwater mussel found in Oak Creek’s mainstem, downstream of the confluence with the North Branch. The photo in the lower right shows a juvenile snapping turtle encountered on the North Branch of Oak Creek near the MATC campus.



Streambank Erosion



Some streambank and bed erosion is normal and healthy in a stream system. However, channelization and altered hydrology can lead to excessive bank and bed erosion. Sediment loads resulting from excessive bank erosion can destroy aquatic habitat and spawning and feeding areas for fish, contribute to downstream water quality degradation, and contribute to the filling of the Mill Pond in Grant Park. Altogether, SEWRPC staff recorded 135 streambank erosion sites totaling over 3,600 feet of eroding bank on the Oak Creek mainstem, the North Branch of Oak Creek, and the Mitchell Field Drainage Ditch. Above are photos of severe bank erosion sites on the Mitchell Field Drainage Ditch (left) and the North Branch of Oak Creek (right).