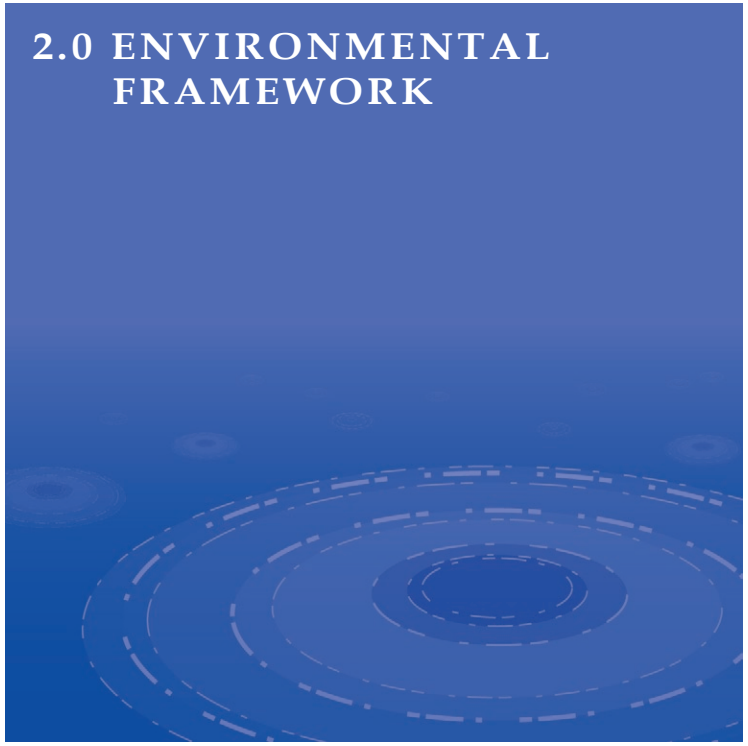
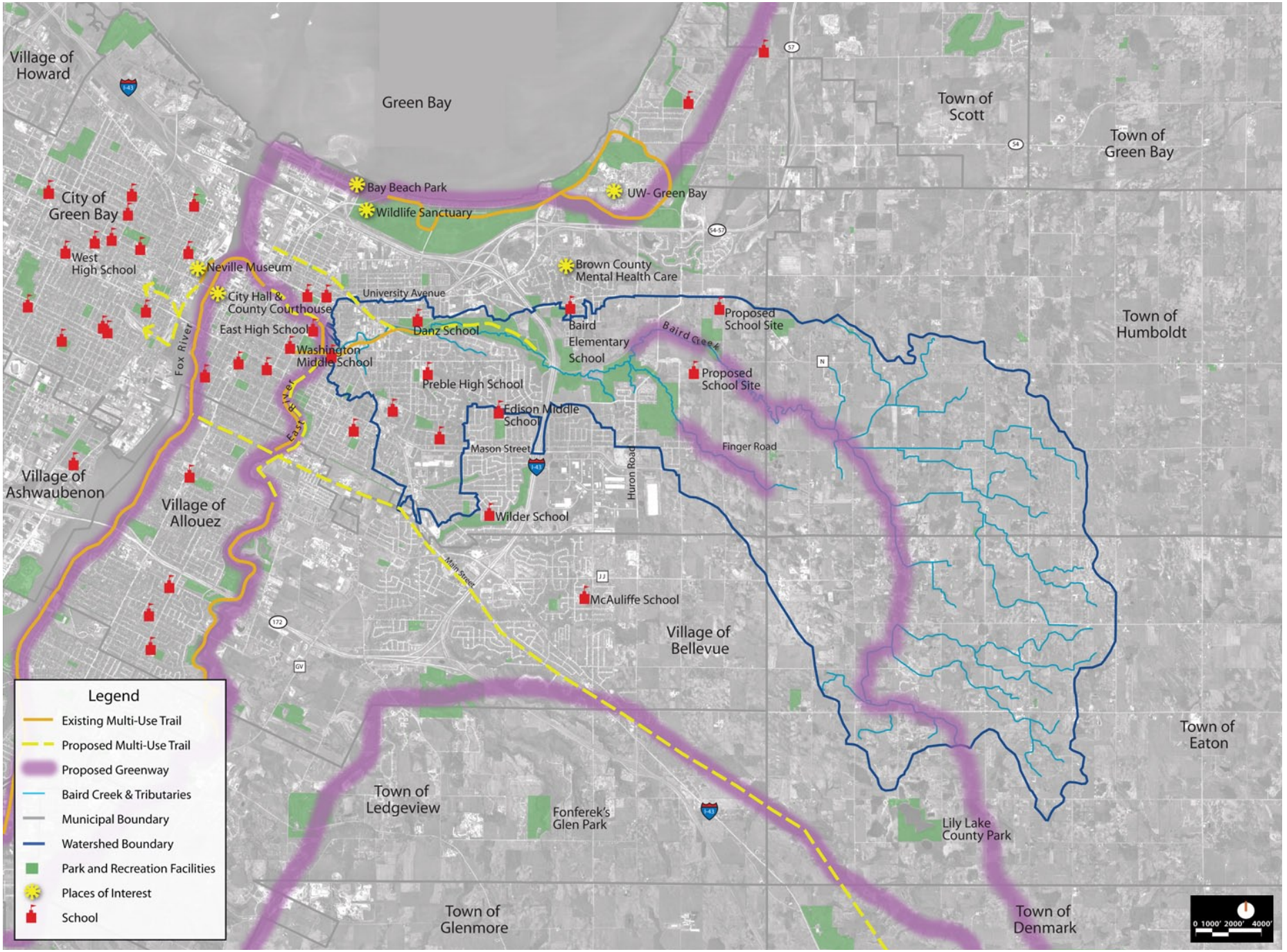
2.0 ENVIRONMENTAL FRAMEWORK



REGIONAL CONTEXT DIAGRAM



2.1 REGIONAL CONTEXT

This section summarizes the analysis of site opportunities and constraints phase of the project, which assessed the current physical characteristics of the Greenway and the opportunities and limitations for future uses, improvements, and restoration projects. Mapping was based on GIS data compiled by Brown County and City of Green Bay Public Works, and the most current Greenway base map file from City of Green Bay Parks, Recreation, and Forestry. All aerial photography used for the analysis graphics was taken in 2005. Habitat information was included from the Baird Creek Greenway Ecological Assessment and Management Plan completed in 2003. The diagrams also incorporated non-digital information from the Brown County Comprehensive Plan, a site walk with BCPF Board members, a map of Baird Creek ski trails from the City Parks Department, and a hand-drawn map of existing trails and trail work by Jonathan Viste of WORBA.

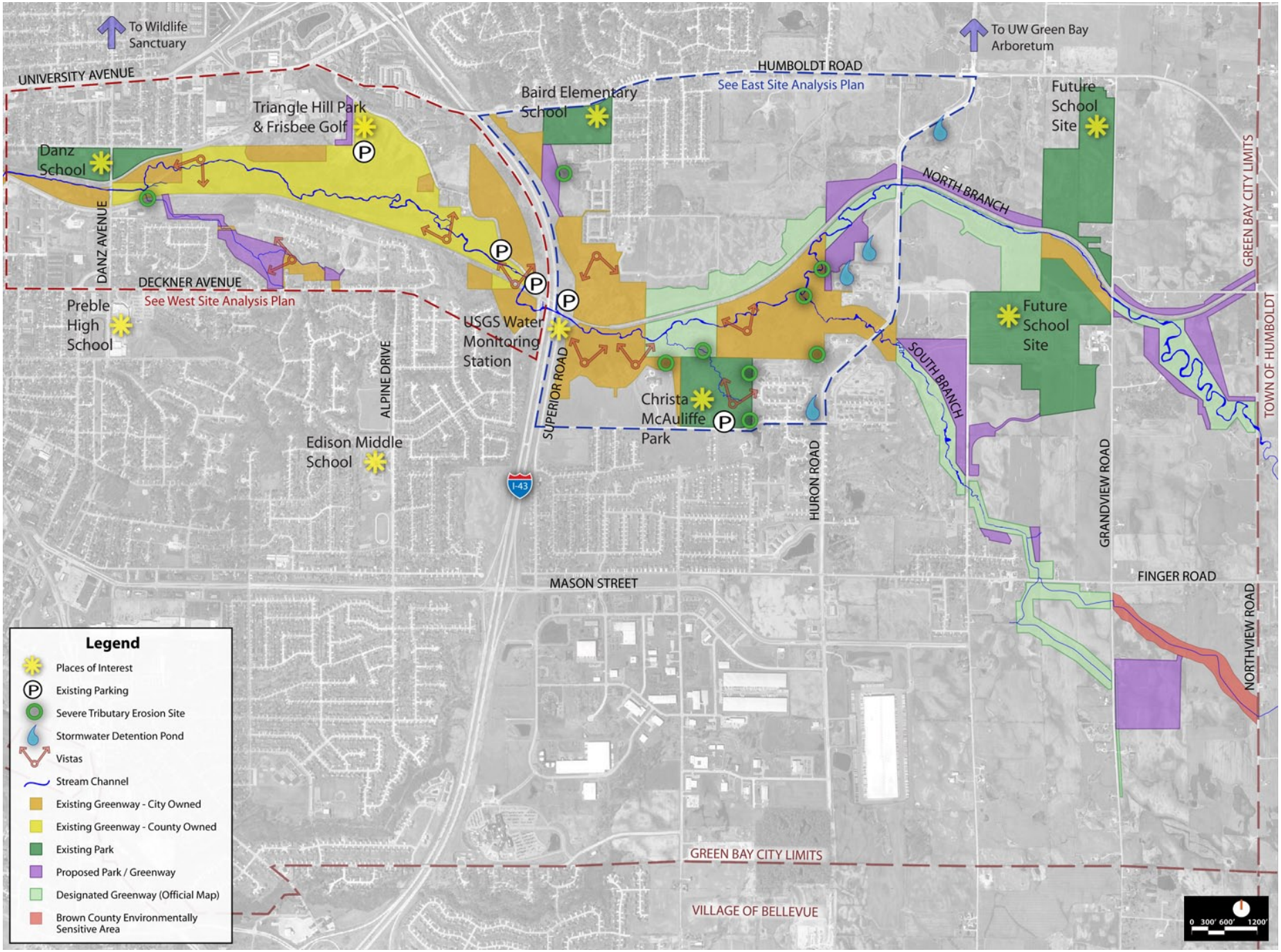
The information collected from these sources was compiled into two types of summary graphics: (1) a Regional Context Diagram and (2) Site Analysis Diagrams. Upon evaluation of the regional context and site analysis, opportunities and limitations for the site were summarized graphically into Environmental Framework Diagrams. Finally, additional information was acquired through a qualitative assessment of the habitats between Huron and Grandview Roads to guide the placement of trails and other facilities as the Greenway expands upstream.

Regional Context

The Regional Context Diagram establishes the site within its cultural and natural setting, showing connections with other green spaces, watersheds, population centers, cultural amenities, and other facilities. As shown by the diagram on the facing page, Baird Creek flows west from headwaters in the Towns of Humboldt and Eaton through the City of Green Bay to empty into the East River just to the east of downtown. It is part of the Lower Fox River drainage basin, a major contributor to Lake Michigan and the Great Lakes. The Greenway is located along Baird Creek within the Green Bay City limits, spanning both sides of Interstate 43. As a large environmental corridor surrounded by urban land use, the Greenway offers a rare opportunity for city residents to experience nature only a short distance from their homes.

Multiple connections to other open spaces are possible from the Baird Creek Greenway. Trail connections could extend north along Danz Avenue to the Bay Beach Wildlife Sanctuary and north along Huron/Bay Settlement Road to the UW-Green Bay Cofrin Arboretum. A multi-use trail is also planned within the Greenway that will provide an alternative transportation route to downtown Green Bay, as well as connections to the East River and Fox River Trails. Future greenways identified in the Brown County Comprehensive Plan could also link southeast to Lily Lake County Park and north along the Niagara Escarpment. Trail loops throughout these Greenways would provide wonderful recreational opportunities for the region.

SITE ANALYSIS DIAGRAM, OVERALL



2.2 SITE ANALYSIS

A series of three Site Analysis Diagrams provides a closer view of the Greenway and its physical features. First, the overall view on the facing page shows the Greenway from Berger Street to Northview Road. This graphic illustrates the different ownerships of the Greenway and proposed acquisition or easement areas for Greenway expansion. Expansion areas are listed in two categories: (1) areas currently designated as Greenway on the City's official map, and (2) areas that are proposed additions to the official map. The graphic also shows the main channel of Baird Creek, which splits into the North and South Branches upstream of I-43. Major streets, schools located near the Greenway, parking areas, severe tributary erosion sites, stormwater ponds, and prominent views are also identified.

Site analysis enlargements of Danz Avenue to I-43 and I-43 to Huron Road are provided on the following pages. These diagrams graphically portray more detailed physical characteristics of the Greenway, including:

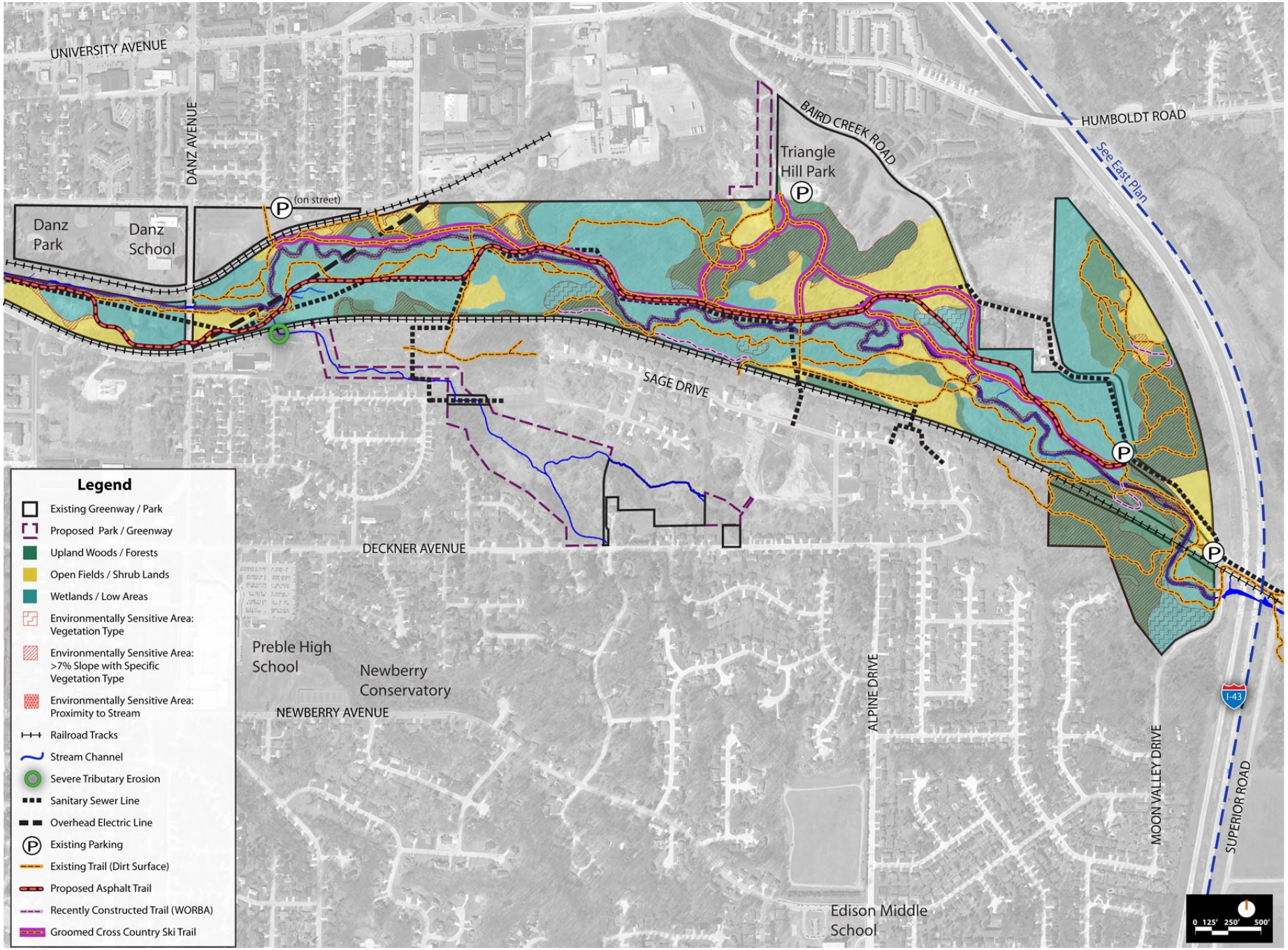
- General habitat types identified by the 2003 Baird Creek Greenway Ecological Assessment and Management Plan
- Environmentally sensitive areas
- Existing utilities within the Greenway
- Railroad corridors
- Parking areas
- Existing trails identified by WORBA, including recent trail realignments
- Cross country ski trails
- The proposed multi-use trail alignment from Danz Avenue to I-43

The 2003 ecological assessment identified 17 different plant communities located in the Baird Creek Greenway, categorized into three general types: (1) upland woods/forests, (2) wetlands/low areas, and (3) open fields/shrub lands. The site analysis enlargements show the locations of each of these three general habitat types. Specific communities included under the upland woods/forest designation are northern dry-mesic forest, oak openings/woodlands, young disturbed woods, mesic forest, hemlock relict, and mesic white cedar forest. Wetland/low area communities include floodplain forest, young low disturbed woods, wet white cedar forest, stream terrace wet-mesic forest, seep wetland, sedge meadow, and degraded wetland.

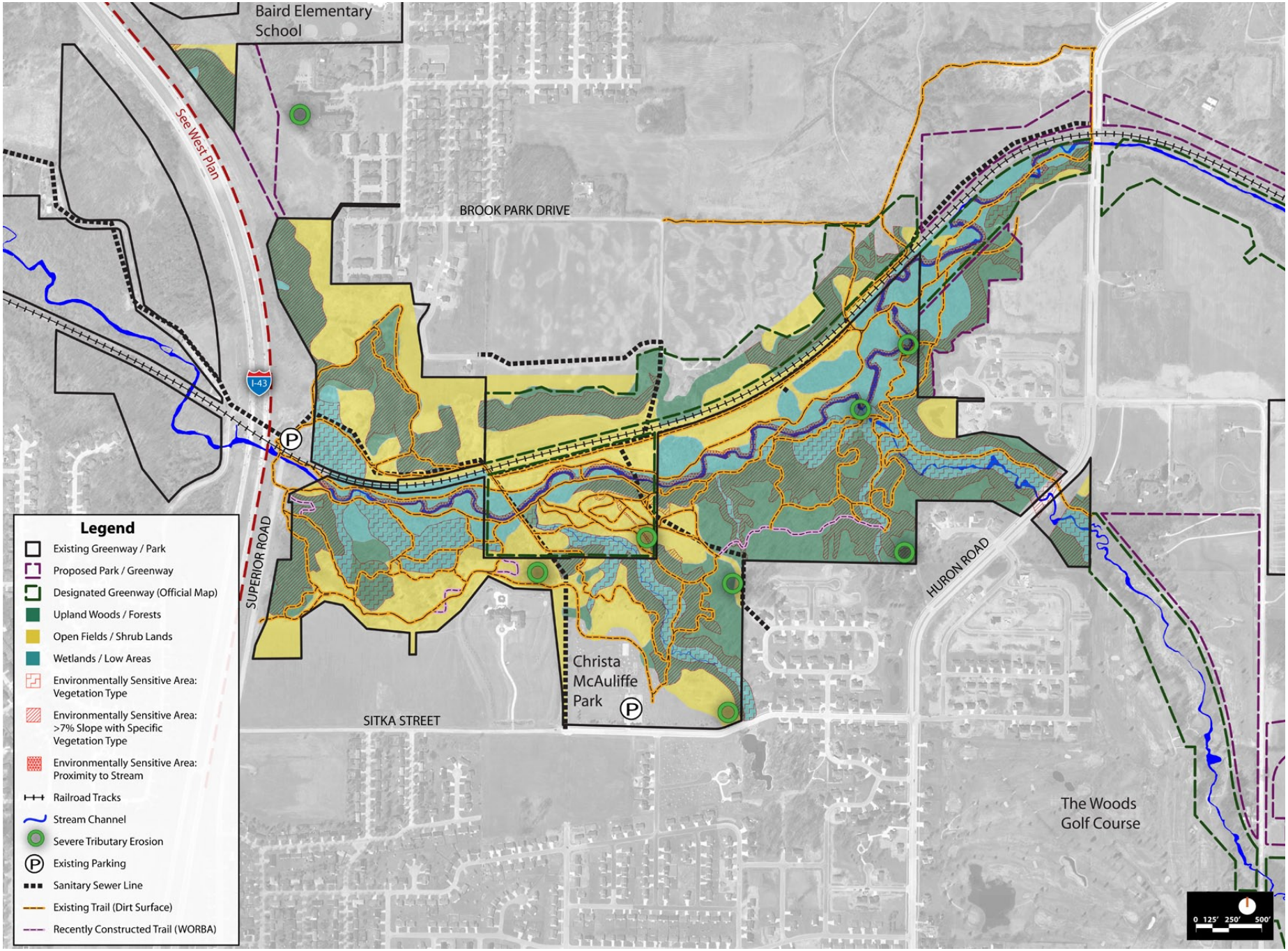
Confluence of the South (left) and North (right) Branches of Baird Creek

View facing north near the northwest corner of Christa McAuliffe Park

SITE ANALYSIS DIAGRAM, WEST ENLARGEMENT



SITE ANALYSIS DIAGRAM, EAST ENLARGEMENT



Overhead electric lines near Danz Avenue

Canadian National Railway corridor east of I-43

The open fields/shrub lands category contains old fields dominated by cool-season grasses, prairie remnants, shrub and tree invaded old fields, and agricultural cropland.

Environmentally sensitive areas (ESAs) are defined in the 2003 ecological assessment as "those areas containing significant remnant native communities, or areas susceptible to degradation from over-use; and therefore include remnant natural communities, significant native vegetation on steep slopes, or waterways." ESAs are broken into three categories within the Greenway, and are shown as hatched patterns on the site analysis enlargements. Certain ESAs are considered fragile habitats based on vegetation type alone. These include hemlock forest remnants, mesic white cedar forests, wet white cedar forests, stream terrace wet mesic forests of the smaller tributaries and South Branch, seep wetlands, and sedge meadows. Trails should generally avoid these areas, if possible. The second classification of ESA shown on the site analysis includes areas with greater than 7-percent slope with specific vegetation types, including northern dry-mesic forests, oak savannah, and old fields containing prairie remnants. These areas may be less impacted by trails than the first ESA type, assuming proper design and maintenance. The final ESA category includes wetland communities immediately adjacent to the stream channel, such as floodplain forest or young low disturbed woods. In general, trails should be located at least 20 feet away from the high water mark of the creek.

Two types of utility corridors are present within the Greenway. A large overhead electric line traverses the Greenway diagonally from Danz Avenue to Clement Street, as shown on the west enlargement. A sanitary sewer main also follows the stream corridor for the length of the Greenway, continuing along the North Branch to Huron Road. Several lateral lines branch off the main, providing easements that could also be used as pedestrian access points.

Two railroad corridors are also located within the Baird Creek valley. Canadian National Railway owns a railroad line that runs from Green Bay east to Luxemburg. This line runs along the southern boundary of the Greenway from Berger Street east to I-43, and bisects the existing and proposed Greenway from I-43 east to Grandview Road. Railroad service on this tract runs approximately once every two

weeks. The second railroad corridor bordering the Greenway is a spur that serves Packerland Packing. The track runs between Danz School and the Greenway as shown on the west enlargement.

Several parking areas are located within the Greenway. On the west enlargement, on-street parking is available at Basten Street near Danz School. Three paved parking lots are also located off of Baird Creek Road, including a lot at Triangle Hill Park and Frisbee Golf Course that accommodates approximately 80 vehicles, a centrally located lot that holds approximately 20 cars, and one pull-through lot near I-43 that provides space for approximately 6 vehicles. On the east enlargement, a small, unpaved parking area is available at the intersection of Superior and Baird Creek Roads that accommodates approximately 8 cars; a large paved lot located at Christa McAuliffe Park holds approximately 70 vehicles.

Existing trails shown on the enlargement plans are generally unimproved and dirt-surfaced. Locations of existing trails were identified by WORBA, including recent work that the organization has completed to realign and/or close trails in poor condition. Cross country ski trail routes and the proposed multi-use asphalt trail alignment were provided by the City of Green Bay. Ski trails are located west of I-43, and are groomed in winter as weather permits. The multi-use trail is currently being designed by the Parks Department, and will provide an alternative transportation corridor from I-43 to downtown. A bridge will be constructed along this trail route to cross Baird Creek. The City envisions extending this trail to Huron Road within the next 5 to 10 years.

Pull-through parking lot west of I-43 on Baird Creek Road


Example of existing dirt-surfaced trail

2.3 ENVIRONMENTAL FRAMEWORK

Potential demonstration site: Garbage gulch

Potential demonstration site: Tributary erosion

The Environmental Framework Diagram expands upon the Regional Context and Site Analysis to identify opportunities and constraints for locating program elements within the Baird Creek Greenway. This diagram is split into two sections on the following pages: Danz Avenue to I-43 and I-43 to Huron Road.

First, the diagrams show conflicts along existing trails with ESAs and Greenway boundaries. Trail segments located within ESAs are highlighted in red on the diagrams, and trails outside areas currently under City or County ownership are identified in white. Areas with overly dense networks of trails are also highlighted on the maps.

Existing parking areas and potential pedestrian access points by easements or from existing roadways are identified. Existing or potential trail railroad crossings are also noted. Any improvements at these crossings will require coordination with Canadian National Railway.

Opportunities for connection to other green spaces from Baird Creek also exist. Bike routes could be approved following Danz Avenue north to the Bay Beach Wildlife Sanctuary and south to Preble High School. A bike route is currently provided along Huron and Bay Settlement Roads to the UWGB Cofrin Arboretum. However, a connection from this route to the Greenway trail system should be constructed.

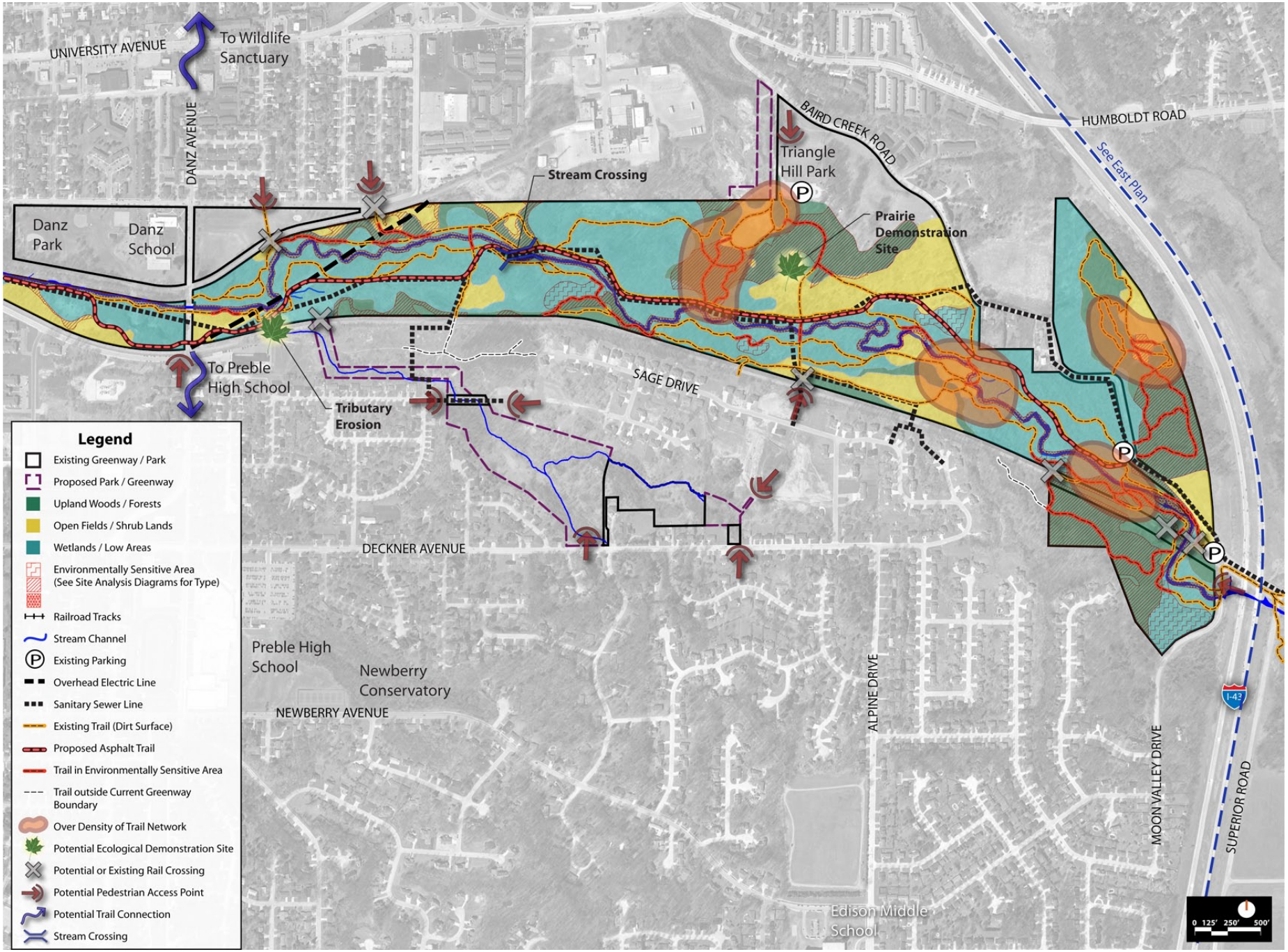
The diagrams also identify demonstration sites that could be established in the near future to educate Greenway users on various ecological subjects. In general, these demonstration sites are located near high-use areas such as current access points or highly used trails, and would provide research areas to explore experimental restoration strategies. Topics include stabilizing tributary erosion, removing garbage, restoring sedge meadows, controlling *Phragmites australis*, restoring prairie, controlling stormwater, and restoring trails through wetland areas.

In addition to the tributary erosion demonstration sites, all other locations of active, severe erosion on Baird Creek and its tributaries should be remediated on a near-term basis. These sites are especially prevalent east of I-43, along steep tributaries on the Greenway's southern border.

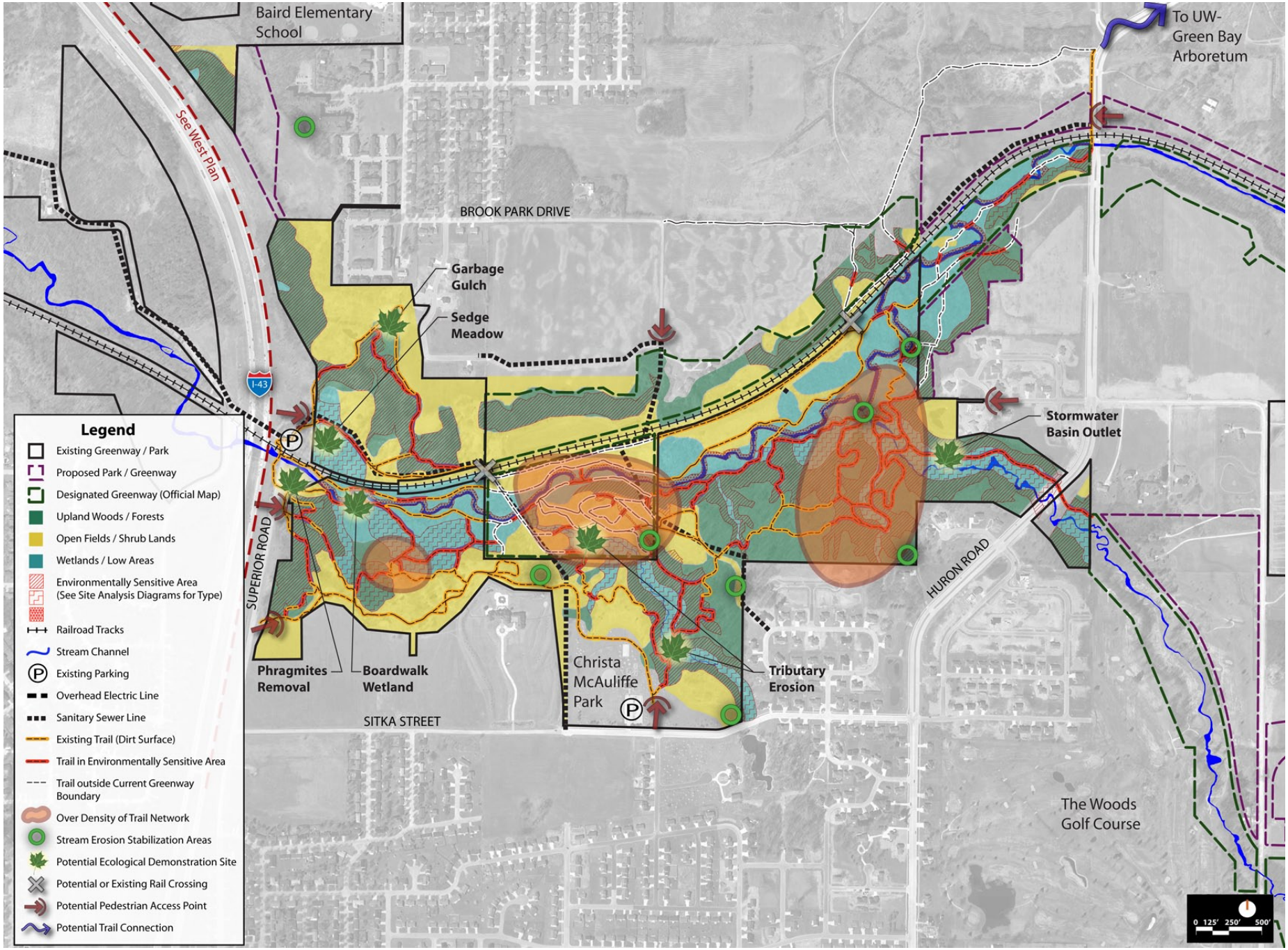
Utility lines located within the Greenway will constrain habitat restoration efforts. The BCPF will need to work with the owner of the overhead electric line near Danz Avenue to establish vegetative management strategies that will control invasive species and encourage a native herbaceous layer to flourish. The utility should stabilize the base of their poles to prevent erosion that has occurred in the past. Service to the sanitary sewer main running along the creek should also be coordinated to limit its effects on the ecological communities.

Potential demonstration site: Stormwater basin outfall

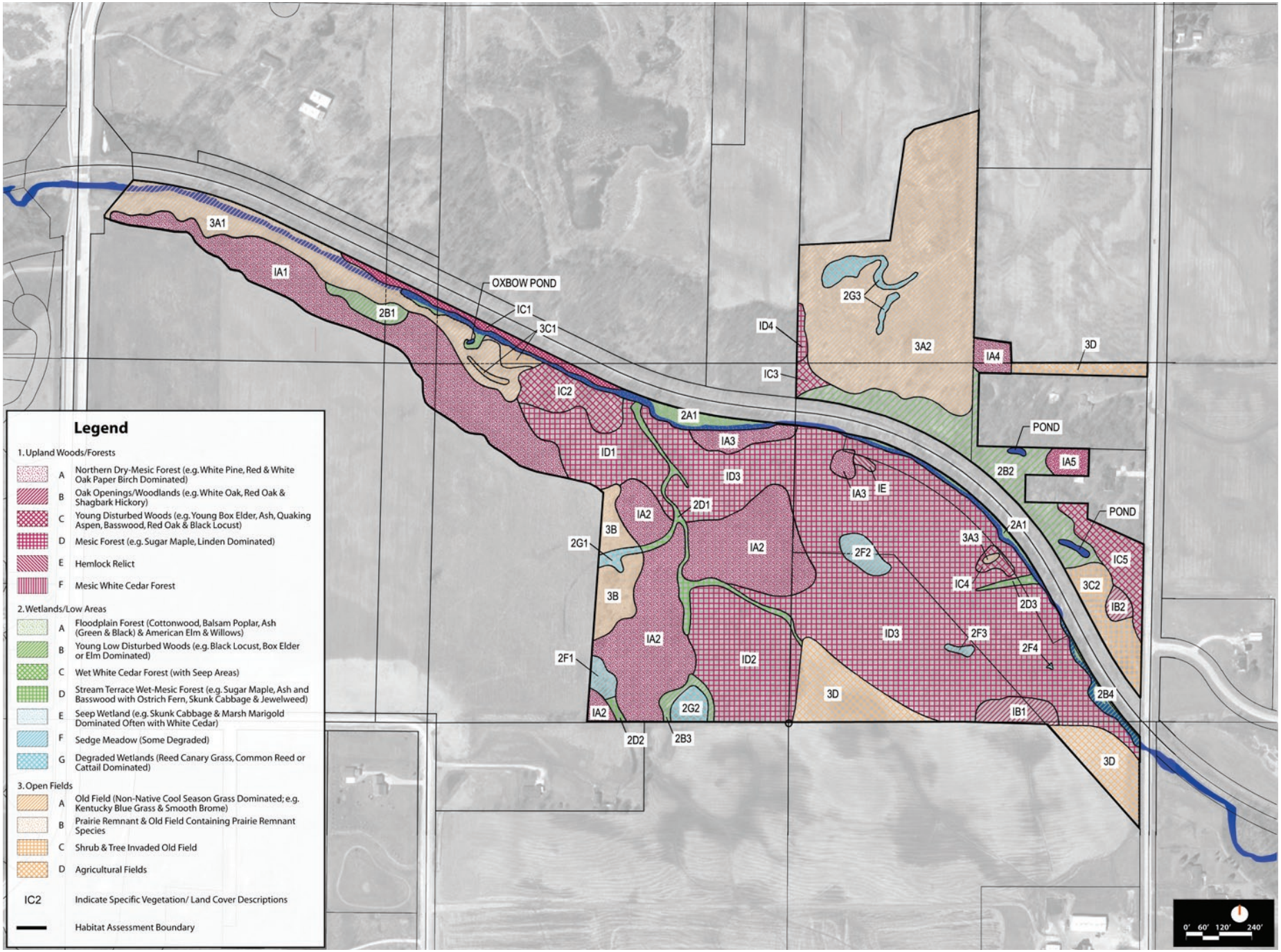
ENVIRONMENTAL FRAMEWORK DIAGRAM, WEST



ENVIRONMENTAL FRAMEWORK DIAGRAM, EAST



HABITAT ASSESSMENT DIAGRAM, HURON TO GRANDVIEW ROAD



2.4 HABITAT ASSESSMENT - HURON TO GRANDVIEW ROAD

The final component of the analysis of site opportunities and constraints was an update of the Baird Creek Greenway Ecological Assessment and Management Plan to include the area along the North Branch of Baird Creek between Huron and Grandview Roads. In June 2006, JJR staff and Gary Baier of the BCPF conducted a site walk to qualitatively assess the plant communities in this area, as compared to the 17 habitat types identified in the previous study. Approximate habitat boundaries were noted on an aerial photo during the walk. The graphic on the facing page shows the types and locations of observed habitats.

Upland Woods/Forest Habitats

Six types of upland forest habitat were identified in the 2003 ecological assessment as occurring within the Baird Creek Greenway. Of these six habitats, five were found in the current qualitative assessment between Huron and Grandview Roads, with only mesic white cedar forest not occurring in the surveyed area. The following provides a general description of each individual upland habitat area identified in the recent assessment, as keyed on the map at left (note: see the 2003 study for a general description of each habitat type):

1A – Northern Dry-Mesic Forest

- 1A1. An area of steep slopes generally characterized by oaks, birch, aspen, and hickory. Towards the western edge of this zone where the wooded area narrows near Huron Road, the forest type is less distinct and species become more mixed from other habitat types.
- 1A2. Rolling upland area characterized by oak, birch, and white pine.
- 1A3. Smaller areas of oaks located on dry ridges within the generally mesic forest matrix.
- 1A4. Steep area of oak dominated upland located adjacent to agricultural fields.
- 1A5. Oak dominated upland forest located near residential lots.

Northern dry-mesic forest 1A2

Mature mesic forest 1D1

Young mesic forest 1D3

Mesic forest 1D3 along stream, showing depth of old channelization

1B – Oak Openings / Woodlands

1B1. Distinguished from the 1A forests by the broad, spreading canopies of the mature oak trees within this zone. The understory is relatively young. It should be noted that garlic mustard has substantially invaded the herbaceous layer within this zone, and should be addressed immediately to avoid its spread to adjacent woods.

1B2. Small knoll of broadly spreading oak trees within a predominantly old field / shrub-invaded area.

1C – Young Disturbed Upland Woods

1C1. Young woods characteristic of a tree-invaded old field above the channelized stream.

1C2. Young mixed woodland above channelized stream so as to be out of the floodplain. Evidence of planted rows of mature white pine near edge of woods.

1C3. Young mixed woodlands on sloping topography.

1C4. Young woods moving into the area surrounding a small, open old field habitat.

1C5. Young woods characteristic of a tree-invaded old field on sloping topography near Grandview Road. Several invasive species present.

1D – Mesic Forest

1D1. Mature mesic woodland characterized by a maple and linden canopy.

1D2. Mesic woodland including maple, linden, and beech. One lone hemlock tree is located within this zone.

1D3. Relatively young mesic woodland dominated primarily by lindens. This zone covers the greatest expanse of wooded area within the assessment area. Along the entire assessment area, the stream was deeply channelized (most likely when the railroad was constructed) resulting in steep slopes on both sides of the channel and minimal floodplain. Birch and aspen are located within this zone on the steep slopes immediately adjacent to the channelized stream. Scattered patches of relatively young buckthorn exist generally close to the stream channel. Also within this

zone, a garbage pile exists on the far south edge of the timber next to the agricultural fields, visible on aerial photography as a small white patch.

1D4. Mesic woodland characterized by a maple and linden canopy along the property edge. This habitat extends onto an adjacent parcel that was not part of the assessment area.

1E – Hemlock Relict

1E. This hemlock relict contains approximately 10-12 trees, with trunks varying in size from 1-inch to several inches in diameter. No small seedlings were observed.

1F – Mesic White Cedar Forest: Not found in assessment area

Wetland / Low Area Habitats

Seven types of wetland and lowland habitats were identified in the 2003 ecological assessment as occurring within the Baird Creek Greenway. Of these seven habitats, five were found in the current qualitative assessment between Huron and Grandview Roads, with wet white cedar forest and seep wetlands not occurring in the surveyed area. The following provides a general description of each individual lowland habitat area identified in the recent assessment:

2A – Floodplain Forest

2A1. Willow dominated forest located where the channelized stream bends away from the railroad tracks, creating a floodplain at stream level. This forest also extends both up and downstream at water level within the channelized section, although its quality is minimized by the reduced width of the habitat type.

Stream terrace habitat 2D1, characteristic of upper channel reaches

Stream terrace habitat 2D2

Sedge meadow 2F1, note phragmites invasion

Sedge meadow 2F2

2B – Young Low Disturbed Woods

2B1. Area of elm and linden young woods located along an old stream meander, which is much higher than the current stream elevation as it was created prior to channelization.

2B2. Young woods characterized by box elder and elm. Wetter soils created by modification of drainage patterns from raised railroad corridor. Multiple invasive species present.

2B3. Young ash woods surrounding an open wetland habitat.

2B4. Young box elder, elm, and ash woods located within the floodplain. Thick buckthorn also present.

2C – Wet White Cedar Forest: Not found in assessment area

2D – Stream Terrace Wet-Mesic Forest

2D1. Large drainage channel network extending through site. Lower end of channel has extensive semi-shaded sedge meadow complexes with standing water. Upper reaches of channels are eroded ravines with little vegetation along bottom of channel but quite extensive vegetation present on side slopes. Relatively small stretches of the ravines are actively cutting due to agricultural runoff from adjacent parcels, and have higher degrees of erosion.

2D2. Forested drainage channel with standing water. Ash canopy over pool with sedge and iris herbaceous edge.

2D3. Wider drainage channel similar to upstream characteristics of 2D1.

2E – Seep Wetland: Not found in assessment area

2F – Sedge Meadow

2F1. Large sedge meadow on edge of agricultural area. Relatively intact despite agricultural runoff contributions to hydrology. Small phragmites invasion beginning that should be dealt with immediately to remove threat.

2F2. High quality, large sedge meadow surrounded by forest.

2F3. Smaller wetland, with a mix of grasses and sedges and deeper standing water surrounded by forest. Great amphibian habitat with many frogs observed.

2F4. Small sedge meadow pocket at end of shallow drainage channel.

2G – Degraded Wetlands

2G1. Drainage channel through old field dominated by non-native grasses.

2G2. Grass and cattail-dominated wetland. This wetland most likely was originally similar to sedge meadow 2F1 or 2F2, with runoff from adjacent agriculture changing the hydrology and community composition.

2G3. Phragmites-dominated wetlands within an open field habitat that appears to be an old quarry site.

Open Field Habitats

Four types of open field habitat were identified in the 2003 ecological assessment as occurring within the Baird Creek Greenway, all of which exist between Huron and Grandview Roads. The following provides a general description of each individual open field habitat area identified in the recent assessment:

3A – Old Field (Cool Season Non-Native Grasses)

3A1. Old field meadow. Existing farm access drive provides good walking trail through zone.

3A2. Open habitat dominated by non-native grasses with scattered shrubs and trees that appears to be an old quarry site. Several trash piles noted with old tires and car parts. Difficult area to walk through due to uneven ground surface.

3A3. Small pocket of old field within the forest matrix. A deer baiting area (old wagon) is located within this pocket, with a deer stand in the timber to the west.

Sedge meadow 2F3

Grass and cattail dominated wetland 2G2 with young forest edge

Old Field 3A1

Phragmites-dominated wetlands 2G3 in open old field

3B – Old Field Containing Prairie Remnant Species

3B. Area dominated by brome and other agricultural grasses that contains a few pockets of native prairie species. This zone also has scattered hawthorn and other shrub species. The topography within this area is hummocky, and may contain wet pockets.

3C – Shrub and Tree Invaded Old Field

3C1. Shrub areas on levee along stream channel and within old field meadow.

3C2. Shrub-invaded flat area along railroad tracks with several open grassed pockets.

3D – Agricultural Fields

3D. Areas of active agricultural land use, including both alfalfa and row crops.

Ponds

Three areas of deep standing water were noted during the habitat assessment. An oxbow pond in a former stream channel is located approximately one-third of the distance from Huron to Grandview Road along the stream. This pond is surrounded by sedges, appears to be fairly diverse, and may still be connected to the stream channel during flood events. The other two ponds are located on the north side of the railroad tracks closer to Grandview Road. These ponds are deeply shaded, stagnant pools surrounded by a young low disturbed woods composed almost entirely of weedy native and invasive species (buckthorn, honeysuckle, prickly ash, and boxelder).