Agenda
Natural Features Protection Review Board

City of Kalamazoo

Tuesday, June 23, 2026 4:00 PM

City Commission Chambers at City Hall - 241 W. South Street

A. CALL TO ORDER/ROLL CALL

1. Excuse Absent Board Members **(Action: Motion to Excuse Absent Board Members)**

B. ADOPTION OF AGENDA

(Action: Motion to approve the agenda)

1. Agenda Approval

C. APPROVAL OF MINUTES

1. Approval of the minutes from the Natural Features Protection Review Board meeting on May 23, 2026 **(Action: Motion to approve the minutes from the Natural Feature Protection Review Board Meeting on May 7, 2026)**

D. PUBLIC COMMENTS

E. BOARD MEMBER COMMENTS

F. NEW BUSINESS

1. 132 W. Cork Street **(Action Item)**

2. 112 W. Cork Street **(Action Item)**

3. 114 W. Cork Street **(Action Item)**

4. 607 E. Kilgore Road **(Action Item)**

G. UNFINISHED BUSINESS

H. STAFF REPORTS AND UPDATES

I. COMMUNICATIONS AND ANNOUNCEMENTS

J. ADJOURNMENT

Natural Features Protection Review
Board Minutes
May 7, 2026, 4:00p.m.
City Hall, Commission Chambers

MEMBERS PRESENT: Director Hollander, Director Fredrickson, Director Bassett, Director Stemple, Director Munchow

MEMBERS ABSENT: Directors Murgia and Rowe

CITY STAFF PRESENT: Nolan Bergstrom

A. CALL TO ORDER/ROLL CALL

Director Fredrickson called the meeting to order at 4:01p.m.

DIRECTOR STEMPLE MADE A MOTION TO EXCUSE ABSENT MEMBERS, SUPPORTED BY DIRECTOR BASSETT. MOTION PASSED UNANIMOUSLY.

B. ADOPTION OF AGENDA

DIRECTOR BASSETT MADE A MOTION TO ADOPT THE AGENDA, SUPPORTED BY DIRECTOR STEMPLE. MOTION PASSED UNANIMOUSLY.

C. APPROVAL OF MEETING MINUTES FROM MARCH 24TH, 2026

The board reviewed the meeting of March 24, 2026, minutes. Several corrections were noted

1. Spelling of Kalamazoo Recovery Project
2. A correction was made regarding tree health and bat habitats; it was clarified that nine trees identified as potential habitat were not necessarily Oak trees and their poor health was distinct from Oak wilt concerns.
3. ATSI was requested to be corrected to ASTI

DIRECTOR HOLLANDER MADE A MOTION TO APPROVE THE MINUTES FROM MARCH 24TH, 2026, NATURAL FEATURES PROTECTION REVIEW BOARD, SUPPORTED BY DIRECTOR STEMPLE. MOTION PASSED.

D. PUBLIC COMMENTS

None.

E. BOARD COMMENTS

None.

F. NEW BUSINESS

1. 1617 N Drake Road – Youth Sports Complex Phase 2

Director Fredrickson recused themselves from the new business item being connected to the project professionally.

This project previously appeared before the board for variances and Phase 1 (woodland clearing). Phase 2 covers the full site plan including building, construction, parking, landscaping, and stormwater management. The board recommended approval with three conditions

- No work until full site plan approval
- Filling of required state/federal permits
- Maintaining tree protection fencing

The board discussed the removal of nine dead trees that served as potential habitat for the Indiana bat and Northern long-eared bats. A suggestion to require the planting of nine replacement trees (Elm, Maple, or Ash) was debated but ultimately not added as a formal condition, as members felt preserving 25% of the woodland and installing bat boxes provided more immediate habitat value. Concerns were also raised regarding the use of White Pines near the parking lot due to their sensitivity to salt. The applicant agreed to move them as far from the curb as possible. The board also noted the removal of the Frontier Elm from the planting schedule. There was a brief discussion regarding why certain endangered plants were not in the landscape plan, the applicant cited aesthetic and maintenance considerations for the parking lot environment.

A MOTION WAS MADE TO APPROVE THE PHASE 2 SITE PLANS FOR THE WESTGATE SPORTS COMPLEX WITH THE FOLLOWING CONDITIONS LISTED ABOVE, MOTION APPROVED VIA ROLL CALL VOTE (4-0)

G. UNFINISHED BUSINESS

- Director Munchow shared the American Society of Landscape Architects (ASLA) 2040 Climate and Biodiversity Action Plan was a resource for the aligning NFP goals with broader climate initiatives
- Staff are working on an NFP Guide to serve as a resource. The board discussed the challenge of balancing stewardship and sustainability goals with the need for predictable regulations for developers
- It was noted that the city is currently drafting a new Master Plan, which will influence future sustainability and land0use goals

G. STAFF REPORTS AND ANNOUNCEMENTS

- Imagine Kalamazoo - staff reported on recent downtown walking audits and the high participation in Imagine Kalamazoo events

- Bikes in the Zoo – Nolan announced the Bikes in the Zoo vintage bicycle show happening downtown alongside the Mac and Cheese Mayhem event

1. ADJOURNMENT

Director Fredrickson adjourned the meeting at 5:05 p.m.

NFP Review Board Staff Report

City of Kalamazoo

TO: The Natural Features Protection Review Board

FROM: Nolan Bergstrom, NFP Board Liaison

DATE: June 23, 2026

SUBJECT: 132 W. Cork Street

RECOMMENDATION:

It is recommended the Natural Features Protection (NFP) Review Board make a recommendation to the Zoning Board of Appeals to grant relief from the Protected Slope and Slope Setback Standards for 132 W. Cork Street to impact 27.78% (2683.4 sq. ft.) of protected slopes and 21.20% (655 sq. ft.) of protected slope setbacks with the following conditions:

- If Site Plan Review is required, no work begins until Full Site Plan Review Approval.
- Tree Protection Fencing remains in place during work

BACKGROUND:

Site Overview

132 W. Cork Street is owned by STATE WIDE RENTALS, LLC. It is apart of larger group of adjacent parcels owned by STATE WIDE RENTALS, LLC. Those parcels are 112, 114, 120, 126, and 132 W. Cork Street and 101, 107, and 113 Imperial Street. The W. Cork Street parcels are within the NFP Overlay and the Imperial Street parcels are not. The W Cork Street parcels are zoned RM-15. The property is located within the Westnedge Hill Neighborhood. The parcels have remained undeveloped due to undulating topography with grades of 20 percent or greater slope closer to W. Cork Street. The parcels are also wooded and a part of a larger woodland complex. The Cork Street properties are within the NFP Overlay District due to the presence of the following natural features:

1. Protected Slopes and Slope Setbacks
2. Woodland and / or Protected Trees

Project Scope
The project is looking to develop duplex housing units with shared driveway access. The parcels are not slated to be combined at this time but kept as separate lots.

NFP Relief Request Background
The applicant is requesting a recommendation to the Zoning Board of Appeals from the NFP Board for relief from the Protected Slope and Slope Setback Standards for 132 W. Cork Street to impact 27% (2683.4 sq. ft.) of protected slopes and 21.20% (655 sq. ft.) of protected slope setbacks. This is to allow for a shared driveway access from Cork Street to the other properties as well as placing the duplex itself.

Next Steps
The project is planned to go before the Zoning Board of Appeals in July. A previous iteration of the project was presented to the NFP Board in January 2026 and went before the ZBA in February 2026. Staff are working with the applicant to determine if full Site Plan Review is needed or if this remains an Administrative Review.

FINDINGS:

Since the project is located within the NFP Overlay District, the NFP Standards were reviewed and applied as follows:

- **Water Resources Standard** (§ 50-6.2D)– Significant water resources do not exist / have not been identified on-site.

- **Wetland Standard** (§ 50-6.2C) – Wetlands do not exist / have not been identified on-site.

- **Woodland Standard** (§ 50-6.2G) – 132 W. Cork Street and the adjacent Cork Street parcels are 100% wooded and a part of a larger complex of woodlands that extend to the Northeast onto adjacent parcels. With each parcel being 100% wooded, the woodland preservation requirement is 25% or greater. The applicant provided a breakdown of impacts to wooded areas for each parcel. For 132 W. Cork Street, the applicant is preserving 30%, which is above the 25% requirement, which meets the Woodland NFP Standard. For areas of preserved woodland, protection fencing is required to protect these areas during construction and is shown on the site plans.
  .
- **Protected Slopes and Slope Setbacks Standards** (§ 50-6.2H) — **Slopes** 20% grade or greater are located throughout the project limits. Complexes of slope are closer to the

frontage of W. Cork Street. Due to this, the applicant worked to place the proposed duplexes closer to the rear of the property to avoid the steeper protected slopes as well as placing the road and utilities on the western edge of 132 W. Cork Street to mitigate impacts to protected slopes and woodland preservation areas. The applicant is requesting a recommendation to the Zoning Board of Appeals from the NFP Board for relief from the Protected Slope and Slope Setback Standards for 132 W. Cork Street to impact 27.78% (2,683.4 sq. ft.) of protected slopes and 21.20% (655 sq. ft.) of protected slope setbacks.

Erosion / sedimentation control materials (Kalamazoo Landscape Supplies, 4150 S 9th St, Kalamazoo):

- Biodegradable straw erosion control blanket on all slope areas, secured with stakes, held until permanent vegetative cover is established; native mix is designed to establish through the blanket.
- Hydro-mulch / EZ-Mulch over seeded areas to retain moisture and improve seed-to-soil contact during germination.
- Silt fence installed along the barrier line shown on the plans, remaining in place until the site is stabilized.

- **Protected Tree Standard (§ 50-6.2F)** — The site is nearly 100 percent woodland and thus, the woodland standard is applied. The applicant does have a woodland report breaking down each tree by tree species, size, and location. This report also provides a preservation priority value and health status for each of the surveyed trees. The report was completed by Davey Resource Group, Inc.

- **Rare Species Review** – MNFI Rare Species Review is not required.

- **Plant Selection (§ 50-6.2J(4)(b))** – Any landscaping and screening are required for this project as well as other plantings. The applicant provided a seeding mix. Per **§ 50-6.1C** *If a conflict arises between the overlay district regulations and those of the base zoning district, the overlay district regulations control. Per **§ 50-6.2J(4)(b)**: When additional landscaping is proposed on the site plan beyond the minimum requirements of Chapter 50, the NFP Review Board may allow the use of non-native, non-invasive species which have been determined not to cause adverse environmental impacts.*

a. Seed mix and erosion materials. Seed: All disturbed areas outside building footprints, driveways, and utility corridors will be stabilized with a Michigan-native erosion control mix suited to disturbed slopes. A quick establishing native blend carried by a heavy nurse crop for rapid first-season sedimentation control.
b. Species:

Native grasses, sedges & rushes:
- Big Bluestem (Andropogon gerardii)
- Fox Sedge (Carex vulpinoidea)
- Tufted Hairgrass (Deschampsia cespitosa)
- Canada Wild Rye (Elymus canadensis)
- Virginia Wild Rye (Elymus virginicus)
- Path Rush (Juncus tenuis)
- Switchgrass (Panicum virgatum)
- Little Bluestem (Schizachyrium scoparium)
- Indian Grass (Sorghastrum nutans)
- Sand Dropseed (Sporobolus cryptandrus)

Native forbs:
- Lance-leaf Coreopsis (Coreopsis lanceolata)
- Partridge Pea (Chamaecrista fasciculata)
- Purple Coneflower (Echinacea purpurea)
- Wild Bergamot (Monarda fistulosa)
- Black-eyed Susan (Rudbeckia hirta)

Temporary nurse crop (rapid sedimentation control while natives establish):
- Annual Ryegrass (Lolium multiflorum)
- Seed Oats (Avena sativa

Total seeding rate approximately 50 lbs/acre (8 lbs native grasses + 40 lbs nurse crop).

- **Stormwater Management** (§ 50-6.2J(6)) – Stormwater requirements for NFP sites are dictated by the City of Kalamazoo Performance Standards for Groundwater Protection within Wellhead Protection Capture Zones.

- **Public Notice Requirement** (**§ 50-6.2K(1)(c)) — The** project is requesting variances to the NFP Standards. Due to this, a Public Notice was required and was completed. Public Notice will also be sent out by City of Kalamazoo staff for the Zoning Board of Appeals meeting.

SUPPLEMENTAL SITE PLAN REVIEW APPLICATION
FOR NATURAL FEATURES PROTECTION

For projects located within the Natural Features Protection (NFP) Overlay District, separate site plan approval is required before the full site plan can be approved. This review is done either by the NFP Review Board or administratively by staff to verify conformance with NFP Overlay District zoning code (Chapter 50, NFP). The NFP Overlay District map can be found on the City's GIS mapping website (select "Planning & Zoning" layer and make sure "NFP Overlay" is clicked on).

The NFP Supplemental Application must be completed and submitted with the regular Site Plan Review Application and checklists. The NFP Review Board meets monthly to review and approve applications. City staff can assist in scheduling a project at an upcoming NFP Review Board meeting. While the review process offers some flexibility, projects often seek NFP approval between the Pre-Application meeting and regular Site Plan Review meeting.

Section I. Project & Applicant Information

All projects must complete Section I. If the project will not impact any natural features on the site, and does not trigger additional stormwater controls or treatment, applicants should sign and submit Section I only. Staff will review and determine if the application can be approved administratively.

Section II. Natural Features Checklist & Attachments

For projects proposing improvements or changes to the site that impact natural features, change grading, or involve work in or near NFP setbacks, Sections II and III must be completed. Section II identifies which natural features are present and standards apply. Section III will assist you in determining what documentation and additional plan sets are needed for a complete application. Once a complete application is submitted to the City, the project will be scheduled for the next available NFP Review Board meeting and an application fee of $110 will apply.

QUESTIONS

Contact the NFP staff liaison with any questions about your NFP Supplemental Application at (269) 337-8045 or development@kalamazoocity.org .

THE CITY OF Kalamazoo
Community Planning & Economic Development
245 N Rose St • Suite 100 • Kalamazoo, MI 49007
(269) 337-8000 • www.kalamazoocity.org

SECTION I. PROJECT AND APPLICANT INFORMATION

Please provide all of the project and applicant information requested below. Include the date of your regular site plan review meeting, if one has been scheduled or already taken place.

APPLICANT NAME:	State Wide Rentals LLC (first) (last)		
APPLICANT ADDRESS:	606 Bryant Street (number) (street name)		
	Kalamazoo (city) (state) MI 49001 (Zip)		
APPLICANT EMAIL:	jeremy@kzoorestored.com	**PHONE:**	
PARCEL ADDRESS/PIN:	132 W. Cork Street PIN: 06-27-396-201		
PROJECT DESCRIPTION:	Construction of a residential duplex on 132 W. Cork Street (combined Lots 101 and 102, 19,600 sq ft) within the NFP Overlay District. Woodland preservation (30.0%) exceeds the 25% minimum under Sec. 50-6.2G; no woodland variance is requested. Variance relief is requested under Sec. 50-6.2K for protected slope and slope-setback impacts. See attached supplemental narrative and site plans.		
OWNER NAME: *(if different)*	Jeremy (first) Cole, Member (last)		
HAS REGULAR SITE PLAN REVIEW MEETING OCCURRED?	☐ Yes ■ No	**DATE OF SITE PLAN REVIEW MEETING:**	

NFP APPLICATION REQUIRED?

Is the project limited to interior work only with no exterior ground changes or increase in impervious coverage?	
☐ **YES**	If YES, Sections II & III of this application are not needed. Sign below & submit only this page with your site plan review or permit application.
☑ **NO**	If NO, proceed to Sections II & III. Do **NOT** sign below.

By signing below, the applicant certifies that no natural features will be disturbed as part of this project.

Print name: _____

Signature: _____ Date: _____

SECTION II. NFP SITE PLAN CHECKLIST & ATTACHMENTS

Use the checklist to determine what documentation and addition plans sets must be prepared for this application. All plan sets, maps, and additional information must be attached to this application to be considered complete. If you checked "no" to certain NFP items in questions 1-7 in Section II, record "N/A" on the checklist.

REQUIRED: NFP SITE PLAN SET

All applications must include separate sheets in the plan set showing the following:

1. Existing conditions map showing an inventory of all protected natural features and any associated natural features setbacks with distances (use checklist below)

2. Future development plan overlaid onto the existing conditions and natural features inventory; indicate where and to what extent protected natural features will be disturbed, removed, altered, or impacted in any way and which natural features will be protected during and after construction

   Future development plan must include:

   - **Boundary with extent of re-grading**, construction, or site preparation activities
   - **All existing and new building footprints** (mark whether existing buildings will be removed or maintained)
   - **New and existing parking** surfaces or structures, sidewalks, trails, and other impervious or semi-impervious surfaces including decks, patios, viewing platforms, etc. (list proposed surface materials and whether existing surfaces will be maintained or removed)
   - **Proposed location of fencing and screening**, whether permanent, natural, or construction silt fencing and/or natural feature protection fencing (with specifications)
   - **Stormwater facilities** showing boundary of ground disturbance, grading or construction activities, if located near natural features
   - **New utilities** and/or relocation of existing utilities showing corridors that could impact natural features

3. Landscape plan detailing the minimum elements needed to meet zoning code requirements and all proposed additional landscaping elements or features (include table with species name)

4. Any additional plans or tables detailing which natural features will be restored or replaced after construction, if required (e.g., riparian buffer installation or slope restoration plan may be required under certain circumstances when the ordinance allows changes within these protected areas)

WETLANDS	Present:	Included	Notes:
Mark existing wetland boundaries with notes about wetland conditions. *Attach a copy of EGLE permit or permit application for work impacting Part 303 wetlands regulated by the State.*	☐ Yes ☒ No	N/A	N/A
WATER RESOURCES	**Present:**	**Included**	**Notes:**
Mark the location of all water resources on the parcel and those within 25 feet of the parcel boundaries. *Attach a copy of EGLE permit or permit application for work impacting Part 301 waters regulated by the State.*	☐ Yes ☒ No	N/A	N/A
Show required setbacks with dimensions; describe existing or future ground cover within riparian setbacks.		N/A	N/A
TREES	**Present:**		
Mark the location of all "protected" trees that are proposed to be removed and those that will remain and require protection fencing.	☐ Yes ☒ No	N/A	N/A
Include a table with species name, size (DBH and height), and condition of "protected" trees that are proposed to be removed and list replacement tree information.		N/A	N/A
Provide a note with justification for removal.		N/A	N/A
WOODLANDS	**Present:**		
Delineate the boundary of all woodlands on the parcel noting where woodlands likely extend onto adjacent parcels.	☒ Yes ☐ No	1 & 2	Woodland boundary delineated on Pages 1 & 2.
Mark all areas of woodland that will be retained and removed (i.e., cleared).		1 & 2	Retained & removed (cleared) areas shown.
Include a table or note with the required preservation ratio (based on existing woodland coverage), percentage proposed to be removed, and rationale for selecting area for removal.		1 & 2	Preservation 30.0% of woodland exceeds the 25% minimum (Table 6.2-3, Sec. 50-6.2G). Compliant - no woodland variance requested.
SLOPES	**Present:**	**Included**	**Notes:**
Provide a slope analysis that shows the boundaries of all "protected" slopes and mark the required setback(s).	☒ Yes ☐ No	1	Protected slopes and required setbacks shown on Page 1.
Include a note with co-existing feature that triggers "protected" slope status (e.g., wooded, within 500 ft of water resource.		1	Wooded slope triggers protected status; variance requested under Sec. 50-6.2K.

NATURAL HERITAGE AREAS	Present:	
Is an MNFI* rare species review required? *Parcels can be pre-screened using the City's GIS website, click on the "Planning & Zoning" layer and "NFP Overlay" layer; then click on parcel and see MNFI status.*	☐ Yes ■ No	
If an MNFI rare species review is required, attach the resulting report.		

*Michigan Natural Features Inventory (MNFI) Rare Species Reviews can be requested at: https://mnfi.anr.msu.edu/services/rare-species-reviews

ACCEPTED DATA SOURCES & ANALYSIS

All data sources, analysis, and professionals are subject to approval by the City Planner according to Chapter 50-6.2. The following guidance may be useful when selecting a professional or methodology for inventorying natural features.

1. **WETLANDS**
   - Wetland delineation report performed by a qualified consultant including a map denoting delineated boundary of all wetlands, OR
   - Most recent US Fish & Wildlife Service's National Wetlands Inventory boundary (State of Michigan mapper: https://www.michigan.gov/egle/about/organization/water-resources/wetlands/inventory-maps)

2. **PROTECTED TREE IDENTIFICATION**
   - May be performed by an qualified professional (including ISA Certified Arborist or similar); a full tree inventory is not required if all necessary information can be obtained and communicated using another survey, inventory, or site assessment methodology

3. **WOODLANDS**
   - A qualified professional, such as an ISA Certified Arborist, landscape architect, or license engineer may perform a desktop analysis or field survey to delineate woodlands
   - When a variances is being requests to remove more woodland cover than is allowed under the preservation ration, the following is required
     - Woodland assessment report with determination that the Trees per Area (TPA) meets the NFP definition of a woodland and mapped delineation of woodland
     - Woodland assessment report with a determination that Basal Area is equivalent to the TPA in the NFP definition and meets definition of a woodland and mapped delineation of woodland
     - In addition to determination of whether stand of trees meets NFP definition of a woodland, assessment must include information on general species diversity,
     -

composition of species, any notable trees (either notable species or size), invasive species composition, and general health and age observations of tree stand

4. **PROTECTED SLOPES**
   - Topographic survey performed in the field by a qualified consultant to delineate areas of a slope with grade of 20% or greater
   - Desktop analysis performed using U.S. Geological Survey digital topographic maps, LIDAR, digital elevation map, or equivalent data showing 2' intervals or finer resolution, performed by a qualified consultant or engineer

Co-Existing Natural Features Statement

112, 114, and 132 W. Cork Street | State Wide Rentals LLC | City of Kalamazoo NFP Overlay District

Overview

Each of the three active parcels located at 112, 114, and 132 West Cork Street contains co-existing natural features regulated under the Natural Features Protection (NFP) Ordinance — specifically, protected steep slopes occurring in direct spatial conjunction with contiguous woodland coverage. These two features overlap and function together across all three properties, such that the protected slopes are entirely located within areas of existing woodland and natural grade change.

Spatial Relationship of Slopes and Woodland

The parcels share a continuous slope complex that runs laterally across the properties. The slope originates near the W. Cork Street right-of-way and rises steeply to the north, with a vertical change of approximately 25 feet over 75 linear feet. The slope grade exceeds 20% across the regulated areas and is therefore subject to the Protected Slope Standard under § 50-6.2 H. The woodland on each parcel is nearly 100% contiguous with this slope complex; the root systems of the woodland trees directly stabilize the slope soils, and the two features function as a single integrated natural feature that cannot be practically separated for development review.

Regulatory Triggers

Because the protected slopes occur within woodland coverage, both the Protected Slope Standard (§ 50-6.2 H) and the Woodland Standard (§ 50-6.2 G) are triggered simultaneously on each parcel. Relief is sought under § 50-6.2 K for both standards, as reasonable residential development of these platted RM-15 lots cannot occur without limited disturbance to the slope and slope setback areas. The Davey Resource Group Woodland Assessment (October 2025) confirms the woodland boundary delineation, species composition, DBH/height, basal area, trees per acre, and general health of the woodland across all parcels, and is included as an attachment.

Why Relief Is Required

There is no configuration of residential development on any of these parcels that avoids all slope and slope setback disturbance. The slope complex occupies the full frontage of each parcel along W. Cork Street — the only access point. The flat, buildable area begins only at the top of the slope, approximately 75 feet from the street. Providing any driveway access or utility connection from W. Cork Street requires crossing the slope. The applicant has minimized disturbance to the maximum extent feasible:

- A single shared 24-foot wide driveway originating at 132 W. Cork Street serves all parcels, eliminating individual driveway cuts through the slope on 112 and 114.
- All driveway disturbance is confined to a defined 24-foot corridor; no disturbance occurs outside this boundary.
- A rear spine driveway at the top of the slope connects the parcels, eliminating additional slope crossings.
- The driveway is engineered to a maximum 10% grade per fire marshal guidance, eliminating the need for retaining walls.
- Woodland preservation meets the 25% ordinance minimum on all parcels.

- Construction protection fencing is installed along all disturbance boundaries prior to ground disturbance and maintained for the entirety of construction.

Variance Relief Narrative — All Four Criteria

112, 114, and 132 W. Cork Street | State Wide Rentals LLC | City of Kalamazoo NFP Overlay District

Relief from the NFP Overlay District Standards in § 50-6.2 may be granted when all four conditions are met. This narrative addresses each for 112, 114, and 132 W. Cork Street.

Criterion 1 — The parcel cannot be reasonably utilized for its zoned use without relief

All three parcels are zoned RM-15 and individually platted for residential development. Each parcel's only street access is W. Cork Street. The protected slope complex occupies the full frontage from the street edge to approximately 75 feet into the lot. There is no configuration of residential construction or driveway access that avoids the slope entirely. Without relief, these platted residential lots are functionally undevelopable; they have remained vacant for decades. City staff confirmed on the record that relief is necessary to allow development of these sites.

Criterion 2 — The extent of relief requested is the minimum needed

The plan presents the minimum possible slope disturbance by consolidating all access into a single shared 24-foot driveway at 132 W. Cork Street. This eliminates individual driveway cuts on 112 and 114. Disturbance is confined to a defined corridor; no disturbance occurs outside this boundary. The rear spine driveway serves the parcels at the flat top of the slope with no additional slope crossings. A ZBA board member specifically requested a proposal involving shared driveways; this plan delivers exactly that.

Criterion 3 — The relief will not substantially impair the intent of the NFP Overlay District

This plan preserves the majority of the slope and woodland on all parcels. Woodland preservation meets or exceeds the 25% ordinance floor: 112 at 36.7%, 114 at 30.2%, and 132 at 30%. The single shared driveway concentrates all disturbance in one defined corridor, leaving the remainder of the slope complex undisturbed. Protective fencing, slope restoration, and post-construction stabilization further protect the natural features. City staff reviewed the plans and recommended approval.

Criterion 4 — The relief is balanced by conservation and green development tools

- Single shared driveway — the maximum feasible reduction in slope disturbance, replacing individual cuts with one shared crossing.
- Rear spine driveway eliminating additional slope crossings.
- Maximum 10% driveway grade eliminating the need for retaining walls.
- Woodland preservation at 30–36.7% across all parcels, above the 25% minimum.
- Construction protection fencing maintained for the entirety of construction.
- Post-construction slope restoration using native seed mix and erosion blankets.
- All utilities buried within the driveway corridor, minimizing additional disturbance.

Woodland Preservation Breakdown

112, 114, and 132 W. Cork Street | State Wide Rentals LLC | City of Kalamazoo NFP Overlay District

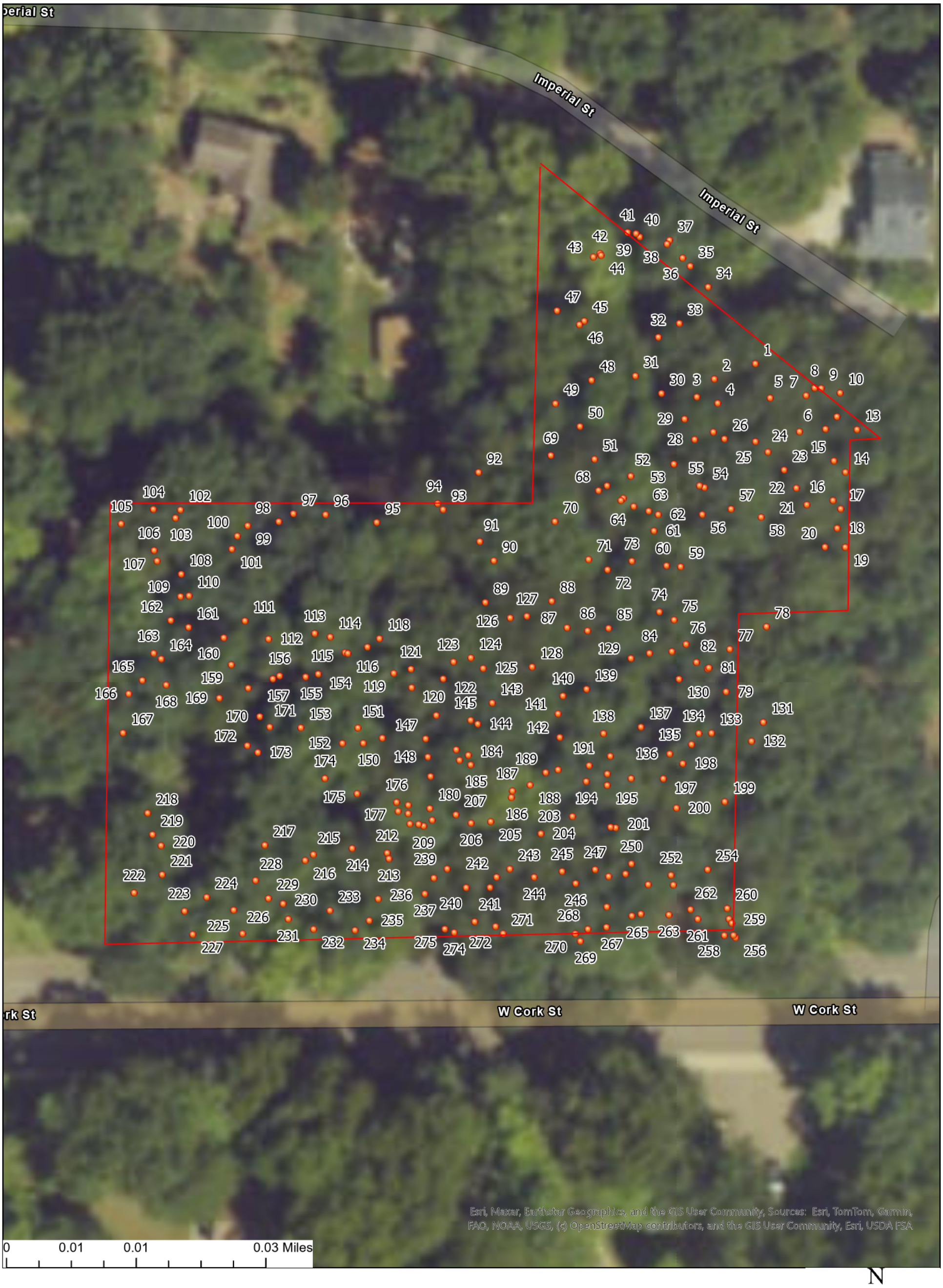
Woodland coverage, proposed disturbance, preserved area, and preservation percentage for each active parcel, calculated per NFP § 50-6.2 G. All parcels are 100% woodland in existing condition. Per Table 6.2-3, parcels with 75–100% woodland coverage must preserve a minimum of 25%. All three parcels meet or exceed this minimum.

Parcel Address	PIN (last 3)	Lot Sq Ft	Disturbed Area	Preserved Area	% Preserved
112 W. Cork Street	397-097	7,350	Northern half / building + driveway	Southern portion	30.2%
114 W. Cork Street	397-098	7,350	Northern half / building + driveway	Southern portion	36.7%
132 W. Cork Street	396-201	19,600	Shared driveway + N. half	Balance of lot	30%
ORDINANCE MIN. (75–100% coverage)	–	–	–	–	**25%**

Preservation rationale: On 112 and 114, the preserved woodland is concentrated in the southern portion of each 150-foot-deep lot, with disturbance limited to the northern half to accommodate the building location and driveway access. On 132 W. Cork Street (the combined parcel of platted lots 101 and 102, totaling 19,600 sq ft), the 30% figure accounts for the shared driveway corridor from Cork Street plus the northern half where the building and rear spine driveway are located.

132 W Cork St Woodland Tree Inventory

Prepared By: Davey Resource Group, Inc.
October 13th, 2025



Legend

132 W Cork St Woodland Inventory

Project Area

Approximate Parcel 0

Trees

N
W
E
S

ObjectID	Species (Common)	Species (Botanical)	Stem #	DBH	DBH Combined	CRZ (ft)	Preservation Priority	Defects	Replacement List Callout
1	cherry, black	Prunus serotina	1	18		27	3	Dead/Dying Branches	Yes
2	maple, sugar	Acer saccharum	1	13		19.5	3		
3	hickory, shagbark	Carya ovata	1	4		6	3		
4	hickory, shagbark	Carya ovata	1	9		13.5	3	Tree Architecture	
5	cherry, black	Prunus serotina	1	11		16.5	3		
6	cherry, black	Prunus serotina	1	12		18	3	Tree Architecture	
7	maple, sugar	Acer saccharum	1	4		6	3		
8	maple, sugar	Acer saccharum	1	6		9	3	Tree Architecture	
9	maple, sugar	Acer saccharum	1	6		9	3	Tree Architecture	
10	oak, northern red	Quercus rubra	1	12		18	2		
11	hickory, shagbark	Carya ovata	1	6		9	3		
12	hickory, shagbark	Carya ovata	1	6		9	3		
13	oak, northern red	Quercus rubra	2	28, 17	45	67.5	2	Tree Architecture	Yes
14	hickory, shagbark	Carya ovata	1	12		18	3		Yes
15	cherry, black	Prunus serotina	1	7		10.5	4	Decay/Cavity	
16	cherry, black	Prunus serotina	1	5		7.5	4	Tree Architecture	
17	hickory, shagbark	Carya ovata	1	5		7.5	3		
18	oak, northern red	Quercus rubra	1	21		31.5	2	Tree Architecture	Yes
19	hickory, shagbark	Carya ovata	1	5		7.5	3		
20	oak, northern red	Quercus rubra	1	20		30	2		Yes
21	cherry, black	Prunus serotina	1	4		6	3		
22	hickory, shagbark	Carya ovata	1	9		13.5	3	Tree Architecture	
23	oak, northern red	Quercus rubra	1	17		25.5	2	Tree Architecture	Yes
24	hickory, shagbark	Carya ovata	1	6		9	3		
25	cherry, black	Prunus serotina	1	7		10.5	3	Tree Architecture	
26	hickory, shagbark	Carya ovata	1	6		9	3		
27	cherry, black	Prunus serotina	1	7		10.5	3	Tree Architecture	
28	hickory, shagbark	Carya ovata	1	7		10.5	3	Tree Architecture	
29	oak, swamp white	Quercus bicolor	1	13		19.5	2		
30	hickory, shagbark	Carya ovata	1	7		10.5	3		
31	oak, northern red	Quercus rubra	1	18		27	2	Tree Architecture	Yes

32	hickory, shagbark	Carya ovata	1	10		15	2		
33	hickory, shagbark	Carya ovata	1	4		6	3		
34	cherry, black	Prunus serotina	1	7		10.5	3	Tree Architecture	
35	maple, silver	Acer saccharinum	1	5		7.5	4	Tree Architecture	
36	cherry, black	Prunus serotina	1	5		7.5	3	Tree Architecture	
37	hackberry, common	Celtis occidentalis	1	9		13.5	2		Yes
38	mulberry spp.	Morus spp.	1	5		7.5	4		
39	hickory, shagbark	Carya ovata	1	22		33	2		Yes
40	hackberry, common	Celtis occidentalis	1	4		6	3		
41	hickory, shagbark	Carya ovata	1	9		13.5	3		
42	maple, sugar	Acer saccharum	1	6		9	3		
43	maple, sugar	Acer saccharum	1	9		13.5	3		
44	elm, American	Ulmus americana	1	5		7.5	3	Tree Architecture	
45	cherry, black	Prunus serotina	1	10		15	3	Tree Architecture	
46	cherry, black	Prunus serotina	1	19		28.5	3	Dead/Dying Branches	Yes
47	hackberry, common	Celtis occidentalis	1	18		27	2	Dead/Dying Branches	Yes
48	oak, black	Quercus velutina	1	19		28.5	2	Tree Architecture	Yes
49	maple, sugar	Acer saccharum	1	14		21	3	Tree Architecture	
50	hickory, shagbark	Carya ovata	1	21		31.5	2		Yes
51	hickory, shagbark	Carya ovata	1	11		16.5	3		
52	cherry, black	Prunus serotina	1	13		19.5	3	Dead/Dying Branches	
53	hickory, shagbark	Carya ovata	1	7		10.5	3		
54	oak, northern red	Quercus rubra	1	24		36	2	Dead/Dying Branches	Yes
55	oak, northern red	Quercus rubra	2	14, 15	29	43.5	2	Tree Architecture	
56	maple, sugar	Acer saccharum	1	4		6	3	Tree Architecture	
57	hickory, shagbark	Carya ovata	2	7, 4	11	16.5	3	Tree Architecture	
58	oak, northern red	Quercus rubra	1	16		24	2	Tree Architecture	Yes
59	oak, black	Quercus velutina	1	18		27	2	Tree Architecture	Yes
60	hickory, shagbark	Carya ovata	1	9		13.5	3		
61	oak, black	Quercus velutina	1	14		21	3		
62	oak, black	Quercus velutina	1	10		15	3		
63	oak, black	Quercus velutina	1	14		21	3		
64	hickory, shagbark	Carya ovata	1	5		7.5	3		

65	oak, northern red	Quercus rubra	1	19		28.5	2		Yes
66	cherry, black	Prunus serotina	1	14		21	3		
67	cherry, black	Prunus serotina	1	22		33	3		Yes
68	maple, sugar	Acer saccharum	1	6		9	3		
69	maple, sugar	Acer saccharum	1	10		15	3	Decay/Cavity	
70	oak, black	Quercus velutina	1	35		52.5	2	Dead/Dying Branches	Yes
71	oak, northern red	Quercus rubra	1	13		19.5	3		
72	oak, northern red	Quercus rubra	1	14		21	3		
73	hickory, shagbark	Carya ovata	1	9		13.5	3		
74	oak, northern red	Quercus rubra	1	14		21	2		
75	maple, sugar	Acer saccharum	1	8		12	3		
76	oak, northern red	Quercus rubra	1	17		25.5	2		Yes
77	hickory, shagbark	Carya ovata	2	10, 15	25	37.5	3	Tree Architecture	Yes
78	oak, black	Quercus velutina	1	25		37.5	3	Dead/Dying Branches	Yes
79	oak, black	Quercus velutina	1	13		19.5	3		
80	hickory, shagbark	Carya ovata	1	5		7.5	3	Tree Architecture	
81	hickory, shagbark	Carya ovata	1	10		15	3	Tree Architecture	
82	hickory, shagbark	Carya ovata	1	8		12	3		
83	oak, white	Quercus alba	1	25		37.5	2	Tree Architecture	Yes
84	oak, black	Quercus velutina	1	14		21	3	Tree Architecture	
85	oak, northern red	Quercus rubra	1	12		18	3		
86	oak, white	Quercus alba	1	16		24	3	Dead/Dying Branches	Yes
87	oak, northern red	Quercus rubra	1	32		48	2	Dead/Dying Branches	Yes
88	cherry, black	Prunus serotina	1	6		9	4	Decay/Cavity	
89	cherry, sweet	Prunus avia	1	8		12	3	Tree Architecture	
90	cherry, black	Prunus serotina	1	9		13.5	3	Dead/Dying Branches	
91	cherry, black	Prunus serotina	1	11		16.5	3	Dead/Dying Branches	
92	maple, sugar	Acer saccharum	1	5		7.5	3		
93	elm, American	Ulmus americana	2	12, 7	19	28.5	3	Dead/Dying Branches	
94	oak, black	Quercus velutina	1	15		22.5	3		
95	hackberry, common	Celtis occidentalis	1	14		21	3		Yes
96	hackberry, common	Celtis occidentalis	1	5		7.5	3		
97	oak, white	Quercus alba	1	30		45	2	Dead/Dying Branches	Yes

98	cherry, sweet	Prunus avia	1	11		16.5	4	Decay/Cavity	
99	maple, Norway	Acer platanoides	1	6		9	4	Tree Architecture	
100	oak, white	Quercus alba	1	29		43.5	3	Dead/Dying Branches	Yes
101	cherry, black	Prunus serotina	1	13		19.5	3	Tree Architecture	
102	oak, northern red	Quercus rubra	1	33		49.5	2	Dead/Dying Branches	Yes
103	hickory, shagbark	Carya ovata	1	9		13.5	3		
104	mulberry spp.	Morus spp.	1	7		10.5	4		
105	maple, Norway	Acer platanoides	1	9		13.5	3		
106	boxelder	Acer negundo	1	8		12	4		
107	cherry, black	Prunus serotina	1	14		21	4		
108	hackberry, common	Celtis occidentalis	1	5		7.5	3		
109	oak, northern red	Quercus rubra	1	8		12	3	Dead/Dying Branches	
110	maple, Norway	Acer platanoides	1	9		13.5	3		
111	hickory, shagbark	Carya ovata	1	10		15	3		
112	hickory, shagbark	Carya ovata	1	11		16.5	3		
113	hickory, shagbark	Carya ovata	1	22		33	2		Yes
114	hackberry, common	Celtis occidentalis	1	6		9	3		
115	hickory, shagbark	Carya ovata	1	12		18	3		Yes
116	hickory, shagbark	Carya ovata	1	7		10.5	3		
117	hickory, shagbark	Carya ovata	1	11		16.5	3		
118	hickory, shagbark	Carya ovata	1	12		18	3	Dead/Dying Branches	Yes
119	hickory, shagbark	Carya ovata	1	14		21	3	Dead/Dying Branches	Yes
120	oak, white	Quercus alba	1	14		21	2	Dead/Dying Branches	
121	oak, northern red	Quercus rubra	1	24		36	2		Yes
122	oak, white	Quercus alba	1	24		36	2	Tree Architecture	Yes
123	maple, Norway	Acer platanoides	1	8		12	3.00	Tree Architecture	
124	cherry, black	Prunus serotina	1	13		19.5	3	Dead/Dying Branches	
125	oak, northern red	Quercus rubra	1	14		21	2	Dead/Dying Branches	
126	oak, northern red	Quercus rubra	1	31		46.5	2	Dead/Dying Branches	Yes
127	oak, white	Quercus alba	1	16		24	2	Dead/Dying Branches	Yes
128	hickory, shagbark	Carya ovata	1	20		30	2	Dead/Dying Branches	Yes
129	hickory, shagbark	Carya ovata	1	8		12	3	Dead/Dying Branches	
130	oak, black	Quercus velutina	1	13		19.5	2	Dead/Dying Branches	

131	oak, northern red	Quercus rubra	1	16		24	3	Tree Architecture	Yes
132	hickory, shagbark	Carya ovata	1	19		28.5	2	Tree Architecture	Yes
133	hickory, shagbark	Carya ovata	1	11		16.5	2		
134	hickory, shagbark	Carya ovata	1	14		21	2		Yes
135	hickory, shagbark	Carya ovata	1	7		10.5	3	Tree Architecture	
136	oak, black	Quercus velutina	1	15		22.5	2	Dead/Dying Branches	
137	hickory, shagbark	Carya ovata	1	6		9	3	Tree Architecture	
138	oak, white	Quercus alba	1	16		24	2	Dead/Dying Branches	Yes
139	hickory, shagbark	Carya ovata	1	24		36	2	Tree Architecture	Yes
140	maple, Norway	Acer platanoides	1	12		18	3	Tree Architecture	
141	maple, Norway	Acer platanoides	1	10		15	3	Tree Architecture	
142	oak, white	Quercus alba	1	20		30	2	Dead/Dying Branches	Yes
143	oak, white	Quercus alba	3	19, 11, 13	43	64.5	2	Tree Architecture	Yes
144	maple, Norway	Acer platanoides	1	9		13.5	3	Tree Architecture	
145	hickory, shagbark	Carya ovata	1	16		24	2		Yes
146	hickory, shagbark	Carya ovata	1	10		15	2	Tree Architecture	
147	oak, black	Quercus velutina	1	15		22.5	3	Tree Architecture	
148	oak, swamp white	Quercus bicolor	1	16		24	2	Tree Architecture	???
149	elm, American	Ulmus americana	1	9		13.5	2	Dead/Dying Branches	
150	cherry, black	Prunus serotina	1	13		19.5	3	Tree Architecture	
151	cherry, black	Prunus serotina	1	7		10.5	3	Dead/Dying Branches	
152	maple, Norway	Acer platanoides	1	6		9	3	Dead/Dying Branches	
153	hickory, shagbark	Carya ovata	1	27		40.5	2	Dead/Dying Branches	Yes
154	walnut, black	Juglans nigra	1	8		12	3	Tree Architecture	
155	hackberry, common	Celtis occidentalis	2	8, 8	16	24	3	Tree Architecture	Yes
156	cherry, black	Prunus serotina	1	11		16.5	3	Dead/Dying Branches	
157	hickory, shagbark	Carya ovata	1	7		10.5	3	Tree Architecture	
158	cherry, black	Prunus serotina	1	16		24	3	Dead/Dying Branches	
159	mulberry spp.	Morus spp.	1	10		15	4		
160	hickory, shagbark	Carya ovata	1	20		30	2	Dead/Dying Branches	Yes
161	mulberry spp.	Morus spp.	1	8		12	4		
162	maple, Norway	Acer platanoides	1	10		15	3		
163	oak, white	Quercus alba	1	29		43.5	2	Dead/Dying Branches	Yes

164	walnut, black	Juglans nigra	1	9		13.5	3	Tree Architecture	
165	cherry, black	Prunus serotina	1	13		19.5	4	Dead/Dying Branches	
166	mulberry spp.	Morus spp.	1	7		10.5	4	Tree Architecture	
167	maple, Norway	Acer platanoides	1	8		12	3	Dead/Dying Branches	
168	maple, Norway	Acer platanoides	1	8		12	3		
169	cherry, black	Prunus serotina	1	18		27	3	Tree Architecture	Yes
170	maple, Norway	Acer platanoides	1	13		19.5	3		
171	elm, American	Ulmus americana	1	16		24	2	Tree Architecture	
172	maple, Norway	Acer platanoides	1	9		13.5	3		
173	hickory, shagbark	Carya ovata	1	18		27	2	Dead/Dying Branches	Yes
174	mulberry spp.	Morus spp.	1	6		9	4		
175	mulberry spp.	Morus spp.	1	11		16.5	4	Tree Architecture	
176	maple, Norway	Acer platanoides	1	11		16.5	3	Tree Architecture	
177	oak, northern red	Quercus rubra	1	15		22.5	2	Tree Architecture	
178	oak, northern red	Quercus rubra	1	14		21	2	Tree Architecture	
179	maple, Norway	Acer platanoides	1	11		16.5	3	Tree Architecture	
180	oak, black	Quercus velutina	1	12		18	3	Tree Architecture	
181	hickory, shagbark	Carya ovata	1	9		13.5	3	Tree Architecture	
182	hackberry, common	Celtis occidentalis	1	8		12	3		Yes
183	hackberry, common	Celtis occidentalis	1	17		25.5	2	Tree Architecture	Yes
184	maple, Norway	Acer platanoides	1	7		10.5	3		
185	maple, Norway	Acer platanoides	1	7		10.5	3		
186	hickory, shagbark	Carya ovata	1	11		16.5	3	Tree Architecture	
187	hickory, shagbark	Carya ovata	1	10		15	3	Tree Architecture	
188	hickory, shagbark	Carya ovata	1	6		9	3	Tree Architecture	
189	oak, white	Quercus alba	1	12		18	3	Tree Architecture	
190	oak, white	Quercus alba	1	21		31.5	2	Dead/Dying Branches	Yes
191	maple, Norway	Acer platanoides	1	9		13.5	3		
192	oak, black	Quercus velutina	1	16		24	3	Tree Architecture	Yes
193	maple, Norway	Acer platanoides	1	7		10.5	4		
194	hickory, shagbark	Carya ovata	1	6		9	3		
195	oak, black	Quercus velutina	1	13		19.5	2	Tree Architecture	
196	oak, black	Quercus velutina	1	15		22.5	2	Tree Architecture	

197	maple, norway	Acer platanoides	1	14		21	3	Tree Architecture	
198	hickory, shagbark	Carya ovata	1	13		19.5	3	Tree Architecture	Yes
199	oak, white	Quercus alba	1	17		25.5	2	Dead/Dying Branches	Yes
200	maple, Norway	Acer platanoides	1	7		10.5	4	Tree Architecture	
201	cherry, black	Prunus serotina	1	8		12	3	Dead/Dying Branches	
202	hickory, shagbark	Carya ovata	1	12		18	3		Yes
203	oak, northern red	Quercus rubra	1	10		15	3	Tree Architecture	
204	oak, northern red	Quercus rubra	1	14		21	2	Dead/Dying Branches	
205	hickory, shagbark	Carya ovata	1	11		16.5	3	Tree Architecture	
206	hickory, shagbark	Carya ovata	1	6		9	3		
207	oak, black	Quercus velutina	1	12		18	3	Tree Architecture	
208	maple, Norway	Acer platanoides	1	12		18	3	Tree Architecture	
209	maple, Norway	Acer platanoides	1	14		21	3	Tree Architecture	
210	maple, Norway	Acer platanoides	1	15		22.5	3	Tree Architecture	
211	maple, Norway	Acer platanoides	1	11		16.5	3	Tree Architecture	
212	hickory, shagbark	Carya ovata	1	8		12	3		
213	maple, Norway	Acer platanoides	1	7		10.5	3		
214	elm, American	Ulmus americana	1	12		18	3	Tree Architecture	
215	walnut, black	Juglans nigra	1	9		13.5	3		
216	elm, American	Ulmus americana	1	9		13.5	3	Tree Architecture	
217	hickory, shagbark	Carya ovata	1	20		30	2	Tree Architecture	Yes
218	elm, American	Ulmus americana	1	17		25.5	3	Dead/Dying Branches	
219	cherry, black	Prunus serotina	1	7		10.5	3	Dead/Dying Branches	
220	maple, Norway	Acer platanoides	1	7		10.5	4	Trunk Condition	
221	walnut, black	Juglans nigra	1	6		9	3		
222	oak, northern red	Quercus rubra	1	31		46.5	4	Tree Architecture	Yes
223	maple, Norway	Acer platanoides	1	12		18	3	Dead/Dying Branches	
224	hickory, shagbark	Carya ovata	1	23		34.5	3	Dead/Dying Branches	Yes
225	hackberry, common	Celtis occidentalis	1	10		15	2		Yes
226	maple, Norway	Acer platanoides	1	9		13.5	4		
227	elm, Siberian	Ulmus parvifolia	1	16		24	4	Trunk Condition	
228	mulberry spp.	Morus spp.	1	8		12	4	Tree Architecture	
229	oak, white	Quercus alba	1	24		36	3	Tree Architecture	Yes

230	oak, white	Quercus alba	1	22		33	3	Tree Architecture	Yes
231	maple, Norway	Acer platanoides	1	7		10.5	4	Tree Architecture	
232	oak, white	Quercus alba	1	21		31.5	3	Tree Architecture	Yes
233	maple, Norway	Acer platanoides	1	11		16.5	3	Trunk Condition	
234	walnut, black	Juglans nigra	1	18		27	2	Tree Architecture	Yes
235	oak, white	Quercus alba	1	11		16.5	2	Tree Architecture	
236	maple, Norway	Acer platanoides	1	7		10.5	3	Tree Architecture	
237	hickory, shagbark	Carya ovata	1	8		12	3	Tree Architecture	
238	maple, Norway	Acer platanoides	1	7		10.5	3	Tree Architecture	
239	hickory, shagbark	Carya ovata	1	6		9	3	Tree Architecture	
240	oak, northern red	Quercus rubra	1	16		24	3	Tree Architecture	Yes
241	oak, black	Quercus velutina	1	15		22.5	3	Tree Architecture	
242	hickory, shagbark	Carya ovata	1	6		9	3		
243	hickory, shagbark	Carya ovata	1	9		13.5	3	Tree Architecture	
244	oak, white	Quercus alba	1	15		22.5	3	Dead/Dying Branches	
245	hickory, shagbark	Carya ovata	1	6		9	3	Trunk Condition	
246	hickory, shagbark	Carya ovata	1	20		30	2	Tree Architecture	Yes
247	maple, Norway	Acer platanoides	1	6		9	3		
248	oak, white	Quercus alba	1	24		36	2	Tree Architecture	Yes
249	maple, Norway	Acer platanoides	1	6		9	3		
250	maple, Norway	Acer platanoides	1	8		12	3	Decay/Cavity	
251	hickory, shagbark	Carya ovata	1	6		9	3	Dead/Dying Branches	
252	hickory, shagbark	Carya ovata	1	8		12	3	Dead/Dying Branches	
253	hickory, shagbark	Carya ovata	1	8		12	3	Tree Architecture	
254	oak, northern red	Quercus rubra	1	25		37.5	4	Decay/Cavity	Yes
255	hickory, shagbark	Carya ovata	1	7		10.5	3	Tree Architecture	
256	oak, northern red	Quercus rubra	1	7		10.5	3	Tree Architecture	
257	oak, northern red	Quercus rubra	1	17		25.5	3	Tree Architecture	Yes
258	maple, Norway	Acer platanoides	1	14		21	3	Tree Architecture	
259	oak, northern red	Quercus rubra	1	11		16.5	3	Tree Architecture	
260	hickory, shagbark	Carya ovata	1	7		10.5	3		
261	hickory, shagbark	Carya ovata	1	11		16.5	3	Tree Architecture	
262	cherry, black	Prunus serotina	1	6		9	3	Tree Architecture	

263	oak, black	Quercus velutina	1	25		37.5	4	Dead/Dying Branches	Yes
264	hickory, shagbark	Carya ovata	1	7		10.5	3		
265	oak, black	Quercus velutina	1	15		22.5	4	Tree Architecture	
266	oak, northern red	Quercus rubra	1	27		40.5	4	Dead/Dying Branches	Yes
267	maple, Norway	Acer platanoides	1	12		18	3	Dead/Dying Branches	
268	maple, Norway	Acer platanoides	1	9		13.5	3	Dead/Dying Branches	
269	oak, white	Quercus alba	1	27		40.5	4	Tree Architecture	Yes
270	hickory, shagbark	Carya ovata	1	8		12	3	Tree Architecture	
271	maple, Norway	Acer platanoides	2	8, 6	14	21	3	Tree Architecture	
272	oak, white	Quercus alba	1	22		33	4	Tree Architecture	Yes
273	maple, Norway	Acer platanoides	1	10		15	3	Tree Architecture	
274	maple, Norway	Acer platanoides	1	10		15	3	Tree Architecture	
275	oak, northern red	Quercus rubra	1	17		25.5	4	Dead/Dying Branches	Yes

Slope and Slope Setback Disturbance Summary

112, 114, and 132 W. Cork Street | State Wide Rentals LLC | City of Kalamazoo NFP Overlay District

Regulated protected slope and slope setback areas, proposed disturbance, and percentage of impact for each active parcel, pursuant to § 50-6.2 H. The slope setback is calculated at 12.5 feet per § 50-6.2 H(3)(a) — half the height of the 25-foot slope, which exceeds the 10-foot floor. Disturbance figures are inclusive of the full 24-foot driveway corridor width. Because the driveway is engineered to a maximum 10% grade, no retaining walls are required.

Table 1 — Protected Slope Areas Affected

Parcel Address	Parcel ID (PIN)	Total Slope Area (sq ft)	Area Affected (sq ft)	% Affected
132 W. Cork Street	06-27-396-201	9,659	2,683.4	27.78%
114 W. Cork Street	06-27-397-098	4,373	1,137.2	26.00%
112 W. Cork Street	06-27-397-097	2,100	119.8	5.71%

Table 2 — Slope Setback Areas Affected (12.5-ft setback)

Parcel Address	Parcel ID (PIN)	Total Setback Area (sq ft)	Area Affected (sq ft)	% Affected
132 W. Cork Street	06-27-396-201	3,090	655	21.20%
114 W. Cork Street	06-27-397-098	750	575	76.67%
112 W. Cork Street	06-27-397-097	1,325	225	16.98%

Note on 114 W. Cork Street: The higher slope setback impact on this parcel (76.67%) is a function of the lot geometry and the required rear yard setbacks, which together leave this configuration as the only feasible option for reasonable development of the parcel. The driveway alignment and building placement cannot be shifted further without losing required rear yard clearance or buildable area.

All disturbance is confined to the single shared 24-foot driveway corridor and the building footprint; no disturbance occurs outside the boundaries shown on the plans, consistent with the intent of § 50-6.2K to protect slopes while allowing reasonable use of the property.

Charge: Percentage of Slopes and Slope Setbacks Affected

REVISED SUBMISSION — May 2026

This charge is provided in support of the requested relief from the Natural Features Protection slope standards pursuant to **§50-6.2K (Slopes)** of the City of Kalamazoo Zoning Ordinance. The table below summarizes the total area of regulated slopes and slope setback areas on each parcel, the portion proposed to be affected, and the corresponding percentage of impact.

This revised submission reflects the following material changes from the original application:

- **Shared Ingress/Egress Driveway at 132 W. Cork Street (Lots 101–102):** A single shared driveway accessed from 132 W. Cork Street is proposed to serve all five addresses on the corridor — 112, 114, 120, 126, and 132 W. Cork Street. This is the central design change that enables all slope impact reductions described in this submission. All revised disturbance figures below are contingent upon approval of this shared driveway. If denied, each of the five parcels will require its own individual driveway, resulting in significantly greater regulated slope and setback disturbance across the corridor.
- **112 W. Cork Street (Lot 97) and 114 W. Cork Street (Lot 98):** With the shared driveway approved, individual driveways and southern parking areas are eliminated. Disturbance is reduced to utility connections and building placement only. Slope area affected at 112 drops from 119.8 to 50 sq ft; at 114 from 1,137.2 to 292 sq ft.
- **120 W. Cork Street (Lot 99) and 126 W. Cork Street (Lot 100) — Conditionally Withdrawn:** With shared driveway access provided via 132 W. Cork, these parcels require zero regulated slope or setback disturbance and are withdrawn from this NFP application. If the shared driveway is denied and individual driveways are required, NFP relief will be necessary on both lots.
- **132 W. Cork Street (Lots 101–102):** Structure footprint reduced to 36’ x 42’. The shared driveway originates here and serves all neighboring homes, replacing what would otherwise be five separate driveway cuts with associated slope disturbance.

■ **CONTINGENCY NOTICE — ALL FIVE PARCELS: The slope impact reductions shown in this submission are entirely contingent upon approval of the single shared ingress/egress driveway at 132 W. Cork Street. This one driveway is proposed to serve 112, 114, 120, 126, and 132 W. Cork Street. If the shared driveway is denied, all five addresses will require individual driveways, each producing independent regulated slope and setback disturbance. Under that scenario, NFP relief would be required for every parcel on the corridor at disturbance levels exceeding those in the original application. The applicant respectfully requests that the shared driveway approval and NFP applications be evaluated together.**

Parcel Address	Parcel ID (PIN)	Total Regulated Slope Area (sq ft)	Slope Area Affected (sq ft)	Slope Setback Affected (sq ft)	Percentage Affected	NFP Relief Required
112 W. Cork Street	06-27-397-097	2,100	**50***	240*	**2.38%***	**Conditional***
114 W. Cork Street	06-27-397-098	4,373	**292***	316*	**6.68%***	**Conditional***

Parcel Address	Parcel ID (PIN)	Total Regulated Slope Area (sq ft)	Slope Area Affected (sq ft)	Slope Setback Affected (sq ft)	Percentage Affected	NFP Relief Required
*120 W. Cork St. (cond. withdrawn)**	06-27-397-099	4,845	**0***	0*	**0%***	**Conditional***
*126 W. Cork St. (cond. withdrawn)**	06-27-397-100	4,791	**0***	0*	**0%***	**Conditional***
132 W. Cork Street (shared driveway origin)	06-27-396-201	9,659	2,683.4	See note†	27.78%	Yes

** All figures for 112, 114, 120, and 126 W. Cork Street are contingent upon approval of the shared ingress/egress driveway at 132 W. Cork Street. If the shared driveway is denied, all five parcels revert to requiring individual driveways with associated regulated slope and setback disturbance, and NFP relief will be required for each address.*

† 132 W. Cork Street: Shared driveway replaces the previously proposed 24' individual driveway. Structure reduced to 36' x 42'. Slope setback impact to be addressed in updated site plan.

As demonstrated above, the revised proposal dramatically reduces regulated slope and setback disturbance across all subject parcels. The shared ingress/egress driveway at 132 W. Cork Street is the single design element that makes these reductions possible. With its approval, total regulated slope area disturbed falls from **5,630.7 sq ft** to **3,025.4 sq ft** — a reduction of **2,605.3 sq ft (46.3%)**. Without it, all five addresses require individual driveways and the corridor's aggregate slope disturbance would exceed the original application. The remaining proposed impacts are confined to the minimum extent necessary to accommodate shared access, utility connections, and reasonable building placement, consistent with the intent of **§50-6.2K**.

W. Cork Street — Slope Impact Reduction

Original Application vs. Revised Submission · May 2026

The Shared Driveway: One Decision, Five Outcomes

A single shared ingress/egress driveway, originating at **132 W. Cork Street**, is proposed to serve all five addresses on the corridor. This one approval is the linchpin of the entire revised submission. Every slope impact reduction shown below depends on it. If approved, four of the five parcels eliminate or dramatically reduce their individual driveway cuts — the primary driver of slope disturbance. If denied, all five addresses must construct independent driveways and the disturbance figures revert to those in the original application.

Scenario	112	114	120	126	132	Total Impact
Shared driveway APPROVED	**50 sq ft**	**292 sq ft**	**0 sq ft (withdrawn)**	**0 sq ft (withdrawn)**	2,683.4 sq ft	**3,025.4 sq ft (–46.3%)**
Shared driveway DENIED	119.8 sq ft	1,137.2 sq ft	826.8 sq ft	863.5 sq ft	2,683.4 sq ft	**5,630.7 sq ft (original figures apply)**

Denied scenario figures reflect the original application disturbance extents, which already account for individual driveway sizing on each parcel.

■ CONTINGENCY NOTICE — ALL FIVE PARCELS: Every slope impact reduction in this submission is contingent upon approval of the shared driveway at 132 W. Cork Street. That single driveway serves 112, 114, 120, 126, and 132 W. Cork Street. If denied, all five addresses revert to the original application disturbance figures, and NFP relief will be required at every address. The shared driveway approval and NFP applications must be evaluated together.

Parcel-by-Parcel Detail (Shared Driveway Approved Scenario)

Parcel Address	Lot	Total Regulated Slope (sq ft)	Original Area Affected	Original %	Revised Area Affected*	Revised %*	NFP Relief
112 W. Cork St.	97	2,100	119.8	5.71%	**50**	**2.38%**	**Conditional***
114 W. Cork St.	98	4,373	1,137.2	26.00%	**292**	**6.68%**	**Conditional***
120 W. Cork St.	99	4,845	826.8	17.07%	**0***	**0%***	**Conditional withdrawal***
126 W. Cork St.	100	4,791	863.5	18.02%	**0***	**0%***	**Conditional withdrawal***
132 W. Cork St. (shared drive origin)	101–102	9,659	2,683.4	27.78%	2,683.4	27.78%	Yes

** All revised figures contingent on shared driveway approval at 132 W. Cork Street. 132 W. Cork retains its NFP requirement regardless; structure reduced to 36'×42' and shared driveway replaces the previously proposed 24' individual driveway.*

How Each Change Reduces Slope Disturbance

Design Change	Parcels	Slope Area Eliminated	Dependency
Single shared driveway at 132 replaces five individual driveway cuts	**All 5**	**Enables all reductions below**	**Primary approval required**

Driveways & parking relocated north (Proposed Utility Plan)	112 & 114	**–914.2 sq ft (112: –69.8 | 114: –845.2)**	Requires shared driveway approval
Lots 99 & 100 withdrawn from NFP (no slope impact without indiv. driveway)	120 & 126	**–1,690.3 sq ft (120: –826.8 | 126: –863.5)**	Requires shared driveway approval
Structure at 132 reduced to 36’×42’	132	*Minimizes footprint; driveway impact per updated plan*	*Stand-alone change*

The shared driveway at 132 W. Cork Street is not a secondary convenience — it is the structural basis for this entire revised submission. One driveway approval produces a 46.3% reduction in corridor-wide slope disturbance, eliminates NFP requirements on two lots, and dramatically reduces impact on two others. If denied, all five parcels revert to the original application disturbance figures.

Construction Access and Staging Plan

112, 114, and 132 W. Cork Street | State Wide Rentals LLC | City of Kalamazoo NFP Overlay District

Phase 1 — Shared Driveway Construction (Temporary Access via Imperial Street)

During construction of the shared 24-foot driveway at 132 W. Cork Street, construction traffic will temporarily access the site via Imperial Street from the north, using the applicant-owned Imperial Street parcels as the staging corridor. A single excavator will access W. Cork Street to construct the driveway cut through the slope. W. Cork Street will not be closed and public traffic will not be redirected. Construction protection fencing will be installed along the full disturbance boundary prior to any ground disturbance and will remain in place for the entirety of construction.

Phase 2 — All Remaining Construction (Permanent Access via Shared Driveway)

Once the shared 24-foot driveway at 132 W. Cork Street is complete, construction traffic for each parcel will route via the shared driveway from W. Cork Street. These are individual, separately permitted builds occurring simultaneously — not a single combined development. Each parcel remains its own platted lot with its own permit, and the shared driveway functions as common access serving each independent build. The shared driveway is the permanent access point for each parcel. The rear spine driveway will be constructed during this phase, enabling access to each building site from the flat area at the top of the slope without additional slope disturbance. Imperial Street is used only during Phase 1 driveway construction and is not the permanent access route.

Driveway Grade and Utilities

The shared driveway is engineered to a maximum 10% grade per fire marshal guidance. Because of this gradual grade, no retaining walls are required. Water, sewer, and gas utilities are accommodated within the 24-foot driveway footprint. A new 6-inch sewer lead will be installed; Public Works scoped the sewer lines in the road and confirmed no existing leads are present, so the new 6-inch lead location is at the applicant's discretion and aligns with the driveway location. All utilities will be buried within the driveway corridor. Overhead electrical utility poles are located outside the protected slope areas and reach the rear of the lots without crossing the protected slope. Utility elevation data points were provided by Terra Pointe Consultants, Inc.

Slope Protection During Construction

- Temporary construction protection fence installed along the full disturbance boundary prior to any ground disturbance.
- Fence posts: 6 ft tall, buried minimum 2 ft below grade, spaced no more than 8 ft on center.
- Cross beams: two beams positioned at approximately 2 ft and 6 ft above grade.
- Barrier material: plastic mesh barrier fence securely affixed to the front of posts.
- Fencing remains in place for the entirety of construction.
- No traffic, storage, soil spreading, or grading within the protected area enclosed by fencing.

Post-Construction Slope Restoration

- Seeding with native grass and groundcover mix appropriate for slope stabilization.

- Installation of slope protection erosion blankets, secured with staples, on all disturbed slope faces.
- Monitoring during first growing season with re-seeding as needed.
- Soil erosion and sedimentation control coordinated with the City's SESC permit technician.

Permit and Agency Coordination Status

112, 114, and 132 W. Cork Street | State Wide Rentals LLC | City of Kalamazoo NFP Overlay District

Confirmation of coordination with City departments and external consultants, responsive to staff questions regarding drive access, utilities, and supporting documentation.

Item	Status
Driveway Permit	Submitted; held by Zoning Administrator Peter Eldridge pending this decision.
Curb Cut — 24-ft Driveway	Location approved; permit ready from Terrell Ayers, Utilities.
Sewer Lead	Public Works scoped sewer lines in road; no existing leads present. New 6-inch lead location at applicant
Utility Elevation Data	Provided by Terra Pointe Consultants, Inc.
Overhead Electrical	Overhead electrical utility poles are located outside the protected slope areas and reach the rear of the lo
Boundary & Topographic Survey	Prepared by Terra Pointe Consultants, Inc. — the correct survey document for this application.
Davey Woodland Assessment	Davey Resource Group, Inc., October 2025 — attached.
Public Services Coordination	Drive access and utility placement coordinated; curb cut and sewer confirmed as above.

Construction Protection Fencing Specifications

112, 114, and 132 W. Cork Street | State Wide Rentals LLC | City of Kalamazoo NFP Overlay District

Temporary construction protection fencing will be installed per City of Kalamazoo NFP Ordinance requirements, placed at the edge of the not-to-be-disturbed area — no closer than the required slope setback boundary — and maintained for the entirety of construction.

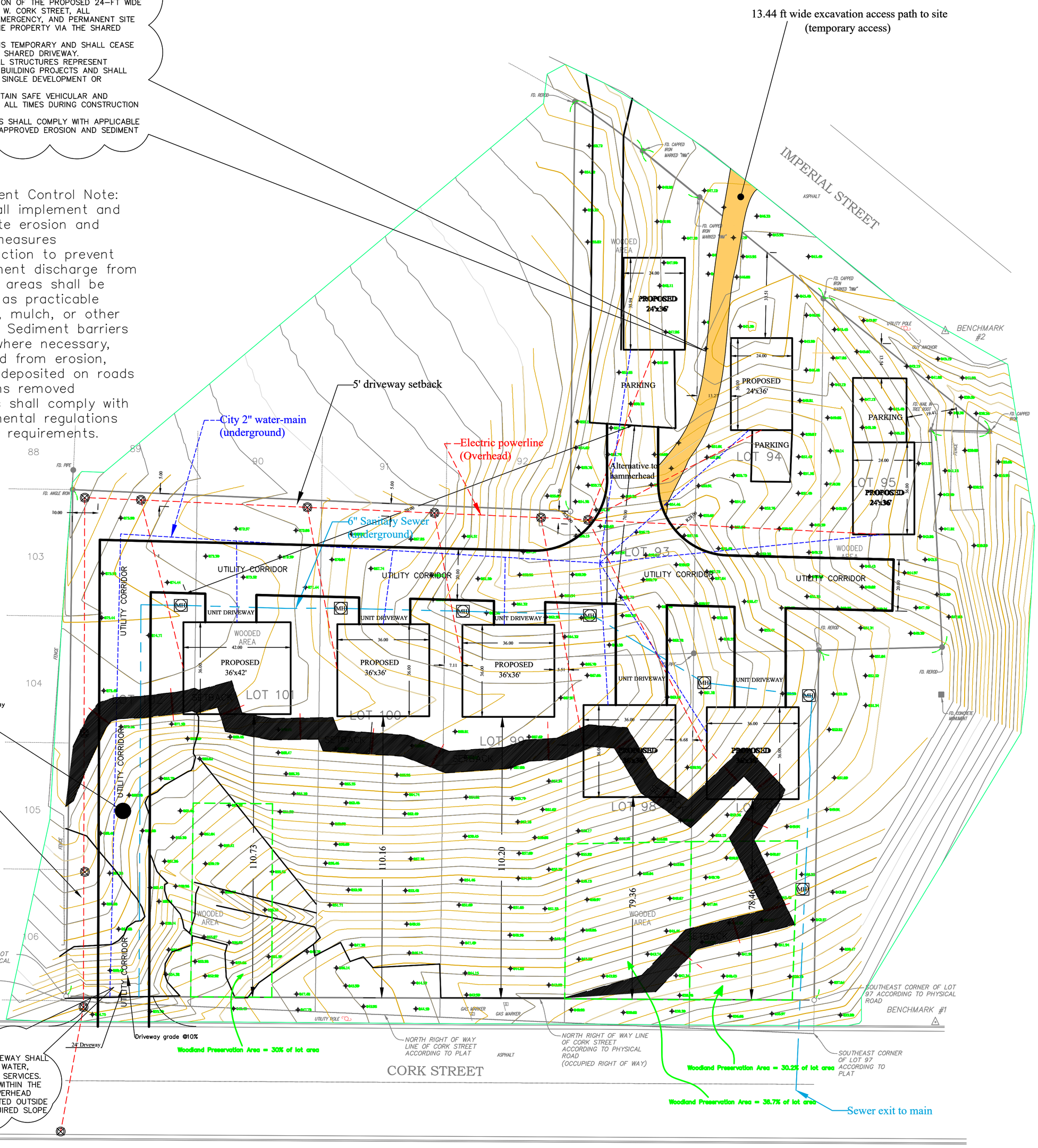
Component	Specification
Posts	6 feet in height, buried at least 2 feet below grade, spaced no more than 8 feet apart on center
Cross Beams	Two cross beams positioned approximately 2 feet and 6 feet above grade
Barrier Material	Plastic mesh barrier fence securely affixed to the front of the posts
Placement	Outside the CRZ; no closer than the edge of the not-to-be-disturbed area or the required setback
Duration	Fence remains in place for the entirety of construction
Prohibited Activities	No heavy equipment, vehicle traffic, material storage, soil spreading, or grading within protected area

SITE PLAN

CONSTRUCTION ACCESS NOTES

PHASE 1 –TEMPORARY CONSTRUCTION ACCESS SHALL BE PROVIDED VIA IMPERIAL STREET FOR SITE PREPARATION, UTILITY INSTALLATION, AND BUILDING CONSTRUCTION ACTIVITIES.
DURING PHASE 1, ONE EXCAVATOR MAY TEMPORARILY ACCESS W. CORK STREET SOLELY FOR CONSTRUCTION OF THE SHARED DRIVEWAY ENTRANCE AT 132 W. CORK STREET.
PHASE 2 –UPON COMPLETION OF THE PROPOSED 24–FT WIDE SHARED DRIVEWAY AT 132 W. CORK STREET, ALL CONSTRUCTION, SERVICE, EMERGENCY, AND PERMANENT SITE TRAFFIC SHALL ACCESS THE PROPERTY VIA THE SHARED DRIVEWAY.
IMPERIAL STREET ACCESS IS TEMPORARY AND SHALL CEASE UPON COMPLETION OF THE SHARED DRIVEWAY.
THE PROPOSED RESIDENTIAL STRUCTURES REPRESENT INDIVIDUAL SIMULTANEOUS BUILDING PROJECTS AND SHALL NOT BE CONSTRUED AS A SINGLE DEVELOPMENT OR SUBDIVISION PROJECT.
CONTRACTORS SHALL MAINTAIN SAFE VEHICULAR AND PEDESTRIAN MOVEMENT AT ALL TIMES DURING CONSTRUCTION ACTIVITIES.
ALL CONSTRUCTION ACCESS SHALL COMPLY WITH APPLICABLE LOCAL REGULATIONS AND APPROVED EROSION AND SEDIMENT CONTROL REQUIREMENTS.

Erosion and Sediment Control Note:
The Contractor shall implement and maintain appropriate erosion and sediment control measures throughout construction to prevent soil loss and sediment discharge from the site. Disturbed areas shall be stabilized as soon as practicable through vegetation, mulch, or other approved methods. Sediment barriers shall be installed where necessary, stockpiles protected from erosion, and any sediment deposited on roads or drainage systems removed promptly. All works shall comply with applicable environmental regulations and local authority requirements.



UTILITY CORRIDOR NOTE

THE PROPOSED 24–FT SHARED DRIVEWAY SHALL SERVE AS A UTILITY CORRIDOR FOR WATER, SEWER (NEW 6–IN. LEAD), AND GAS SERVICES. ALL UTILITIES SHALL BE INSTALLED WITHIN THE DRIVEWAY FOOTPRINT AS SHOWN. OVERHEAD ELECTRICAL SERVICE SHALL BE ROUTED OUTSIDE PROTECTED SLOPE AREAS AND REQUIRED SLOPE SETBACKS.

A1

REV:	DESCRIPTION:	BY:	DATE:
A description		by	xx/xx/xx

GENERAL NOTES:

PROJECT NAME: PROJECT_NAME

DRAWING TITLE: site-single-line

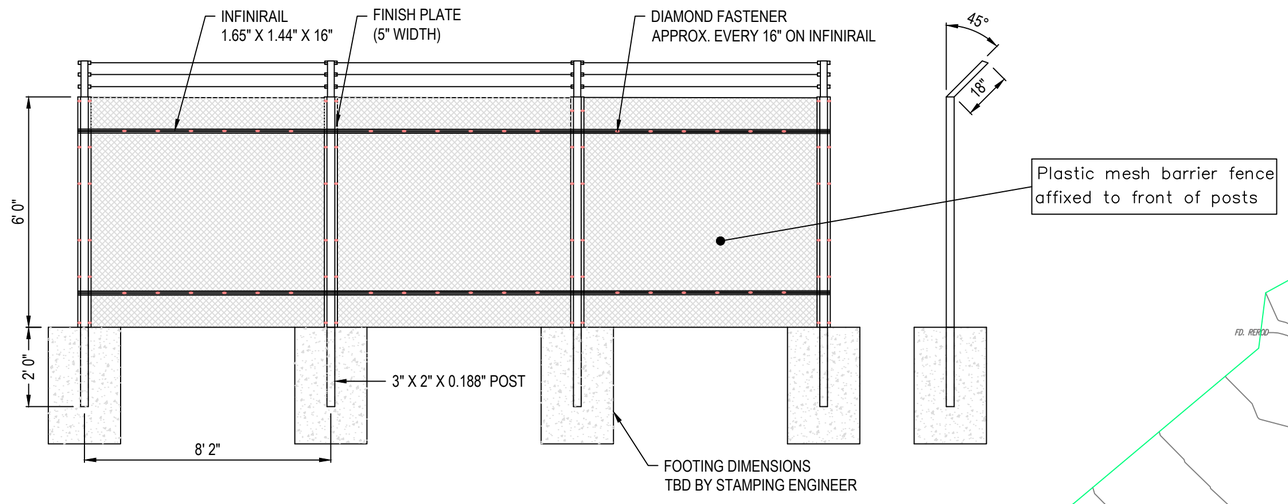
CLIENT
CLIENT NAME
XXXXXXXXXXXXXXXX,
YYYYYYYYYY,
YYYYY.
CONTACT NO-
E-MAIL :

ARCHITECT:
FIRM NAME
ARCHITECTS,PLANNERS & ENGINEERS.
XXXXXXXXXXXXXXX,
YYYYYYYYYY,
YYYYYY.
CONTACT NO-
E-MAIL :

DRAWN BY: P.PARTHIBAN
CHECKED BY: -
APPROVED BY: -
DATE: 00/00/0000

PROJECT NO: -
SCALE: 0:000
SHEET SIZE: A1
DRAWING NO: -
SHEET NO: 0 OF 0
REVISION: -
UNIT: -

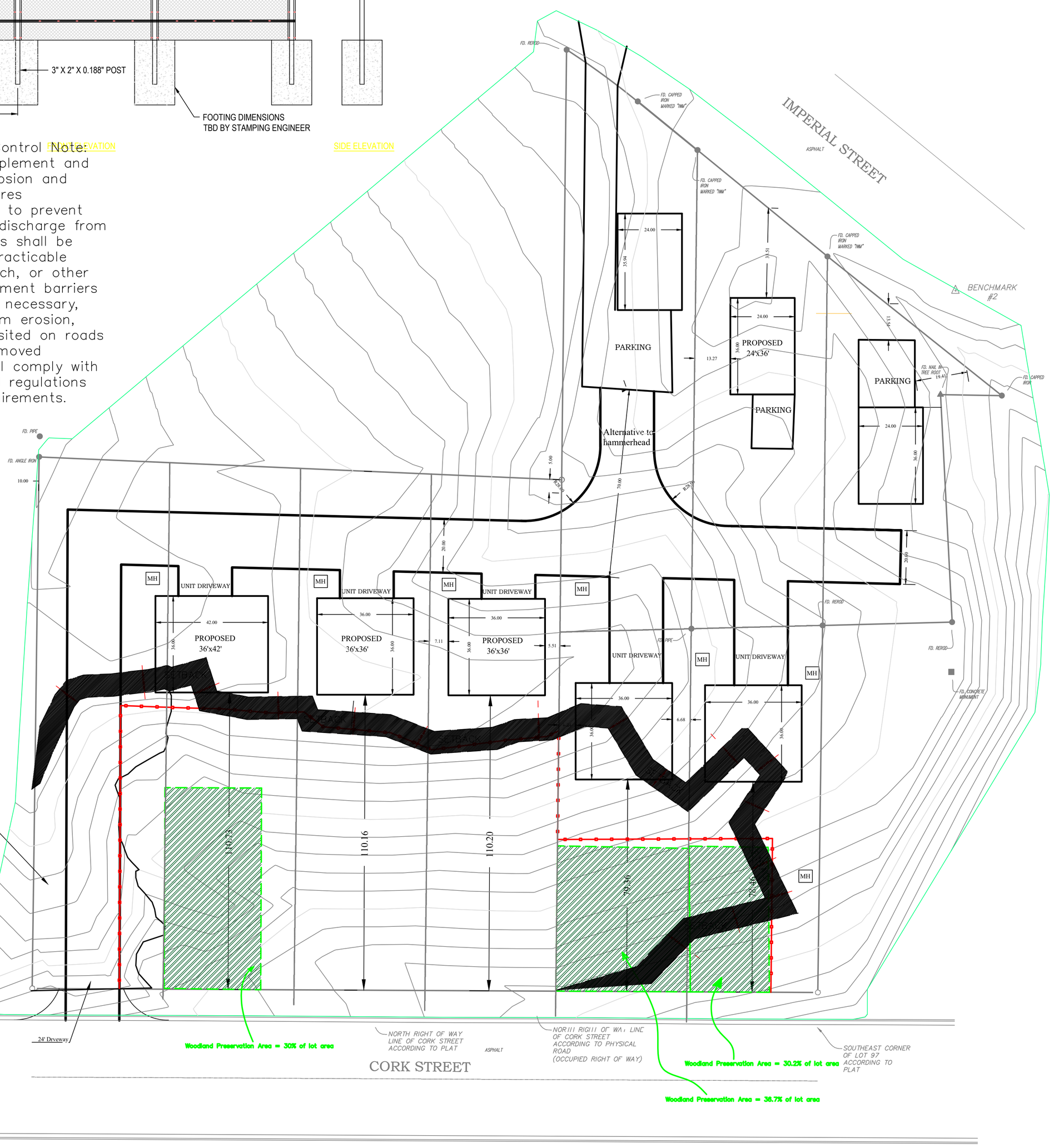
FENCING & WOODLAND PRESERVATION



FRONT ELEVATION

SIDE ELEVATION

Erosion and Sediment Control Note:
The Contractor shall implement and maintain appropriate erosion and sediment control measures throughout construction to prevent soil loss and sediment discharge from the site. Disturbed areas shall be stabilized as soon as practicable through vegetation, mulch, or other approved methods. Sediment barriers shall be installed where necessary, stockpiles protected from erosion, and any sediment deposited on roads or drainage systems removed promptly. All works shall comply with applicable environmental regulations and local authority requirements.



WOODLAND PRESERVATION AREAS SHOWN HEREON SHALL REMAIN UNDISTURBED. NO CLEARING, GRADING, MATERIAL STORAGE, EQUIPMENT ACCESS, OR CONSTRUCTION ACTIVITIES SHALL OCCUR WITHIN DESIGNATED PRESERVATION AREAS.

A1

REV:	DESCRIPTION:	BY:	DATE:
A description		by	xx/xx/xx

GENERAL NOTES:

PR JE T NAME:
PROJECT_NAME

DRAWING TITLE:
site-single-line

CLIENT
CLIENT NAME
XXXXXXXXXXXXXXX,
YYYYYYYYYY,
YYYYY.
CONTACT NO-
E-MAIL :

ARCHITECT:
FIRM NAME
ARCHITECTS,PLANNERS & ENGINEERS.
XXXXXXXXXXXXXXX,
YYYYYYYYYY,
YYYYYY.
CONTACT NO-
E-MAIL :

DRAWN BY: P.PARTHIBAN
CHECKED BY: -
APPROVED BY: -
DATE: 00/00/0000

PROJECT NO: -
SCALE: 0:000
SHEET SIZE: A1
DRAWING NO: -
SHEET NO: 0 OF 0
REVISI N: -
UNIT: -

PUBLIC NOTICE

NATURAL FEATURES PROTECTION (NFP) REVIEW

Pursuant to the City of Kalamazoo Natural Features Protection Ordinance, notice is hereby given of a proposed project subject to review by the Natural Features Protection (NFP) Review Board.

You are receiving this notice because you own property or reside within 300 feet of the subject properties.

Proposed Project

The applicant is proposing residential duplex development on the following individually platted parcels:

132 W. Cork Street — PIN: 06-27-396-201
114 W. Cork Street — PIN: 06-27-397-098
112 W. Cork Street — PIN: 06-27-397-097

The application materials consist of planning-level Natural Features Protection exhibits submitted for NFP review. These exhibits illustrate existing site conditions (including slopes and protected natural features) and approximate building locations and disturbance areas. The materials are not construction drawings, engineering plans, or permit-ready documents.

Plan Review Location

Project plans and application materials may be reviewed in person at:

606 Bryant Street, Kalamazoo, MI

By appointment only.

Appointments may be requested by email at:

admin@kzoobnb.com

The Natural Features Protection Overlay District may also be viewed using the City's interactive GIS map at:

https://www.kalamazoocity.org/Residents/Taxes-Assessing/View-GIS-Maps

Public Comment

Written comments may be submitted to City staff prior to the meeting and will be included in the public record. Public comment may also be provided at the public meeting in accordance with City procedures.

Review and Construction Timeline

The project is scheduled for review by the Natural Features Protection Review Board. If approved, construction is anticipated to begin no earlier than Fall 2026, subject to receipt of all required permits and approvals.

NFP Review Meeting

Tuesday, June 23, 2026

4:00 PM

Kalamazoo City Hall – Commission Chambers
241 W. South Street, Kalamazoo, MI 49007

City Contact

Nolan Bergstrom (He/Him)
Community Planner & NFP Board Liaison
Community Planning & Economic Development Department
City of Kalamazoo
Phone: 269-337-8045
Cell: 269-454-1832

NFP Review Board
Staff Report

City of Kalamazoo

TO: The Natural Features Protection Review Board

FROM: Nolan Bergstrom, NFP Board Liaison

DATE: June 23, 2026

SUBJECT: 112 W. Cork Street

RECOMMENDATION:

It is recommended the Natural Features Protection (NFP) Review Board make a recommendation to the Zoning Board of Appeals to grant relief from the Protected Slope and Slope Setback Standards for 112 W. Cork Street to impact 50 sq. ft. of protected slopes and 240 sq. ft. of protected slope setbacks with the following conditions:

- If Site Plan Review is required, no work begins until Full Site Plan Review Approval.
- Tree Protection Fencing remains in place during work

BACKGROUND:

Site Overview

112 W. Cork Street is owned by STATE WIDE RENTALS, LLC. It is apart of larger group of adjacent parcels owned by STATE WIDE RENTALS, LLC. Those parcels are 112, 114, 120, 126, and 132 W. Cork Street and 101, 107, and 113 Imperial Street. The W. Cork Street parcels are within the NFP Overlay and the Imperial Street parcels are not. The W Cork Street parcels are zoned RM-15. The property is located within the Westnedge Hill Neighborhood. The parcels have remained undeveloped due to undulating topography with grades of 20 percent or greater slope closer to W. Cork Street. The parcels are also wooded and a part of a larger woodland complex. The Cork Street properties are within the NFP Overlay District due to the presence of the following natural features:

1. Protected Slopes and Slope Setbacks
2. Woodlands and / or Protected Trees

Project Scope
The project is looking to develop duplex housing units with shared driveway access. The parcels are not slated to be combined at this time but kept as separate lots.

NFP Relief Request Background
The applicant is requesting a recommendation to the Zoning Board of Appeals from the NFP Board for relief from the Protected Slope and Slope Setback Standards for 112 W. Cork Street to impact 50 sq. ft. of protected slopes and 240 sq. ft. of protected slope setbacks.

Next Steps
The project is planned to go before the Zoning Board of Appeals in July. A previous iteration of the project was presented to the NFP Board in January 2026 and went before the ZBA in February 2026. Staff are working with the applicant to determine if full Site Plan Review is needed or if this remains an Administrative Review.

FINDINGS:

Since the project is located within the NFP Overlay District, the NFP Standards were reviewed and applied as follows:

- **Water Resources Standard** (§ 50-6.2D)– Significant water resources do not exist / have not been identified on-site.

- **Wetland Standard** (§ 50-6.2C) – Wetlands do not exist / have not been identified on-site.

- **Woodland Standard** (§ 50-6.2G) – 112 W. Cork Street and the adjacent Cork Street parcels are 100% wooded and a part of a larger complex of woodlands that extend to the Northeast onto adjacent parcels. With each parcel being 100% wooded, the woodland preservation requirement is 25% or greater. The applicant provided a breakdown of impacts to wooded areas for each parcel. For 112 W. Cork Street, the applicant is preserving 30.2%, which is above the 25% requirement, which meets the Woodland NFP Standard. For areas of preserved woodland, protection fencing is required to protect these areas during construction and is shown on the site plans.
  .
- **Protected Slopes and Slope Setbacks Standards** (§ 50-6.2H) — **Slopes** 20% grade or greater are located throughout the project limits. Complexes of slope are closer to the frontage of W. Cork Street. Due to this, the applicant worked to place the proposed duplexes closer to the rear of the property to avoid the steeper protected slopes as well as

using the shared driveway access off of 132 W. Cork Street to eliminate impacts due to a separate driveway access. The applicant is requesting a recommendation to the Zoning Board of Appeals from the NFP Board for relief from the Protected Slope and Slope Setback Standards for 112 W. Cork Street to impact 50 sq. ft. of protected slopes and 240 sq. ft. of protected slope setbacks.

Erosion / sedimentation control materials (Kalamazoo Landscape Supplies, 4150 S 9th St, Kalamazoo):

- Biodegradable straw erosion control blanket on all slope areas, secured with stakes, held until permanent vegetative cover is established; native mix is designed to establish through the blanket.
- Hydro-mulch / EZ-Mulch over seeded areas to retain moisture and improve seed-to-soil contact during germination.
- Silt fence installed along the barrier line shown on the plans, remaining in place until the site is stabilized.

- **Protected Tree Standard** (§ 50-6.2F) — The site is nearly 100 percent woodland and thus, the woodland standard is applied. The applicant does have a woodland report breaking down each tree by tree species, size, and location. This report also provides a preservation priority value and health status for each of the surveyed trees. The report was completed by Davey Resource Group, Inc.

- **Rare Species Review** – Rare species review is not required.

- **Plant Selection (§ 50-6.2J(4)(b))** – Any landscaping and screening are required for this project as well as other plantings. The applicant provided a seeding mix. Per **§ 50-6.1C** *If a conflict arises between the overlay district regulations and those of the base zoning district, the overlay district regulations control. Per **§ 50-6.2J(4)(b)**: When additional landscaping is proposed on the site plan beyond the minimum requirements of Chapter 50, the NFP Review Board may allow the use of non-native, non-invasive species which have been determined not to cause adverse environmental impacts.*
    a. Seed mix and erosion materials. Seed: All disturbed areas outside building footprints, driveways, and utility corridors will be stabilized with a Michigan-native erosion control mix suited to disturbed slopes. A quick establishing native blend carried by a heavy nurse crop for rapid first-season sedimentation control.

b. Species:

Native grasses, sedges & rushes:
- Big Bluestem (Andropogon gerardii)
- Fox Sedge (Carex vulpinoidea)
- Tufted Hairgrass (Deschampsia cespitosa)
- Canada Wild Rye (Elymus canadensis)
- Virginia Wild Rye (Elymus virginicus)
- Path Rush (Juncus tenuis)
- Switchgrass (Panicum virgatum)
- Little Bluestem (Schizachyrium scoparium)
- Indian Grass (Sorghastrum nutans)
- Sand Dropseed (Sporobolus cryptandrus)

Native forbs:
- Lance-leaf Coreopsis (Coreopsis lanceolata)
- Partridge Pea (Chamaecrista fasciculata)
- Purple Coneflower (Echinacea purpurea)
- Wild Bergamot (Monarda fistulosa)
- Black-eyed Susan (Rudbeckia hirta)

Temporary nurse crop (rapid sedimentation control while natives establish):
- Annual Ryegrass (Lolium multiflorum)
- Seed Oats (Avena sativa

Total seeding rate approximately 50 lbs/acre (8 lbs native grasses + 40 lbs nurse crop).

- **Stormwater Management** (§ 50-6.2J(6)) – Stormwater requirements for NFP sites are dictated by the City of Kalamazoo Performance Standards for Groundwater Protection within Wellhead Protection Capture Zones.

- **Public Notice Requirement** (§ 50-6.2K(1)(c)) — **The** project is requesting variances to the NFP Standards. Due to this, a Public Notice was required and was completed. Public Notice will also be sent out by City of Kalamazoo staff for the Zoning Board of Appeals meeting.

THE CITY OF Kalamazoo
Community Planning & Economic Development
245 N Rose St • Suite 100 • Kalamazoo, MI 49007
(269) 337-8000 • www.kalamazoocity.org

SUPPLEMENTAL SITE PLAN REVIEW APPLICATION
FOR NATURAL FEATURES PROTECTION

For projects located within the Natural Features Protection (NFP) Overlay District, separate site plan approval is required before the full site plan can be approved. This review is done either by the NFP Review Board or administratively by staff to verify conformance with NFP Overlay District zoning code (Chapter 50, NFP). The NFP Overlay District map can be found on the City's GIS mapping website (select "Planning & Zoning" layer and make sure "NFP Overlay" is clicked on).

The NFP Supplemental Application must be completed and submitted with the regular Site Plan Review Application and checklists. The NFP Review Board meets monthly to review and approve applications. City staff can assist in scheduling a project at an upcoming NFP Review Board meeting. While the review process offers some flexibility, projects often seek NFP approval between the Pre-Application meeting and regular Site Plan Review meeting.

Section I. Project & Applicant Information

All projects must complete Section I. If the project will not impact any natural features on the site, and does not trigger additional stormwater controls or treatment, applicants should sign and submit Section I only. Staff will review and determine if the application can be approved administratively.

Section II. Natural Features Checklist & Attachments

For projects proposing improvements or changes to the site that impact natural features, change grading, or involve work in or near NFP setbacks, Sections II and III must be completed. Section II identifies which natural features are present and standards apply. Section III will assist you in determining what documentation and additional plan sets are needed for a complete application. Once a complete application is submitted to the City, the project will be scheduled for the next available NFP Review Board meeting and an application fee of $110 will apply.

QUESTIONS

Contact the NFP staff liaison with any questions about your NFP Supplemental Application at (269) 337-8045 or development@kalamazoocity.org .

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Community Planning & Economic Development
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SECTION I. PROJECT AND APPLICANT INFORMATION

Please provide all of the project and applicant information requested below. Include the date of your regular site plan review meeting, if one has been scheduled or already taken place.

APPLICANT NAME:	State Wide Rentals LLC (first) (last)		
APPLICANT ADDRESS:	606 Bryant Street (number) (street name)		
	Kalamazoo (city) (state) MI 49001 (Zip)		
APPLICANT EMAIL:	jeremy@kzoorestored.com	**PHONE:**	
PARCEL ADDRESS/PIN:	112 W. Cork Street PIN: 06-27-397-097		
PROJECT DESCRIPTION:	Construction of a residential duplex on 112 W. Cork Street within the NFP Overlay District. Woodland preservation (30.2%) exceeds the 25% minimum under Sec. 50-6.2G; no woodland variance is requested. Variance relief is requested under Sec. 50-6.2K for protected slope and slope-setback impacts. See attached supplemental narrative, site plan set, and slope/woodland breakdowns.		
OWNER NAME: *(if different)*	Jeremy (first) Cole, Member (last)		
HAS REGULAR SITE PLAN REVIEW MEETING OCCURRED?	☐ Yes ■ No	**DATE OF SITE PLAN REVIEW MEETING:**	

NFP APPLICATION REQUIRED?

Is the project limited to interior work only with no exterior ground changes or increase in impervious coverage?	
☐ **YES**	If YES, Sections II & III of this application are not needed. Sign below & submit only this page with your site plan review or permit application.
☑ **NO**	If NO, proceed to Sections II & III. Do **NOT** sign below.

By signing below, the applicant certifies that no natural features will be disturbed as part of this project.

Print name: _____

Signature: _____ Date: _____

SECTION II. NFP SITE PLAN CHECKLIST & ATTACHMENTS

Use the checklist to determine what documentation and addition plans sets must be prepared for this application. All plan sets, maps, and additional information must be attached to this application to be considered complete. If you checked "no" to certain NFP items in questions 1-7 in Section II, record "N/A" on the checklist.

REQUIRED: NFP SITE PLAN SET

All applications must include separate sheets in the plan set showing the following:

1. Existing conditions map showing an inventory of all protected natural features and any associated natural features setbacks with distances (use checklist below)

2. Future development plan overlaid onto the existing conditions and natural features inventory; indicate where and to what extent protected natural features will be disturbed, removed, altered, or impacted in any way and which natural features will be protected during and after construction

   Future development plan must include:

   - **Boundary with extent of re-grading**, construction, or site preparation activities
   - **All existing and new building footprints** (mark whether existing buildings will be removed or maintained)
   - **New and existing parking** surfaces or structures, sidewalks, trails, and other impervious or semi-impervious surfaces including decks, patios, viewing platforms, etc. (list proposed surface materials and whether existing surfaces will be maintained or removed)
   - **Proposed location of fencing and screening**, whether permanent, natural, or construction silt fencing and/or natural feature protection fencing (with specifications)
   - **Stormwater facilities** showing boundary of ground disturbance, grading or construction activities, if located near natural features
   - **New utilities** and/or relocation of existing utilities showing corridors that could impact natural features

3. Landscape plan detailing the minimum elements needed to meet zoning code requirements and all proposed additional landscaping elements or features (include table with species name)

4. Any additional plans or tables detailing which natural features will be restored or replaced after construction, if required (e.g., riparian buffer installation or slope restoration plan may be required under certain circumstances when the ordinance allows changes within these protected areas)

WETLANDS	Present:	Included	Notes:
Mark existing wetland boundaries with notes about wetland conditions. *Attach a copy of EGLE permit or permit application for work impacting Part 303 wetlands regulated by the State.*	☐ Yes ☒ No	N/A	N/A
WATER RESOURCES	**Present:**	**Included**	**Notes:**
Mark the location of all water resources on the parcel and those within 25 feet of the parcel boundaries. *Attach a copy of EGLE permit or permit application for work impacting Part 301 waters regulated by the State.*	☐ Yes ☒ No	N/A	N/A
Show required setbacks with dimensions; describe existing or future ground cover within riparian setbacks.		N/A	N/A
TREES	**Present:**		
Mark the location of all "protected" trees that are proposed to be removed and those that will remain and require protection fencing.	☐ Yes ☒ No	N/A	N/A
Include a table with species name, size (DBH and height), and condition of "protected" trees that are proposed to be removed and list replacement tree information.		N/A	N/A
Provide a note with justification for removal.		N/A	N/A
WOODLANDS	**Present:**		
Delineate the boundary of all woodlands on the parcel noting where woodlands likely extend onto adjacent parcels.	☒ Yes ☐ No	1 & 2	Woodland boundary delineated on Pages 1 & 2.
Mark all areas of woodland that will be retained and removed (i.e., cleared).		1 & 2	Retained & removed (cleared) areas shown.
Include a table or note with the required preservation ratio (based on existing woodland coverage), percentage proposed to be removed, and rationale for selecting area for removal.		1 & 2	Preservation 30.2% of woodland exceeds the 25% minimum (Table 6.2-3, Sec. 50-6.2G). Compliant - no woodland variance requested.
SLOPES	**Present:**	**Included**	**Notes:**
Provide a slope analysis that shows the boundaries of all "protected" slopes and mark the required setback(s).	☒ Yes ☐ No	1	Protected slopes and required setbacks shown on Page 1.
Include a note with co-existing feature that triggers "protected" slope status (e.g., wooded, within 500 ft of water resource.		1	Wooded slope triggers protected status; variance requested under Sec. 50-6.2K.

NATURAL HERITAGE AREAS	Present:	
Is an MNFI* rare species review required? *Parcels can be pre-screened using the City's GIS website, click on the "Planning & Zoning" layer and "NFP Overlay" layer; then click on parcel and see MNFI status.*	☐ Yes ■ No	
If an MNFI rare species review is required, attach the resulting report.		

*Michigan Natural Features Inventory (MNFI) Rare Species Reviews can be requested at: https://mnfi.anr.msu.edu/services/rare-species-reviews

ACCEPTED DATA SOURCES & ANALYSIS

All data sources, analysis, and professionals are subject to approval by the City Planner according to Chapter 50-6.2. The following guidance may be useful when selecting a professional or methodology for inventorying natural features.

1. **WETLANDS**
   - Wetland delineation report performed by a qualified consultant including a map denoting delineated boundary of all wetlands, OR
   - Most recent US Fish & Wildlife Service's National Wetlands Inventory boundary (State of Michigan mapper: https://www.michigan.gov/egle/about/organization/water-resources/wetlands/inventory-maps)

2. **PROTECTED TREE IDENTIFICATION**
   - May be performed by an qualified professional (including ISA Certified Arborist or similar); a full tree inventory is not required if all necessary information can be obtained and communicated using another survey, inventory, or site assessment methodology

3. **WOODLANDS**
   - A qualified professional, such as an ISA Certified Arborist, landscape architect, or license engineer may perform a desktop analysis or field survey to delineate woodlands
   - When a variances is being requests to remove more woodland cover than is allowed under the preservation ration, the following is required
     - Woodland assessment report with determination that the Trees per Area (TPA) meets the NFP definition of a woodland and mapped delineation of woodland
     - Woodland assessment report with a determination that Basal Area is equivalent to the TPA in the NFP definition and meets definition of a woodland and mapped delineation of woodland
     - In addition to determination of whether stand of trees meets NFP definition of a woodland, assessment must include information on general species diversity,
     -

composition of species, any notable trees (either notable species or size), invasive species composition, and general health and age observations of tree stand

4. **PROTECTED SLOPES**
   - Topographic survey performed in the field by a qualified consultant to delineate areas of a slope with grade of 20% or greater
   - Desktop analysis performed using U.S. Geological Survey digital topographic maps, LIDAR, digital elevation map, or equivalent data showing 2' intervals or finer resolution, performed by a qualified consultant or engineer

NFP Review Board
Staff Report

City of Kalamazoo

TO: The Natural Features Protection Review Board

FROM: Nolan Bergstrom, NFP Board Liaison

DATE: June 23, 2026

SUBJECT: 114 W. Cork Street

RECOMMENDATION:

It is recommended the Natural Features Protection (NFP) Review Board make a recommendation to the Zoning Board of Appeals to grant relief from the Protected Slope and Slope Setback Standards for 114 W. Cork Street to impact 292 sq. ft. of protected slopes and 316 sq. ft. of protected slope setbacks with the following conditions:

- If Site Plan Review is required, no work begins until Full Site Plan Review Approval.
- Tree Protection Fencing remains in place during work

BACKGROUND:

Site Overview

114 W. Cork Street is owned by STATE WIDE RENTALS, LLC. It is part of larger group of adjacent parcels owned by STATE WIDE RENTALS, LLC. Those parcels are 112, 114, 120, 126, and 132 W. Cork Street and 101, 107, and 113 Imperial Street. The W. Cork Street parcels are within the NFP Overlay and the Imperial Street parcels are not. The W Cork Street parcels are zoned RM-15. The property is located within the Westnedge Hill Neighborhood. The parcels have remained undeveloped due to undulating topography with grades of 20 percent or greater slope closer to W. Cork Street. The parcels are also wooded and a part of a larger woodland complex. The Cork Street properties are within the NFP Overlay District due to the presence of the following natural features:

1. Protected Slopes and Slope Setbacks
2. Woodland and / or Protected Slopes

Project Scope

The project is looking to develop duplex housing units with shared driveway access. The parcels are not slated to be combined at this time but kept as separate lots.

NFP Relief Request Background
The applicant is requesting a recommendation to the Zoning Board of Appeals from the NFP Board for relief from the Protected Slope and Slope Setback Standards for 114 W. Cork Street to impact 292 sq. ft. of protected slopes and 316 sq. ft. of protected slope setbacks.

Next Steps
The project is planned to go before the Zoning Board of Appeals in July. A previous iteration of the project was presented to the NFP Board in January 2026 and went before the ZBA in February 2026. Staff are working with the applicant to determine if full Site Plan Review is needed or if this remains an Administrative Review.

FINDINGS:

Since the project is located within the NFP Overlay District, the NFP Standards were reviewed and applied as follows:

- **Water Resources Standard** (§ 50-6.2D)– Significant water resources do not exist / have not been identified on-site.

- **Wetland Standard** (§ 50-6.2C) – Wetlands do not exist / have not been identified on-site.

- **Woodland Standard** (§ 50-6.2G) – 114 W. Cork Street and the adjacent Cork Street parcels are 100% wooded and a part of a larger complex of woodlands that extend to the Northeast onto adjacent parcels. With each parcel being 100% wooded, the woodland preservation requirement is 25% or greater. The applicant provided a breakdown of impacts to wooded areas for each parcel. For 114 W. Cork Street, the applicant is preserving 36.7%, which is above the 25% requirement, which meets the Woodland NFP Standard. For areas of preserved woodland, protection fencing is required to protect these areas during construction and is shown on the site plans.
  .
- **Protected Slopes and Slope Setbacks Standards** (§ 50-6.2H) — **Slopes** 20% grade or greater are located throughout the project limits. Complexes of slope are closer to the frontage of W. Cork Street. Due to this, the applicant worked to place the proposed duplexes closer to the rear of the property to avoid the steeper protected slopes as well as using the shared driveway access off of 132 W. Cork Street to eliminate impacts due to a separate driveway access. The applicant is requesting a recommendation to the Zoning

Board of Appeals from the NFP Board for relief from the Protected Slope and Slope Setback Standards for 114 W. Cork Street to impact 292 sq. ft. of protected slopes and 316 sq. ft. of protected slope setbacks.

Erosion / sedimentation control materials (Kalamazoo Landscape Supplies, 4150 S 9th St, Kalamazoo):

- Biodegradable straw erosion control blanket on all slope areas, secured with stakes, held until permanent vegetative cover is established; native mix is designed to establish through the blanket.
- Hydro-mulch / EZ-Mulch over seeded areas to retain moisture and improve seed-to-soil contact during germination.
- Silt fence installed along the barrier line shown on the plans, remaining in place until the site is stabilized.

- **Protected Tree Standard** (§ 50-6.2F) — The site is nearly 100 percent woodland and thus, the woodland standard is applied. The applicant does have a woodland report breaking down each tree by tree species, size, and location. This report also provides a preservation priority value and health status for each of the surveyed trees. The report was completed by Davey Resource Group, Inc.

- **Rare Species Review** – Is not required.

- **Plant Selection (§ 50-6.2J(4)(b))** – Any landscaping and screening are required for this project as well as other plantings. The applicant provided a seeding mix. Per § 50-6.1C *If a conflict arises between the overlay district regulations and those of the base zoning district, the overlay district regulations control. Per § 50-6.2J(4)(b): When additional landscaping is proposed on the site plan beyond the minimum requirements of Chapter 50, the NFP Review Board may allow the use of non-native, non-invasive species which have been determined not to cause adverse environmental impacts.*
    a. Seed mix and erosion materials. Seed: All disturbed areas outside building footprints, driveways, and utility corridors will be stabilized with a Michigan-native erosion control mix suited to disturbed slopes. A quick establishing native blend carried by a heavy nurse crop for rapid first-season sedimentation control.
    b. Species:

Native grasses, sedges & rushes:

- Big Bluestem (Andropogon gerardii)
- Fox Sedge (Carex vulpinoidea)
- Tufted Hairgrass (Deschampsia cespitosa)
- Canada Wild Rye (Elymus canadensis)
- Virginia Wild Rye (Elymus virginicus)
- Path Rush (Juncus tenuis)
- Switchgrass (Panicum virgatum)
- Little Bluestem (Schizachyrium scoparium)
- Indian Grass (Sorghastrum nutans)
- Sand Dropseed (Sporobolus cryptandrus)

Native forbs:

- Lance-leaf Coreopsis (Coreopsis lanceolata)
- Partridge Pea (Chamaecrista fasciculata)
- Purple Coneflower (Echinacea purpurea)
- Wild Bergamot (Monarda fistulosa)
- Black-eyed Susan (Rudbeckia hirta)

Temporary nurse crop (rapid sedimentation control while natives establish):

- Annual Ryegrass (Lolium multiflorum)
- Seed Oats (Avena sativa

Total seeding rate approximately 50 lbs/acre (8 lbs native grasses + 40 lbs nurse crop).

- **Stormwater Management** (§ 50-6.2J(6)) – Stormwater requirements for NFP sites are dictated by the City of Kalamazoo Performance Standards for Groundwater Protection within Wellhead Protection Capture Zones.

- **Public Notice Requirement** (§ 50-6.2K(1)(c)) — **The** project is requesting variances to the NFP Standards. Due to this, a Public Notice was required and was completed. Public Notice will also be sent out by City of Kalamazoo staff for the Zoning Board of Appeals meeting.

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SUPPLEMENTAL SITE PLAN REVIEW APPLICATION
FOR NATURAL FEATURES PROTECTION

For projects located within the Natural Features Protection (NFP) Overlay District, separate site plan approval is required before the full site plan can be approved. This review is done either by the NFP Review Board or administratively by staff to verify conformance with NFP Overlay District zoning code (Chapter 50, NFP). The NFP Overlay District map can be found on the City's GIS mapping website (select "Planning & Zoning" layer and make sure "NFP Overlay" is clicked on).

The NFP Supplemental Application must be completed and submitted with the regular Site Plan Review Application and checklists. The NFP Review Board meets monthly to review and approve applications. City staff can assist in scheduling a project at an upcoming NFP Review Board meeting. While the review process offers some flexibility, projects often seek NFP approval between the Pre-Application meeting and regular Site Plan Review meeting.

Section I. Project & Applicant Information

All projects must complete Section I. If the project will not impact any natural features on the site, and does not trigger additional stormwater controls or treatment, applicants should sign and submit Section I only. Staff will review and determine if the application can be approved administratively.

Section II. Natural Features Checklist & Attachments

For projects proposing improvements or changes to the site that impact natural features, change grading, or involve work in or near NFP setbacks, Sections II and III must be completed. Section II identifies which natural features are present and standards apply. Section III will assist you in determining what documentation and additional plan sets are needed for a complete application. Once a complete application is submitted to the City, the project will be scheduled for the next available NFP Review Board meeting and an application fee of $110 will apply.

QUESTIONS

Contact the NFP staff liaison with any questions about your NFP Supplemental Application at (269) 337-8045 or development@kalamazoocity.org .

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SECTION I. PROJECT AND APPLICANT INFORMATION

Please provide all of the project and applicant information requested below. Include the date of your regular site plan review meeting, if one has been scheduled or already taken place.

APPLICANT NAME:	State Wide Rentals LLC (first) (last)		
APPLICANT ADDRESS:	606 Bryant Street (number) (street name)		
	Kalamazoo (city) (state) MI 49001 (Zip)		
APPLICANT EMAIL:	jeremy@kzoorestored.com	**PHONE:**	
PARCEL ADDRESS/PIN:	114 W. Cork Street PIN: 06-27-397-098		
PROJECT DESCRIPTION:	Construction of a residential duplex on 114 W. Cork Street within the NFP Overlay District. Woodland preservation (36.7%) exceeds the 25% minimum under Sec. 50-6.2G; no woodland variance is requested. Variance relief is requested under Sec. 50-6.2K for protected slope and slope-setback impacts. See attached supplemental narrative, site plan set, and slope/woodland breakdowns.		
OWNER NAME: *(if different)*	Jeremy (first) Cole, Member (last)		
HAS REGULAR SITE PLAN REVIEW MEETING OCCURRED?	☐ Yes ■ No	**DATE OF SITE PLAN REVIEW MEETING:**	

NFP APPLICATION REQUIRED?

Is the project limited to interior work only with no exterior ground changes or increase in impervious coverage?	
☐ **YES**	If YES, Sections II & III of this application are not needed. Sign below & submit only this page with your site plan review or permit application.
☑ **NO**	If NO, proceed to Sections II & III. Do **NOT** sign below.

By signing below, the applicant certifies that no natural features will be disturbed as part of this project.

Print name: _____

Signature: _____ Date: _____

SECTION II. NFP SITE PLAN CHECKLIST & ATTACHMENTS

Use the checklist to determine what documentation and addition plans sets must be prepared for this application. All plan sets, maps, and additional information must be attached to this application to be considered complete. If you checked "no" to certain NFP items in questions 1-7 in Section II, record "N/A" on the checklist.

REQUIRED: NFP SITE PLAN SET

All applications must include separate sheets in the plan set showing the following:

1. Existing conditions map showing an inventory of all protected natural features and any associated natural features setbacks with distances (use checklist below)

2. Future development plan overlaid onto the existing conditions and natural features inventory; indicate where and to what extent protected natural features will be disturbed, removed, altered, or impacted in any way and which natural features will be protected during and after construction

   Future development plan must include:

   - **Boundary with extent of re-grading**, construction, or site preparation activities
   - **All existing and new building footprints** (mark whether existing buildings will be removed or maintained)
   - **New and existing parking** surfaces or structures, sidewalks, trails, and other impervious or semi-impervious surfaces including decks, patios, viewing platforms, etc. (list proposed surface materials and whether existing surfaces will be maintained or removed)
   - **Proposed location of fencing and screening**, whether permanent, natural, or construction silt fencing and/or natural feature protection fencing (with specifications)
   - **Stormwater facilities** showing boundary of ground disturbance, grading or construction activities, if located near natural features
   - **New utilities** and/or relocation of existing utilities showing corridors that could impact natural features

3. Landscape plan detailing the minimum elements needed to meet zoning code requirements and all proposed additional landscaping elements or features (include table with species name)

4. Any additional plans or tables detailing which natural features will be restored or replaced after construction, if required (e.g., riparian buffer installation or slope restoration plan may be required under certain circumstances when the ordinance allows changes within these protected areas)

WETLANDS	Present:	Included	Notes:
Mark existing wetland boundaries with notes about wetland conditions. *Attach a copy of EGLE permit or permit application for work impacting Part 303 wetlands regulated by the State.*	☐ Yes ☒ No	N/A	N/A
WATER RESOURCES	**Present:**	**Included**	**Notes:**
Mark the location of all water resources on the parcel and those within 25 feet of the parcel boundaries. *Attach a copy of EGLE permit or permit application for work impacting Part 301 waters regulated by the State.*	☐ Yes ☒ No	N/A	N/A
Show required setbacks with dimensions; describe existing or future ground cover within riparian setbacks.		N/A	N/A
TREES	**Present:**		
Mark the location of all "protected" trees that are proposed to be removed and those that will remain and require protection fencing.	☐ Yes ☒ No	N/A	N/A
Include a table with species name, size (DBH and height), and condition of "protected" trees that are proposed to be removed and list replacement tree information.		N/A	N/A
Provide a note with justification for removal.		N/A	N/A
WOODLANDS	**Present:**		
Delineate the boundary of all woodlands on the parcel noting where woodlands likely extend onto adjacent parcels.	☒ Yes ☐ No	1 & 2	Woodland boundary delineated on Pages 1 & 2.
Mark all areas of woodland that will be retained and removed (i.e., cleared).		1 & 2	Retained & removed (cleared) areas shown.
Include a table or note with the required preservation ratio (based on existing woodland coverage), percentage proposed to be removed, and rationale for selecting area for removal.		1 & 2	Preservation 36.7% of woodland exceeds the 25% minimum (Table 6.2-3, Sec. 50-6.2G). Compliant - no woodland variance requested.
SLOPES	**Present:**	**Included**	**Notes:**
Provide a slope analysis that shows the boundaries of all "protected" slopes and mark the required setback(s).	☒ Yes ☐ No	1	Protected slopes and required setbacks shown on Page 1.
Include a note with co-existing feature that triggers "protected" slope status (e.g., wooded, within 500 ft of water resource.		1	Wooded slope triggers protected status; variance requested under Sec. 50-6.2K.

NATURAL HERITAGE AREAS	Present:	
Is an MNFI* rare species review required? *Parcels can be pre-screened using the City's GIS website, click on the "Planning & Zoning" layer and "NFP Overlay" layer; then click on parcel and see MNFI status.*	☐ Yes ■ No	
If an MNFI rare species review is required, attach the resulting report.		

*Michigan Natural Features Inventory (MNFI) Rare Species Reviews can be requested at: https://mnfi.anr.msu.edu/services/rare-species-reviews

ACCEPTED DATA SOURCES & ANALYSIS

All data sources, analysis, and professionals are subject to approval by the City Planner according to Chapter 50-6.2. The following guidance may be useful when selecting a professional or methodology for inventorying natural features.

1. **WETLANDS**
   - Wetland delineation report performed by a qualified consultant including a map denoting delineated boundary of all wetlands, OR
   - Most recent US Fish & Wildlife Service's National Wetlands Inventory boundary (State of Michigan mapper: https://www.michigan.gov/egle/about/organization/water-resources/wetlands/inventory-maps)

2. **PROTECTED TREE IDENTIFICATION**
   - May be performed by an qualified professional (including ISA Certified Arborist or similar); a full tree inventory is not required if all necessary information can be obtained and communicated using another survey, inventory, or site assessment methodology

3. **WOODLANDS**
   - A qualified professional, such as an ISA Certified Arborist, landscape architect, or license engineer may perform a desktop analysis or field survey to delineate woodlands
   - When a variances is being requests to remove more woodland cover than is allowed under the preservation ration, the following is required
     - Woodland assessment report with determination that the Trees per Area (TPA) meets the NFP definition of a woodland and mapped delineation of woodland
     - Woodland assessment report with a determination that Basal Area is equivalent to the TPA in the NFP definition and meets definition of a woodland and mapped delineation of woodland
     - In addition to determination of whether stand of trees meets NFP definition of a woodland, assessment must include information on general species diversity,
     -

composition of species, any notable trees (either notable species or size), invasive species composition, and general health and age observations of tree stand

4. **PROTECTED SLOPES**
   - Topographic survey performed in the field by a qualified consultant to delineate areas of a slope with grade of 20% or greater
   - Desktop analysis performed using U.S. Geological Survey digital topographic maps, LIDAR, digital elevation map, or equivalent data showing 2' intervals or finer resolution, performed by a qualified consultant or engineer

NFP Review Board
Staff Report

City of Kalamazoo

TO: The Natural Features Protection Review Board

FROM: Nolan Bergstrom, NFP Board Liaison

DATE: June 23, 2026

SUBJECT: 607 E. Kilgore Road

RECOMMENDATION:

It is recommended the Natural Features Protection (NFP) Review Board approve the Phase 1 Site Plan for the Milham Park Improvements project at 607 E Kilgore Road with the following conditions:

- No work begins until Full Site Plan Review Approval
- Tree Protection Fencing remains in place during work
- Conservation measures and construction BMPs identified and detailed on Page 5 of the USFWS Verification Letter (Appendix B) are implemented to avoid impacts to protected species.
- Approval of the City Stormwater Engineer

BACKGROUND:

Site Overview

Milham Park is located at 607 East Kilgore Road in the Millwood Neighborhood on the southern boundary of the City limit. The park is zoned RS-5 (Residential, Single-Dwelling). The park area has been owned by the City of Kalamazoo since 1910 and is 195.5 acres. Improvements and changes to the park have occurred since the 1920s. Milham Park is in the NFP Overlay District because it is a Publicly Owned and Operated Open Greenspace / Park and due to the following natural features being present:

1. Protected Slopes and Slope Setbacks
2. Woodlands and Protected Trees
3. Hydrology and Wetlands (Portage Creek)
4. Michigan Natural Features Inventory Rare Species Review being required.

Scope of work
For this Phase 1 work, the following improvements are proposed:

- Removal and replacement of the existing parking lot along Kilgore Road (this will lead to a lower percentage of impervious surface)
- Removal of the existing parking spaces along Lovers Lane and on the east side of the upper/central level of the park. (this will lead to a lower percentage of impervious surface)
- Installation of a new small parking lot on the west side of the upper/central level of the park to add additional accessible parking.
- Installation of a new accessible walk and overlook deck near Portage Creek.

The remainder of the existing walks throughout the park will remain as-is. No new exterior lights will be added. A new trench slot drain system will be installed along the north side of the Kilgore Road parking lot and will connect into the existing stormwater system with a stormwater treatment structure. The new upper parking lot will have two (2) leaching basins for stormwater capture. Fifty-two (52) new trees will be planted per the City's zoning and Natural Features Protection ordinances (required plantings per Zoning and Replacement Tree Plantings per NFP Ordinance).

Project Request
Project is seeking NFP Board Approval which is a condition for Full Site Plan Approval.

Next Steps
The project will attend Site Plan Review on July 1st.

FINDINGS:

Since the project is located within the NFP Overlay District, the NFP Standards were reviewed and applied as follows:

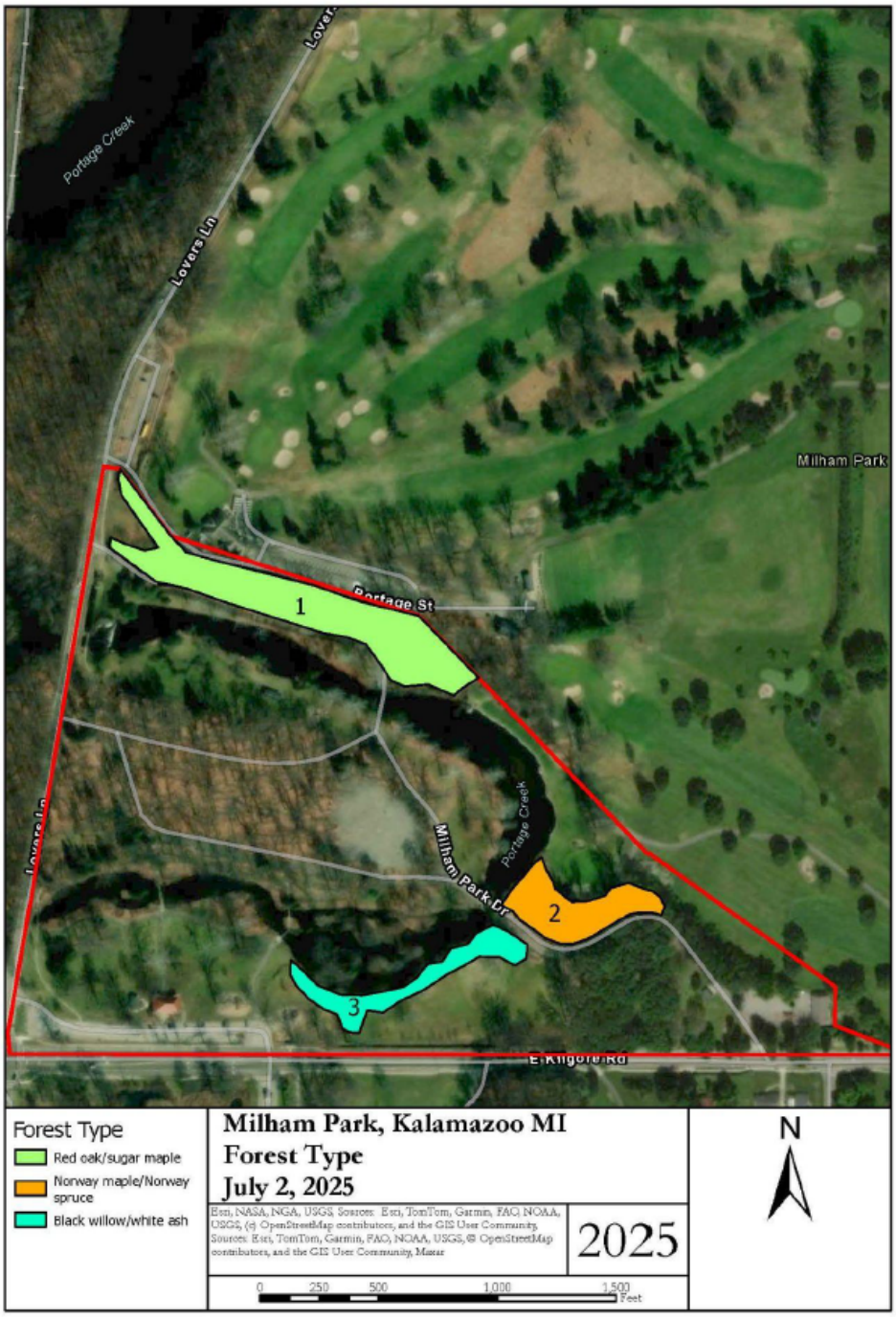
- **Water Resources Standard** (§ 50-6.2D)– Water resources do exist on site in the form of Portage Creek. There is no proposed impacts to Portage Creek with this work or within the 25ft setback.

- **Wetland Standard** (§ 50-6.2C) – There are some National Wetland Inventory delineated wetland areas in association with Portage Creek. There is no proposed work in wetland areas with this work. A wetland delineation report was prepared by Native Edge, LLC and is included.

- **Woodland Standard** (§ 50-6.2G) – A woodland delineation was completed by Davey Resource Group. Three separate woodland stands were delineated within the Park. Stand 1 is primarily a Red Oak / Sugar Maple Stand and is on the Northern property line across Portage Creek. Stand 2 is primarily a Norway Maple / Norway Spruce stand and is located on the eastern edge of the property across Portage Creek. Stand 3 is primarily a Black Willow / White Ash stand located on the Southern Property boundary near Stand 2.

Per § 50-6.2G(6) of the NFP Ordinance: *Woodlands trees and their CRZ shall be protected during site construction following the standards of § 50-6.2K(8), Protection during construction.*

The plans and woodland protection report outline management techniques for during project construction and show locations and specifications for Tree Protection fencing. Davey Resource Group also documented condition, location, and images of each individual tree on-site totaling over 500 trees. See the Protected Tree Standard Section below for more.



- **Protected Tree Standard** (§ 50-6.2F) — Davey Resource Group also documented condition, location, and images of each individual tree on-site totaling 566 trees. Documentation was provided for each of the 566 trees providing the following information:

- DBH
- Common and Botanical Name
- Number of Stems
- Calculated DBH
- Structural Critical Root Zone
- Critical Root Zone
- Preservation Priority
- Impact Level
- Preservation Measures
- Defects for each individual tree

Pictures are also provided for each individual tree.

Priority	Count	Description / Recommendation
Priority 1	1	Highly unique; recommended for preservation at all reasonable cost.
Priority 2	256	Generally healthy; recommended for protection and preservation.
Priority 3	195	Less desirable; may be removed depending on location or condition.
Priority 4	114	Recommended for **removal** due to poor health or structural defects.
Total	**566**	The total trees inventoried for the project

Approximately 19 existing protected trees are slated to be removed. The arborist and woodland reports shows 10 being moderate health, 5 being low health, 4 being poor health. Replacement tree plantings are shown on the Lanscaping Sheet (L1.1) (x24 plantings) near the parking lot fronting Kilgore Road.

- **Protected Slopes and Slope Setbacks Standards** (**§ 50-6.2H) — Slopes** 20% grade or greater are located throughout the property. There are no impacts to protected slopes or slope setbacks for this work.

- **Rare Species Review** – This site required Rare Species Review to be completed by the **Michigan State University Extension**. The review was completed by MSU Extension and is attached as an Appendix item in the larger report. The assessment from the MSU Extension MNFI Staff Biologist was that: *Several at-risk species and/or natural communities have been documented within 2 miles of the project location, and it is possible that adverse impacts will occur.*

Per § 50-6.2I(3) of the NFP Ordinance states: *On-site survey. When a database search indicates a rare species has been identified within two miles of the parcel, an on-site survey shall be conducted. The survey must be conducted by a consultant with a Michigan endangered species permit or another qualified professional approved by the City Planner.*

An on-site survey was completed by Niswander Environmental. This work was comprehensive, including communications with the USFWS (US Fish and Wildlife Service). The determination from the Niswander Environmental Report was that:

NE's site investigation confirmed that no natural heritage areas are present within the Review Area, as defined by the City of Kalamazoo's NFP. However, the following extant species with documented occurrences or known ranges within two miles of the Review Area have the potential to occur within the Review Area based on the presence of suitable or marginally suitable habitat:

- Indiana bat
- EMR
- Eastern box turtle
- Red-headed woodpecker
- Osprey
- Red-shouldered hawk
- Bald and golden eagles
- Creek heelsplitter
- Flutedshell

NE determined that the proposed project is Not Likely to Adversely Affect Indiana bat and EMR, provided the Indiana bat and EMR construction BMPs are implemented. All other

T&E species documented by USFWS and MNFI received a determination of No Effect or No Take due to the following reasons:

- The documented occurrences are historical, or the species are extirpated.
- The Review Area does not contain suitable habitat.
- The project's scope will not impact species or their suitable habitat within the Review Area (e.g., no proposed work will occur in streams).
- Implementation of conservation measures and construction BMPs for Indiana bat, EMR, eastern box turtle, red-headed woodpecker, osprey, red-shouldered hawk, creek heelsplitter, and flutedshell.

Therefore, it is critical that the conservation measures and construction BMPs identified in this report and detailed on Page 5 of the USFWS Verification Letter (Appendix B) are implemented to avoid impacts to protected species.

- **Plant Selection (§ 50-6.2J(4)(b))** – Any landscaping and screening are required for this project as well as other plantings. Per **§ 50-6.1C** *If a conflict arises between the overlay district regulations and those of the base zoning district, the overlay district regulations control.* The landscaping plan sheets show Natives or Nativars. Per **§ 50-6.2J(4)(b)**: *When additional landscaping is proposed on the site plan beyond the minimum requirements of Chapter 50, the NFP Review Board may allow the use of nonnative, noninvasive species which have been determined not to cause adverse environmental impacts.*

- **Stormwater Management** (§ 50-6.2J(6)) – Stormwater requirements on NFP sites are dictated by the City of Kalamazoo Performance Standards for Groundwater Protection within Wellhead Protection Capture Zones. Stormwater is shown as being captured on-site. This will be reviewed by the City Stormwater Engineer. A stormwater agreement will be required for this project. A stormwater detention seed mix is also provided.

THE CITY OF Kalamazoo
Community Planning & Economic Development
245 N Rose St • Suite 100 • Kalamazoo, MI 49007
(269) 337-8000 • www.kalamazoocity.org

SUPPLEMENTAL SITE PLAN REVIEW APPLICATION

FOR NATURAL FEATURES PROTECTION

For projects located within the Natural Features Protection (NFP) Overlay District, separate site plan approval is required before the full site plan can be approved. This review is done either by the NFP Review Board or administratively by staff to verify conformance with NFP Overlay District zoning code (Chapter 50, NFP). The NFP Overlay District map can be found on the City's GIS mapping website (select "Planning & Zoning" layer and make sure "NFP Overlay" is clicked on).

The NFP Supplemental Application must be completed and submitted with the regular Site Plan Review Application and checklists. The NFP Review Board meets monthly to review and approve applications. City staff can assist in scheduling a project at an upcoming NFP Review Board meeting. While the review process offers some flexibility, projects often seek NFP approval between the Pre-Application meeting and regular Site Plan Review meeting.

Section I. Project & Applicant Information

All projects must complete Section I. If the project will not impact any natural features on the site, and does not trigger additional stormwater controls or treatment, applicants should sign and submit Section I only. Staff will review and determine if the application can be approved administratively.

Section II. Natural Features Checklist & Attachments

For projects proposing improvements or changes to the site that impact natural features, change grading, or involve work in or near NFP setbacks, Sections II and III must be completed. Section II identifies which natural features are present and standards apply. Section III will assist you in determining what documentation and additional plan sets are needed for a complete application. Once a complete application is submitted to the City, the project will be scheduled for the next available NFP Review Board meeting and an application fee of $110 will apply.

QUESTIONS

Contact the NFP staff liaison with any questions about your NFP Supplemental Application at (269) 337-8045 or development@kalamazoocity.org .

THE CITY OF Kalamazoo

Community Planning & Economic Development
245 N Rose St • Suite 100 • Kalamazoo, MI 49007
(269) 337-8000 • www.kalamazoocity.org

SECTION I. PROJECT AND APPLICANT INFORMATION

Please provide all of the project and applicant information requested below. Include the date of your regular site plan review meeting, if one has been scheduled or already taken place.

APPLICANT NAME:	(first) Rachel	(last) Hughes-Nilsson	
APPLICANT ADDRESS:	141 (number)	East Michigan Avenue, Suite 500 (street name)	
	(city) Kalamazoo	(state) MI	(Zip) 49007
APPLICANT EMAIL:	rhnilsson@ocba.com	**PHONE:**	(269)381-3357
PARCEL ADDRESS/PIN:	607 East Kilgore Road, Kalamazoo, MI 49001, #06-34-482-001		
PROJECT DESCRIPTION:	See Attachment #1		
OWNER NAME: *(if different)*	(first) City of Kalamazoo	(last)	
HAS REGULAR SITE PLAN REVIEW MEETING OCCURRED?	☐ Yes ■ No	**DATE OF SITE PLAN REVIEW MEETING:**	

NFP APPLICATION REQUIRED?

Is the project limited to interior work only with no exterior ground changes or increase in impervious coverage?	
☐ **YES**	If YES, Sections II & III of this application are not needed. Sign below & submit only this page with your site plan review or permit application.
☑ **NO**	If NO, proceed to Sections II & III. Do **NOT** sign below.

By signing below, the applicant certifies that no natural features will be disturbed as part of this project.

Print name: Only sign if No is selected above

Signature: _____ Date: _____

SECTION II. NFP SITE PLAN CHECKLIST & ATTACHMENTS

Use the checklist to determine what documentation and addition plans sets must be prepared for this application. All plan sets, maps, and additional information must be attached to this application to be considered complete. If you checked "no" to certain NFP items in questions 1-7 in Section II, record "N/A" on the checklist.

REQUIRED: NFP SITE PLAN SET

All applications must include separate sheets in the plan set showing the following:

1. Existing conditions map showing an inventory of all protected natural features and any associated natural features setbacks with distances (use checklist below)

2. Future development plan overlaid onto the existing conditions and natural features inventory; indicate where and to what extent protected natural features will be disturbed, removed, altered, or impacted in any way and which natural features will be protected during and after construction

   Future development plan must include:

   - **Boundary with extent of re-grading**, construction, or site preparation activities
   - **All existing and new building footprints** (mark whether existing buildings will be removed or maintained)
   - **New and existing parking** surfaces or structures, sidewalks, trails, and other impervious or semi-impervious surfaces including decks, patios, viewing platforms, etc. (list proposed surface materials and whether existing surfaces will be maintained or removed)
   - **Proposed location of fencing and screening**, whether permanent, natural, or construction silt fencing and/or natural feature protection fencing (with specifications)
   - **Stormwater facilities** showing boundary of ground disturbance, grading or construction activities, if located near natural features
   - **New utilities** and/or relocation of existing utilities showing corridors that could impact natural features

3. Landscape plan detailing the minimum elements needed to meet zoning code requirements and all proposed additional landscaping elements or features (include table with species name)

4. Any additional plans or tables detailing which natural features will be restored or replaced after construction, if required (e.g., riparian buffer installation or slope restoration plan may be required under certain circumstances when the ordinance allows changes within these protected areas)

WETLANDS	Present:	Included on page #:	Notes:
Mark existing wetland boundaries with notes about wetland conditions. *Attach a copy of EGLE permit or permit application for work impacting Part 303 wetlands regulated by the State.*	■ Yes ☐ No	C0.5	
WATER RESOURCES	**Present:**	**Included on page #:**	**Notes:**
Mark the location of all water resources on the parcel and those within 25 feet of the parcel boundaries. *Attach a copy of EGLE permit or permit application for work impacting Part 301 waters regulated by the State.*	■ Yes ☐ No	C0.4	Water Resources are not impacted as part of this project
Show required setbacks with dimensions; describe existing or future ground cover within riparian setbacks.		C0.4	
TREES	**Present:**	**Included on page #:**	**Notes:**
Mark the location of all "protected" trees that are proposed to be removed and those that will remain and require protection fencing.	■ Yes ☐ No	C0.6	
Include a table with species name, size (DBH and height), and condition of "protected" trees that are proposed to be removed and list replacement tree information.		C0.6	
Provide a note with justification for removal.		C0.6	
WOODLANDS	**Present:**	**Included on page #:**	**Notes:**
Delineate the boundary of all woodlands on the parcel noting where woodlands likely extend onto adjacent parcels.	■ Yes ☐ No	C0.3	No Woodlands will be removed.
Mark all areas of woodland that will be retained and removed (i.e., cleared).		C0.3	
Include a table or note with the required preservation ratio (based on existing woodland coverage), percentage proposed to be removed, and rationale for selecting area for removal.		C0.3	
SLOPES	**Present:**	**Included on page #:**	**Notes:**
Provide a slope analysis that shows the boundaries of all "protected" slopes and mark the required setback(s).	☐ Yes ■ No		
Include a note with co-existing feature that triggers "protected" slope status (e.g., wooded, within 500 ft of water resource.			

NATURAL HERITAGE AREAS	Present:	
Is an MNFI* rare species review required? *Parcels can be pre-screened using the City's GIS website, click on the "Planning & Zoning" layer and "NFP Overlay" layer; then click on parcel and see MNFI status.*	☒ Yes ☐ No	Report is attached to application
If an MNFI rare species review is required, attach the resulting report.		

*Michigan Natural Features Inventory (MNFI) Rare Species Reviews can be requested at: https://mnfi.anr.msu.edu/services/rare-species-reviews

ACCEPTED DATA SOURCES & ANALYSIS

All data sources, analysis, and professionals are subject to approval by the City Planner according to Chapter 50-6.2. The following guidance may be useful when selecting a professional or methodology for inventorying natural features.

1. **WETLANDS**
   - Wetland delineation report performed by a qualified consultant including a map denoting delineated boundary of all wetlands, OR
   - Most recent US Fish & Wildlife Service's National Wetlands Inventory boundary (State of Michigan mapper: https://www.michigan.gov/egle/about/organization/water-resources/wetlands/inventory-maps)

2. **PROTECTED TREE IDENTIFICATION**
   - May be performed by an qualified professional (including ISA Certified Arborist or similar); a full tree inventory is not required if all necessary information can be obtained and communicated using another survey, inventory, or site assessment methodology

3. **WOODLANDS**
   - A qualified professional, such as an ISA Certified Arborist, landscape architect, or license engineer may perform a desktop analysis or field survey to delineate woodlands
   - When a variances is being requests to remove more woodland cover than is allowed under the preservation ration, the following is required
     - Woodland assessment report with determination that the Trees per Area (TPA) meets the NFP definition of a woodland and mapped delineation of woodland
     - Woodland assessment report with a determination that Basal Area is equivalent to the TPA in the NFP definition and meets definition of a woodland and mapped delineation of woodland
     - In addition to determination of whether stand of trees meets NFP definition of a woodland, assessment must include information on general species diversity,
     -

composition of species, any notable trees (either notable species or size), invasive species composition, and general health and age observations of tree stand

4. **PROTECTED SLOPES**
   - Topographic survey performed in the field by a qualified consultant to delineate areas of a slope with grade of 20% or greater
   - Desktop analysis performed using U.S. Geological Survey digital topographic maps, LIDAR, digital elevation map, or equivalent data showing 2’ intervals or finer resolution, performed by a qualified consultant or engineer

Milham Park Phase 1 Improvements

Site Plan Review Submittal

Attachment #2 – Project Summary

The applicant, City of Kalamazoo Parks and Recreation Department, will be constructing new improvements to the existing Milham Park located at 607 East Kilgore Road in the Millwood Neighborhood.

This park serves as one of the larger community parks in the City of Kalamazoo. It contains two (2) existing shelters, multiple parking lots and drives, two (2) restroom buildings, two (2) playground areas, multiple walks and picnic areas. Portage Creek winds its way through the park.

The following improvements are proposed for the site:

- Removal and replacement of the existing parking lot along Kilgore Road.
- Removal of the existing parking spaces along Lovers Lane and on the east side of the upper/central level of the park.
- Installation of a new small parking lot on the west side of the upper/central level of the park.
- Installation of a new accessible walk and overlook deck.

The remainder of the existing walks throughout the park will remain as-is. No new exterior lights will be added to this park.

A new trench slot drain system will be installed along the north side of the Kilgore Road parking lot and will connect into the existing stormwater system with a stormwater treatment structure. The new upper parking lot will have two (2) leaching basins for stormwater capture.

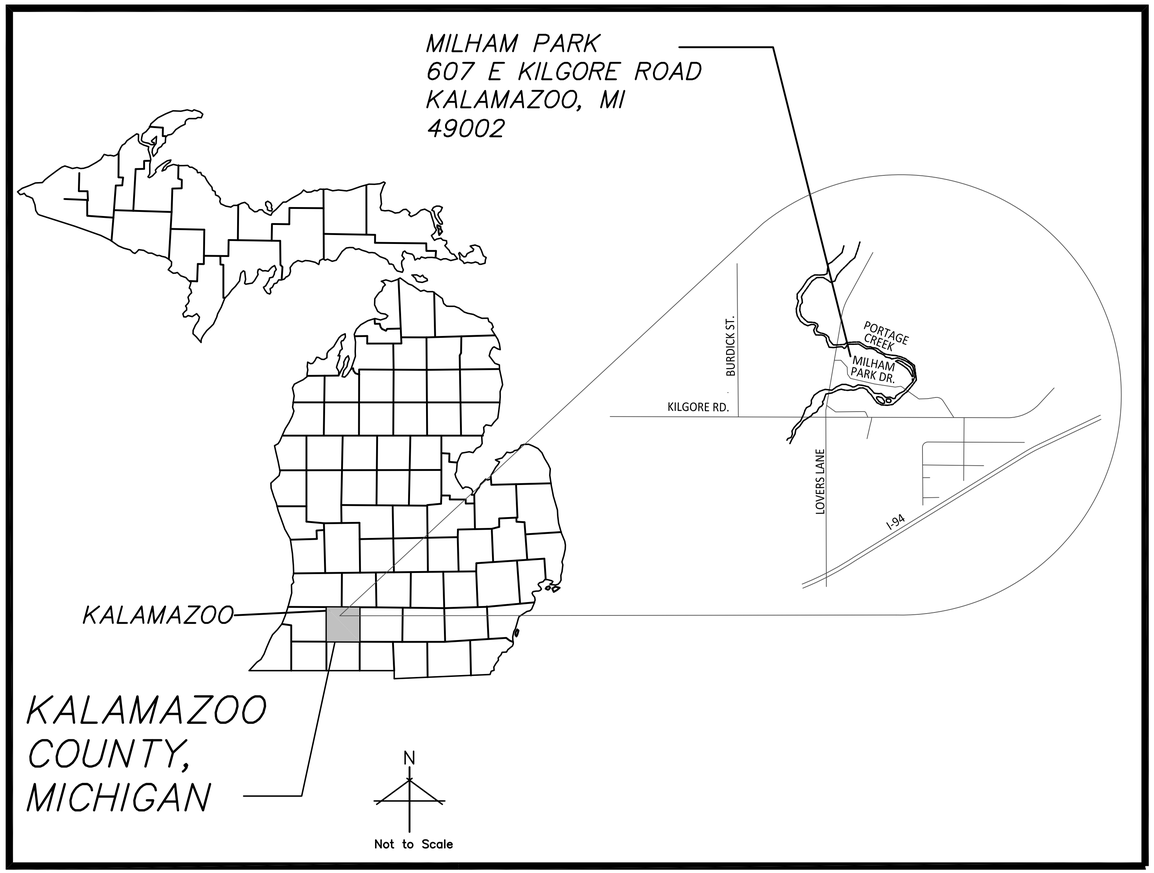
Fifty-two (52) new trees will be planted per the City's zoning and Natural Features Protection ordinances.

Site Plan Review
Received: 6/8/2026
City of Kalamazoo
E.Szymanski

CITY OF KALAMAZOO
MILHAM PARK PHASE I IMPROVEMENTS

KALAMAZOO, MICHIGAN
BID REFERENCE #: XXXXX–XXX.X
LWCF GRANT: 26–01921

LOCATION MAP



NOTES:
1. Except where other wise indicated on the plans or in the proposal and supplemental specifications or special provisions contained herein, all materials and workmanship shall be in accordance with Michigan Department of Transportation Standard Specifications for Construction, 1996 Edition.
2. Call Miss Dig, 1-800-482-7171 three working days, excluding Saturday, Sunday and holidays, before starting your project.

SHEET INDEX

No.	
C0.0	Cover Sheet
C0.1	COK Code Compliance Sheet
C0.2	Existing Conditions Plan
C0.3	Woodland Delineation NFP Plan
C0.4	Water Resource Delineation NFP Plan
C0.5	Wetland Delineation NFP Plan
C0.6	Protected Tree Demolition NFP Plan
LJ1.0	Tree Preservation – Overview
LJ1.1	Tree Preservation Plan
LJ1.2	Tree Preservation Plan
LJ1.3	Tree Preservation Plan
LJ1.4	Tree Preservation Plan
LJ1.5	Tree Preservation Plan
LJ1.6	Tree Preservation Plan
LJ1.7	Tree Preservation Plan
LJ1.8	Tree Preservation Plan
LJ1.9	Tree Preservation Plan
LJ1.10	Tree Preservation Plan
LJ1.11	Tree Preservation Plan
LJ2.1	Tree Preservation Schedule
LJ2.2	Tree Preservation Schedule
LJ2.3	Tree Preservation Schedule
LJ5.1	Tree Preservation Notes and Details
C1.0	Overall Demolition Plan
C1.1	Demolition Enlargement Plans
C1.2	Southern Parking Lot Demolition Plan
C2.0	Overall Layout Plan
C2.1	Central Parking Lot Layout Enlargement Plan
C2.2	Overlook Deck Layout Enlargement Plan
C2.3	Southern Parking Lot Layout Enlargement Plan
C3.0	Utility Plan South
C3.1	Utility Plan North
C4.0	Grading & SESC Plan South
C4.1	Grading & SESC Plan North
C5.0	Details
C5.1	Details
C5.2	Details
C5.3	Details
C5.4	Details
C5.5	Details
L1.0	Overall Landscape Plan
L1.1	Central Parking Lot Landscape Enlargement Plan
L1.2	Overlook Deck Landscape Enlargement Plan
L1.3	Southern Parking Lot Landscape Enlargement Plan

OWNER:
CITY OF KALAMAZOO
251 MILLS STREET
KALAMAZOO, MICHIGAN 49048
(269)337–8191 TELE

LANDSCAPE ARCHITECT:
O'BOYLE COWELL BLALOCK & ASSOCIATES, INC.
141 E MICHIGAN AVE, SUITE 500
KALAMAZOO, MI, 49007
269–381–3357 TELE

CIVIL ENGINEERS:
AR ENGINEERING, INC.
5725 VENTURE PARK DRIVE, SUITE A
KALAMAZOO, MICHIGAN 49009
(269)250–5991 TELE

STRUCTURAL ENGINEERS:
PREIN & NEWHOF, INC.
1707 S PARK STREET W, SUITE 200
KALAMAZOO, MICHIGAN 49001
(269)372–1158 TELE

OCBA LANDSCAPE ARCHITECTS
141 E. Michigan Avenue, Suite 500
Kalamazoo Michigan 49007
Phone (269) 381-3357
Fax (269) 381-2944

Landscape Architecture
Urban Planning
Parks & Recreation
Campus & Institutional Planning
Camp Planning & Design

For Review Only – Not For Construction

HARD COPY IS INTENDED TO BE 24"X36" WHEN PLOTTED. SCALE(S) INDICATED AND GRAPHIC QUALITY MAY NOT BE ACCURATE FOR ANY OTHER SIZES.

Issued For:	Date
COK PROJECT REVIEW	03–30–26
COK CHECKLIST MEETING	04–10–26
SPR SUBMISSION	06–08–26

Project:

Milham Park Ph 1 Improvements
LWCF: 26-01921

Kalamazoo, Michigan

Sheet Title

Cover Sheet

Job No.
OCBA: 52606
COK: XXXXX.XXX.X

Sheet No.
C0.0

EXISTING CONDITIONS & GENERAL ZONING INFORMATION:

1. Project Address: Milham Park, 607 East Kilgore Road, Kalamazoo, Michigan 49001 & 4200 Portage Street, Kalamazoo, MI 49001
2. Property Identification Number: 06-34-482-001 & 06-35-324-001
3. Owner: City of Kalamazoo Parks and Recreation Department, 241 W. South Street, Kalamazoo, Michigan 49007
4. Project Zoning: RS-5 - Single Dwelling Residential
5. Legal Description:

LAND SITUATED IN THE CITY OF KALAMAZOO, KALAMAZOO COUNTY, MICHIGAN:

607 East Kilgore Road: That part of Southeast ¼ of Section 34 lying East of Lovers Lane, Section 34, Town 2 South, Range 11 West, City of Kalamazoo, Kalamazoo County, Michigan.

4200 Portage St: G35-19 Section 35 Town 2 South Range 11 West; The South 1/2 of the Northeast 1/4 of the Southwest 1/4. Also the North 1/2 of the Southeast 1/4 of the Southwest 1/4. Also the West 1/2 of the Southwest 1/4.

6. Applicable Zoning Overlays: Natural Features Protection (NFP)
7. Project location information: The project site is located along Portage Creek, with vehicular boundaries formed by Lovers Lane to the west, and Kilgore Road to the south.
8. The park is not located in a Historic district.
9. This park is not located within a Brownfield Redevelopment Authority.
10. This park is not located on a State/Federal list for Soil/Groundwater Contamination.
11. Refer to attached Threatened and Endangered Species Assessment Report submitted with application.
12. This park is not a RCRA/UP EPA Hazardous Waste Handler site.
13. This park is not a Solid Waste Facility.
14. No Baseline Environmental Assessments, Environmental Site Assessments or Due Care Plans have been created for this park.
15. This park is not located in a tax capture or deferment area.
16. The southwest corner of the park is located in the Wellhead 5-Year Capture Zone
17. This park is identified as "Open Space/Parks" on the 2025 Future Land Use Plan

PROPOSED PROJECT INFORMATION

1. Gross Overall Site Area: (1,741,564 SF) 40 acres
2. Gross Area of Earth Change: 161,321 sf (3.7 acres)
3. Net Area of Open Space:
    *Existing: 1,528,128 sf (35.08 acres)
    *Proposed: 1,592,769 sf (36.56 acres)
4. Area of Regulated Wetlands: Wetland delineation was not completed for the entire property, only the area around the relevant proposed work. Refer to attached wetland report and delineation lines on plans.
5. Impervious Area Quantities:
    *Existing:
        *Parking lots and drives 143,303 sf (3.29 acres)
        * Trails and Sidewalks 70,133 sf (1.61 acres)
        * Total: 213,436 sf (4.9 acres)
    *Proposed:
        * New Parking Lots: south lot 27,281 sf (0.63acres), central lot 4,814 sf (0.11 acres)
        * New Trails & Sidwalks: 5,585 sf (0.13 acres)
        * Existing Trails , Drives, Parking Lots & Sidewalks to Remain: 110,312 sf (2.5 acres)
        * Overlook Deck: 803 sf (0.018 acres)
        * Total: 148,795 sf (3.42 acres)

CITY OF KALAMAZOO LANDSCAPING ZONING REQUIREMENTS:

1. Site landscaping requirements: For sites greater than 1 acre, (1) tree per acre or fraction beyond shall be installed . If site falls within a natural features protection area, existing trees may not satisfy this requirement. Per City Checklist email from Emily Szymanski, project acreage impacted by work is acceptable, instead of overall site acreage.
    *3.7 acres x (1) tree = (4) new trees required to be planted.

2. Parking lot screening landscaping requirements: a minimum 5' wide buffer is required when parking adjoins or faces a public or private street. Buffer is required to contain fencing up to 42" ht. and required plantings adjacent to the street. Required plantings include (1) tree per 35 lf of frontage planted at a consistent spacing and (1) shrub per 6 lf of frontage. Refer to Landscape Plan L1.1 & L1.3 for project parking lot screening totals.

3. Interior parking lot landscaping requirements: interior parking lot landscaping is required for lots containing greater than 30 spaces. A minimum of 5% of the entire parking lot area is to be provided as landscape area containing (1) tree per every 300 sf of required internal landscape area. Tree planting areas to be a minimum of 250 sf and 7' min. width covered with planting materials and mulch. Refer to Landscape Plan L1.1 & L1.3 for parking lot interior landscaping totals.

NATURAL FEATURES PROTECTION OVERLAY REQUIREMENTS:

1. Wetland: When a wetland is present on a parent parcel of more than 1 acre, a 25' setback is required from the edge of the wetland. impervious surfaces are prohibited within the setback.
    ** NOT APPLICABLE - While a portion of the overlook deck crosses into the 25' wetland setback, the overlook deck is considered a pervious structure due to the constructed gaps between the deck boards and therefore there are no impervious surfaces within the setback.

2. Water resource: When a water resource is present on a parent parcel of more than 1 acre, a 25' setback measured from the ordinary high water mark is required. impervious surfaces are prohibited within the setback.
    ** NOT APPLICABLE- NO WORK IS PROPOSED WITHIN THE 25' SETBACK FROM ORDINARY HIGH WATER MARK.

3. Protected trees: Existing trees not part of a woodland and appearing on the protected tree list identified in the City of Kalamazoo zoning ordinance, require protection of the critical root zone from construction activities. If it is necessary to remove a protected tree, replacement is to be per requirements in ordinance.
    *(19) Existing protected trees are proposed to be removed for site improvements. Per the arborist report, (10) trees are marked as moderate, (5) trees are noted in low health, and (4) trees are noted in poor health. All other trees to remain shall be protected from construction activiites.

4. Woodland: If an area is determined to meet the requirements of woodland, it must be preserved as outlined in the ordinance. No disturbance is permitted in the area as defined by its critical root zone and must be protected during construction.
    **NOT APPLICABLE- NO WORK PROPOSED IN AREAS OF WOODLANDS.

5. Slopes: Slopes are considered protected if they have a grade of 20% or greater and contain a woodland, contain a natural heritage area, are located within 500' of a wetland or water resource, or if any portion of the slope extends onto adjacent parcels.
    **NOT APPLICABLE- NO WORK PROPOSED IN AREAS OF SLOPES 20% OR GREATER

SITE PLAN REVIEW ZONING TABLE:

1) Zoning District: RS-5 - Residential Single Family
2) Impervious Coverage (Pre-Development): 213,436 sf (4.9 acres), 12.25% of overall site
4) Impervious Coverage (Post-Development): 148,795 sf (3.42 acres), 8.5% of overall site
5) Proposed Parking Layout and Drive: Sheets C2.1 and C2.3
    * South Parking Lot:
        * Existing: (95) spaces including (2) barrier free parking spaces.
        * Proposed: (57) spaces including (5) barrier free parking spaces
        * Net Area of Existing Parking Lot Landscaping: 0 SF
        * Net Area of Proposed Parking Lot Landscaping: 1,616 sf
        * Net area of Existing Off- Street Parking: 31,288 sf (0.72 acres)
        * Net area of Proposed Off Street Parking: 27,281 sf (0.63 acres)
    * Central Parking Area:
        * Existing: (130) approximate spaces including (2) barrier free parking spaces.
        * Proposed: (12) spaces including (2) barrier free parking spaces.
        * Net Area of Existing Parking Lot Landscaping: 0 SF
        * Net Area of Proposed Parking Lot Landscaping: 303 SF
        * Net Area of Existing Off-Street Parking: 50,026 SF (1.15 acres)
        * Net Area of Proposed Off-Street Parking: 4,814 SF (0.11 acres)
6) Existing lighting: There is no existing lighting in the park and there will be no proposed lighting in the park.
8) Site Access for All Modes: Refer to Sheet C2.0
    * Vehicular access to the site will be limited to the parking lot along the southern site boundary providing an entrance and exit on both Milham Road and Lovers Lane, and a parking lot off of Lovers Lane.
    * Pedestrian and bicycle access is available from Lovers Lane to the west and Kilgore Road to the south.
    * Number of Bicycle Racks Required by Zoning: (1) bike space per 5,000 sf of open park space. Therefore, 1,741,564 sf/5,000 sf = (348) bike spaces required.
    * Number of Existing Bicycle Spaces: (0) racks for (0) bikes = (0) bicycle parking spaces
    * Number of Proposed Bicycle Spaces included in Project: (10) racks for (20) bikes. Lesser amount approved in City of Kalamazoo Checklist Meeting held on 4/29/26.
9) Refuse: There are (0) dumpster refuse containers existing on site. There are (0) new dumpsters or trash receptacle to be installed.
10) Landscape Plan: Refer to Sheets L1.0, L1.1, L1.2, and L1.3

OCBA LANDSCAPE ARCHITECTS

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Issued For:	Date
COK PROJECT REVIEW	03–30–26
COK CHECKLIST MEETING	04–10–26
SPR SUBMISSION	06–08–26

Project:

Milham Park Ph 1 Improvements LWCF: 26-01921

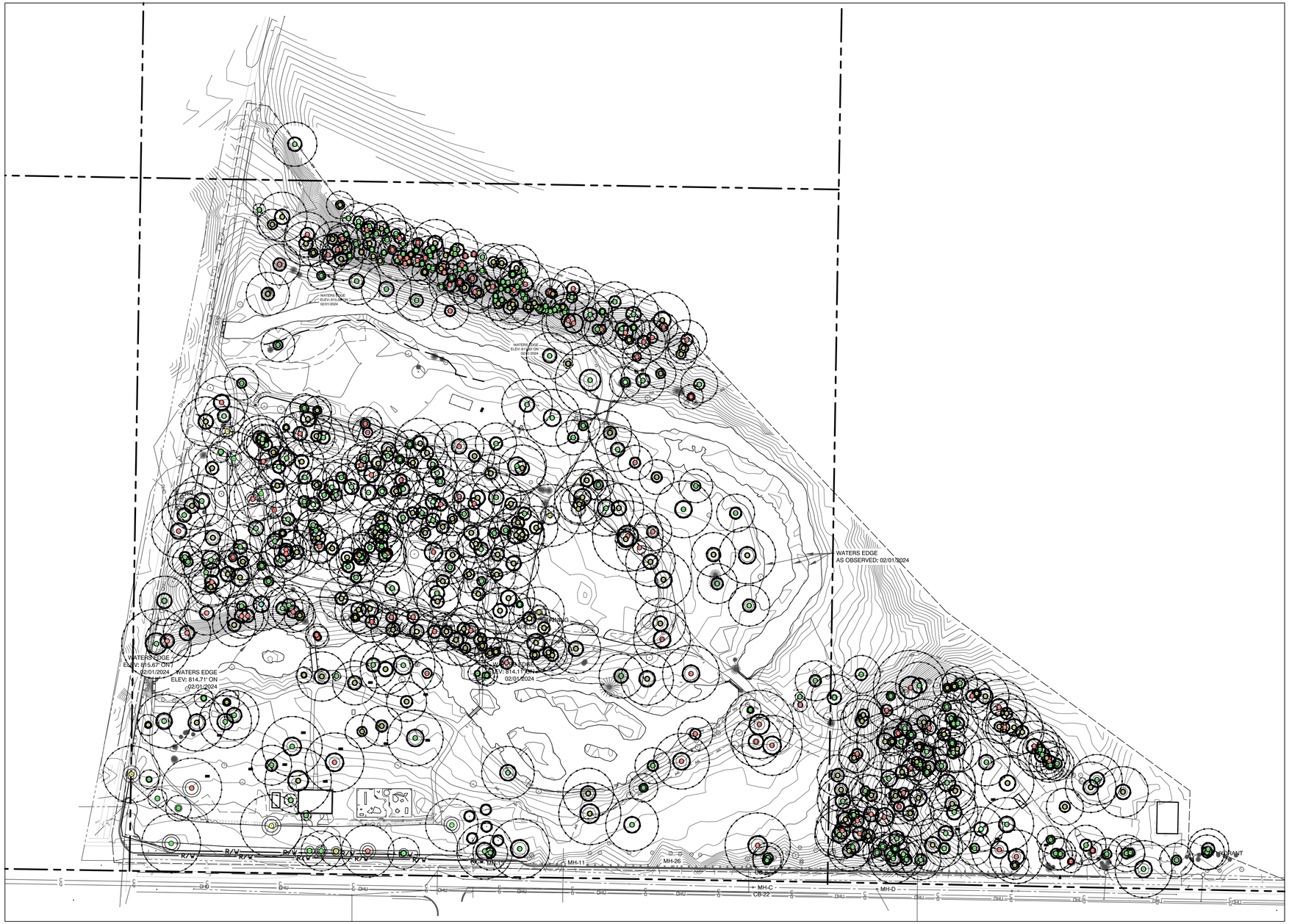
Kalamazoo, Michigan

Sheet Title

COK Code Compliance Plan

Job No. OCBA: 52606 COK: XXXXX.XXXX

Sheet No. **C0.1**



1 **Existing Conditions Plan**
Scale: 1" = 100'-0"

GENERAL NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC., 5725 VENTURE PARK DR A, KALAMAZOO, MI 49009, (269)250-5991.
2. VERIFY LOCATIONS OF ALL BELOW GRADE UTILITIES PRIOR TO BEGINNING WORK. 72 HOURS BEFORE YOU DIG CALL "MISS DIG" AT 1-800-482-7171.
3. PROTECT ALL TREES & EXISTING FEATURES TO REMAIN AS SPECIFIED.
4. REFER TO THE LAYOUT PLAN FOR EXACT LIMITS OF REMOVAL.

EXISTING CONDITIONS LEGEND:

1. GET FROM AR ENGINEERING

TREE PROTECTION NOTES:

PROVIDE AND MAINTAIN TEMPORARY TREE PROTECTION FENCING IN ALL LOCATIONS MARKED ●——●——●——●——●. TREE FENCING SHALL BE PROVIDED AND IN PLACE PRIOR TO ANY WORK ON SITE (INCLUDING TOPSOIL STRIPPING OPERATIONS). REFER TO THE FOLLOWING NOTES AND THE SPECIFICATIONS FOR TREE PROTECTION REQUIREMENTS.

1. NO CONSTRUCTION OPERATIONS, EQUIPMENT, MATERIALS OR TOPSOIL SHALL BE ALLOWED WITHIN THE TREE PROTECTION AREAS.
2. EXISTING GROUND COVER AND TOPSOIL SHALL NOT BE REMOVED FROM TREE PROTECTION AREAS DURING EARTHWORK PHASE.
3. VEHICULAR TRAFFIC, PARKING, EQUIPMENT OR MATERIAL STORAGE MAY NOT OCCUR WITHIN THE TREE PROTECTION AREAS AT ANY TIME.
4. NO EXCAVATION SHALL BE MADE WITHIN THE TREE PROTECTION AREAS EXCEPT AS NOTED OTHERWISE.

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Project:

Milham Park Ph 1 Improvements
LWCF: 26-01921

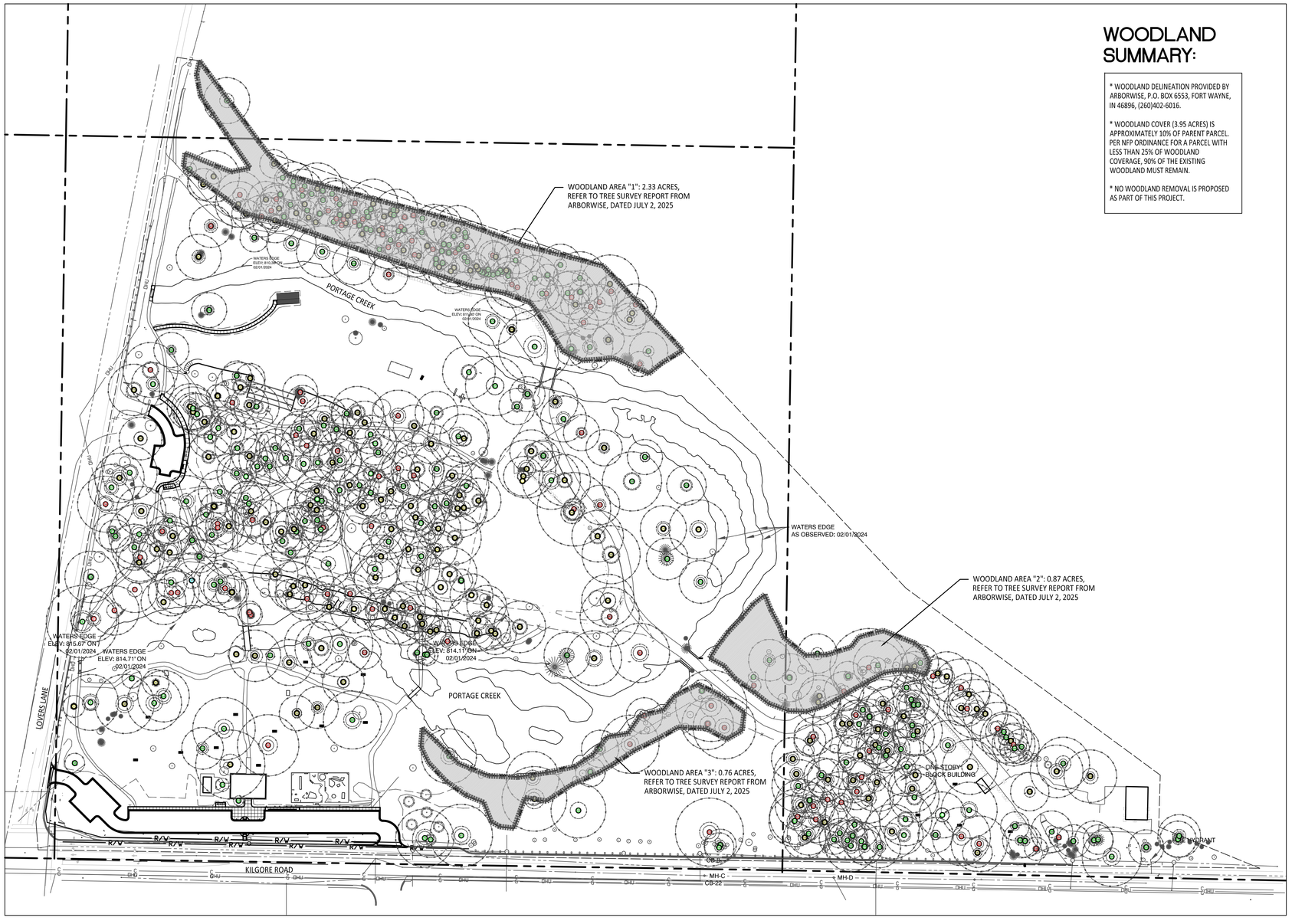
Kalamazoo, Michigan

Sheet Title

Existing Conditions Plan

0 100 200 300
North
SCALE IN FEET

Job No. Sheet No.
OCBA: 52606
COK: XXXX.XXXX **C0.2**



1 **Woodland Delineation Plan**
Scale: 1" = 100'-0"

WOODLAND SUMMARY:

* WOODLAND DELINEATION PROVIDED BY ARBORWISE, P.O. BOX 6553, FORT WAYNE, IN 46896, (260)402-6016.

* WOODLAND COVER (3.95 ACRES) IS APPROXIMATELY 10% OF PARENT PARCEL. PER NFP ORDINANCE FOR A PARCEL WITH LESS THAN 25% OF WOODLAND COVERAGE, 90% OF THE EXISTING WOODLAND MUST REMAIN.

* NO WOODLAND REMOVAL IS PROPOSED AS PART OF THIS PROJECT.

GENERAL NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC.,5725 VENTURE PARK DR. A, KALAMAZOO, MICHIGAN, 49009, (269)250-5991.
2. VERIFY LOCATIONS OF ALL BELOW GRADE UTILITIES PRIOR TO BEGINNING WORK. 72 HOURS BEFORE YOU DIG CALL "MISS DIG" AT 1-800-482-7171.
3. PROTECT ALL TREES & EXISTING FEATURES TO REMAIN AS SPECIFIED.
4. REFER TO THE LAYOUT PLAN FOR EXACT LIMITS OF REMOVAL.

NATURAL FEATURES PROTECTION OVERLAY LEGEND:

- PROTECTED TREE (SEE TABLE FOR SPECIES AND SIZE)
- CRITICAL ROOT ZONE
- EXISTING TREE TO REMAIN
- WOODLAND AREAS
- PROPERTY LINE
- DELINEATED WOODLAND

NATURAL FEATURES PROTECTION OVERLAY NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC., 5725 VENTURE PARK DR., SUITE A, KALAMAZOO, MICHIGAN 49009, (269)250-5991.
2. WOODLAND DELINEATION PROVIDED BY ARBORWISE, P.O. BOX 6553, FORT WAYNE, IN 46896, (260)402-6016.

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Project:

Milham Park Ph 1 Improvements
LWCF: 26-01921

Kalamazoo, Michigan

Sheet Title

Woodland Delineation Plan

0 100 200 300
North
SCALE IN FEET

Job No. Sheet No.
OCBA: 52606
COK: XXXXXXXX.X **C0.3**

1 **Water Resource Delineation Plan**
Scale: 1" = 100'-0"

WATER RESOURCE SUMMARY:

* WATER EDGE DETERMINED AS PART OF TOPOGRAPHIC SURVEY BY AR ENGINEERING, INC., 5725 VENTURE PARK DRIVE A, KALAMAZOO, MICHIGAN, 49009, DATED 02/01/2024

* 0 SF OF WOODEN OVERLOOK DECK WILL SIT ABOVE THE 25' WATER RESOURCES SETBACK LINE.

GENERAL NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC.,5725 VENTURE PARK DR. A, KALAMAZOO, MICHIGAN, 49009, (269)250-5991.
2. VERIFY LOCATIONS OF ALL BELOW GRADE UTILITIES PRIOR TO BEGINNING WORK. 72 HOURS BEFORE YOU DIG CALL "MISS DIG" AT 1-800-482-7171.
3. PROTECT ALL TREES & EXISTING FEATURES TO REMAIN AS SPECIFIED.
4. REFER TO THE LAYOUT PLAN FOR EXACT LIMITS OF REMOVAL.

NATURAL FEATURES PROTECTION OVERLAY LEGEND:

PROPERTY LINE

WATER RESOURCES 25-YEAR SETBACK LINE

NATURAL FEATURES PROTECTION OVERLAY NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC., 5725 VENTURE PARK DR., SUITE A, KALAMAZOO, MICHIGAN 49009, (269)250-5991.

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Project:

Milham Park Ph 1 Improvements LWCF: 26-01921

Kalamazoo, Michigan

Sheet Title

Water Resource Delineation Plan

0 100 200 300
North
SCALE IN FEET

Job No. Sheet No.

OCBA: 52606
COK: XXXXXXXX **C0.4**

1 **Wetland Delineation Plan**
Scale: 1" = 100'-0"

WETLAND DELINEATION SUMMARY:

* WETLAND BOUNDARY DETERMINED BY NATIVE EDGE, LLC, ON APRIL 30, 2026. REFER TO ATTCHED REPORT.

* WETLAND BOUNDARY FLAGGING SURVEYED BY AR ENGINEERING, INC. ON MAY 1, 2026.

GENERAL NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC.,5725 VENTURE PARK DR. A, KALAMAZOO, MICHIGAN, 49009, (269)250-5991.
2. VERIFY LOCATIONS OF ALL BELOW GRADE UTILITIES PRIOR TO BEGINNING WORK. 72 HOURS BEFORE YOU DIG CALL "MISS DIG" AT 1-800-482-7171.
3. PROTECT ALL TREES & EXISTING FEATURES TO REMAIN AS SPECIFIED.
4. REFER TO THE LAYOUT PLAN FOR EXACT LIMITS OF REMOVAL.

NATURAL FEATURES PROTECTION OVERLAY LEGEND:

PROPERTY LINE

WETLAND DELINEATION LINE

NATURAL FEATURES PROTECTION OVERLAY NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC., 5725 VENTURE PARK DR., SUITE A, KALAMAZOO, MICHIGAN 49009, (269)250-5991.
2. WETLAND DELINEATION AND REPORT PROVIDED BY NATIVE EDGE, LLC., PO BOX 140021, GRAND RAPIDS, MICHIGAN 49514, (616)717-0656.

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Project:

Milham Park Ph 1 Improvements
LWCF: 26-01921

Kalamazoo, Michigan

Sheet Title

Wetland Delineation Plan

0 100 200 300
North
SCALE IN FEET

Job No. Sheet No.
OCBA: 52606
COK: XXXXXXXX **C0.5**

GENERAL NOTES:

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2. VERIFY LOCATIONS OF ALL BELOW GRADE UTILITIES PRIOR TO BEGINNING WORK. 72 HOURS BEFORE YOU DIG CALL "MISS DIG" AT 1-800-482-7171.
3. PROTECT ALL TREES & EXISTING FEATURES TO REMAIN AS SPECIFIED.
4. REFER TO THE LAYOUT PLAN FOR EXACT LIMITS OF REMOVAL.

NATURAL FEATURES PROTECTION OVERLAY PROTECTED TREES LEGEND:

- PROTECTED TREE (SEE REPORT FOR SPECIES AND SIZE)
- CRITICAL ROOT ZONE DELINEATION
- EXISTING TREE TO REMAIN
- PROPOSED TREE, DETAIL 1/C5.2
- PROPERTY LINE
- TEMPORARY TREE PROTECTION FENCE; SEE DETAIL
- REMOVE TREE

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1 **Protected Tree Identification Plan**
Scale: 1" = 100'-0"

PROTECTED TREES DELINEATION SUMMARY:

* PROTECTED TREES DELINEATION PROVIDED BY ARBORWISE, P.O. BOX 6553, FORT WAYNE, IN 46896, (260)402-6016.

NATURAL FEATURES PROTECTION OVERLAY PROTECTED TREES NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, 5725 VENTURE PARK DR. A, KALAMAZOO, MI 49009. 269-250-5991.
2. PROTECTED TREE SURVEY PROVIDED BY ARBORWISE, P.O. BOX 6553, FORT WAYNE, IN, 46896, (260)402-6016.
3. (566) TREES IDENTIFIED AS PROTECTED TREES, (24) TREES BEING REMOVED = 4% OF OVERALL PROTECTED TREES REMOVED FROM THE SITE.

EXISTING PROTECTED TREE REMOVAL TABLE

TREE SURVEY			
TREE TAG	SIZE	TYPE	ARBORIST QUALITY
1	39	White Oak	LOW
4	20	Bur Oak	MODERATE
6	33	White Oak	POOR
8	19	Bur Oak	LOW
10	25	Unknown Tree	MODERATE
14	19	Bur Oak	MODERATE
25	37	Chinkapin Oak	MODERATE
26	16	Chinkapin Oak	MODERATE
29	39	London Planetree	POOR
32	12	Chinkapin Oak	MODERATE
36	36	Bur Oak	LOW
45	13	Eastern Arborvitae	MODERATE
48	34	White Oak	MODERATE
50	34	White Oak	MODERATE
51	30	White Oak	POOR
71	33	Chinkapin Oak	MODERATE
110	36	Black Oak	POOR
116	32	White Oak	LOW
233	39	White Oak	LOW

PROTECTED TREE REMOVAL JUSTIFICATION NOTE:

1. THE JUSTIFICATION FOR REMOVAL OF THE LISTED PROTECTED TREES IS THE BALANCE BETWEEN PROVIDING MAINTENANCE TO THE PARK, REMOVAL OF IMPERVIOUS AREAS NO LONGER BEING USED, AND LOCATING NEW IMPROVEMENTS WHERE THERE WILL BE THE LEAST IMPACT ON THE PROTECTED TREES.
2. THE EXISTING SOUTHERN PARKING LOT AREA IS OLD AND THE ASPHALT PAVING HAS FAILED. THE CITY OF KALAMAZOO NEEDS TO REPAIR THIS AREA BY REMOVING AND REPLACING THE PARKING LOT AND IMPROVING THE LAYOUT TO MEET CURRENT ZONING AND ADA CODES. THE NEW PARKING LOT AREA WILL HAVE A SMALLER IMPERVIOUS SURFACE AREA. THE EXISTING TREES TO BE REMOVED ARE OF MODERATE TO POOR QUALITY.
3. THE UPPER LEVEL/CENTRAL PARKING AREA INCLUDES THE REMOVAL OF AN EXISTING DRIVE AND PARKING LOT ON THE EAST SIDE AND THE CONSTRUCTION OF A NEWER, SMALLER PARKING LOT ON THE WEST SIDE. THE NEW PARKING LOT WAS PLACED TO MINIMIZE IMPACTS ON THE FEWEST NUMBER OF PROTECTED TREES. THIS NEW PARKING LOT ALLOWS FOR BARRIER FREE ACCESS TO THE UPPER LEVEL OF THE PARK.
4. OUT OF THE FIVE HUNDRED & SIXTY-SIX (566) PROTECTED TREES ON THIS PROPERTY, ONLY NINETEEN (19) PROTECTED TREES ARE BEING PROPOSED FOR DEMOLITION, OR 3.4% OF THE OVERALL PROTECTED TREES ARE BEING PROPOSED FOR REMOVAL.

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Project:

Milham Park Ph 1 Improvements
LWCF: 26-01921

Kalamazoo, Michigan

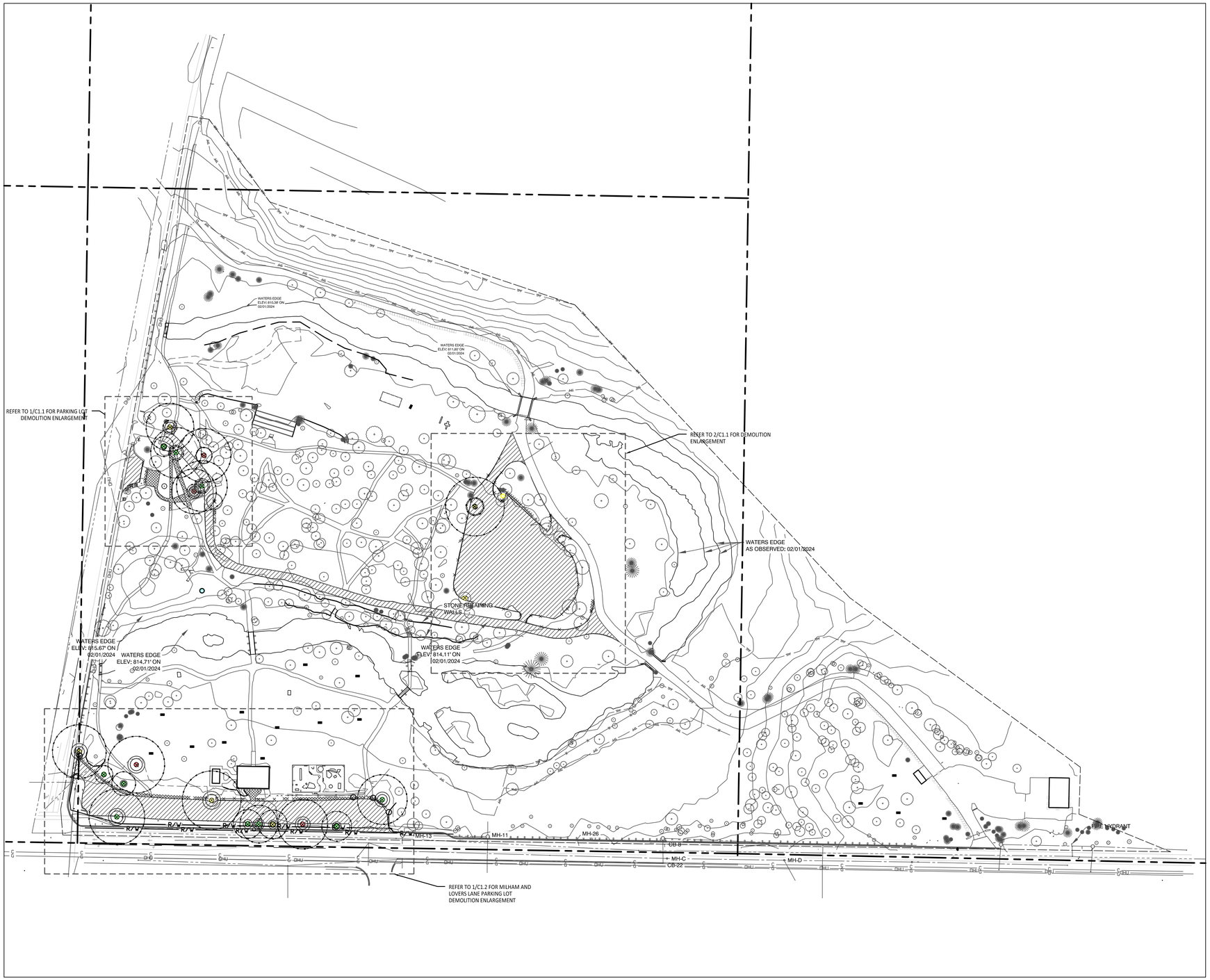
Sheet Title

Protected Trees Identification Plan

0 100 200 300
North
SCALE IN FEET

Job No. Sheet No.

OCBA: 52606
COK: XXXX.XXXX **C0.6**



1 **Overall Demolition Plan**
Scale: 1" = 100'-0"

DEMOLITION NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC., 5725 VENTURE PARK DRIVE, SUITE A, KALAMAZOO, MICHIGAN 49009, (269)250-5991.
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3. PROTECT ALL TREES & EXISTING FEATURES TO REMAIN AS SPECIFIED.
4. REFER TO LAYOUT PLAN FOR LIMITS OF WORK.
5. DISCREPANCIES BETWEEN SITE AND PLANS SHOULD BE REPORTED TO THE PROJECT MANAGER IMMEDIATELY.
6. ALL AREAS OF TREE CLEARING SHALL BE STAKED FOR ARCHITECT'S APPROVAL PRIOR TO CLEARING.
7. ALL TOPSOIL AND EXCESS FILL MATERIAL SHALL BE STOCKPILED ON SITE SEPARATELY FOR LATER RE-USE. LOCATE STOCKPILES IN AREAS AS DIRECTED BY CONSTRUCTION MANAGER AND PROTECT FROM EFFECTS OF EROSION.

SITE DEMOLITION KEY

1. SAWCUT & REMOVE EXISTING BITUMINOUS PAVING INCLUDING SUB-BASE.
2. SAWCUT & REMOVE EXISTING CONCRETE PAVING INCLUDING SUB-BASE.
3. REMOVE EXISTING CURB (AND GUTTER).
4. REMOVE EXISTING TREE INCLUDING ALL ROOT SYSTEMS.
5. REMOVE EXISTING WOOD BOLLARDS COMPLETELY (INCLUDING CONCRETE FOOTINGS)
6. REMOVE EXISTING FENCING COMPLETELY (INCLUDING CONCRETE FOOTINGS)
7. REMOVE SIGN COMPLETELY (INCLUDING CONCRETE FOOTINGS)

DEMOLITION LEGEND:

- REMOVE BITUMINOUS PAVEMENT AND BASE
- SAWCUT & REMOVE CONCRETE
- REMOVE TREE
- REMOVE MISCELLANEOUS FEATURE AS NOTED
- TEMPORARY TREE PROTECTION FENCE; REFER TO DETAIL 5/C5.2
- LIMIT OF WORK

TREE PROTECTION NOTES:

PROVIDE AND MAINTAIN TEMPORARY TREE PROTECTION FENCING IN ALL LOCATIONS MARKED ●——●——●——●——●. TREE FENCING SHALL BE PROVIDED AND IN PLACE PRIOR TO ANY WORK ON SITE (INCLUDING TOPSOIL STRIPPING OPERATIONS). REFER TO THE FOLLOWING NOTES AND THE SPECIFICATIONS FOR TREE PROTECTION REQUIREMENTS.

1. NO CONSTRUCTION OPERATIONS, EQUIPMENT, MATERIALS OR TOPSOIL SHALL BE ALLOWED WITHIN THE TREE PROTECTION AREAS.
2. EXISTING GROUND COVER AND TOPSOIL SHALL NOT BE REMOVED FROM TREE PROTECTION AREAS DURING EARTHWORK PHASE.
3. VEHICULAR TRAFFIC, PARKING, EQUIPMENT OR MATERIAL STORAGE MAY NOT OCCUR WITHIN THE TREE PROTECTION AREAS AT ANY TIME.
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Kalamazoo, Michigan

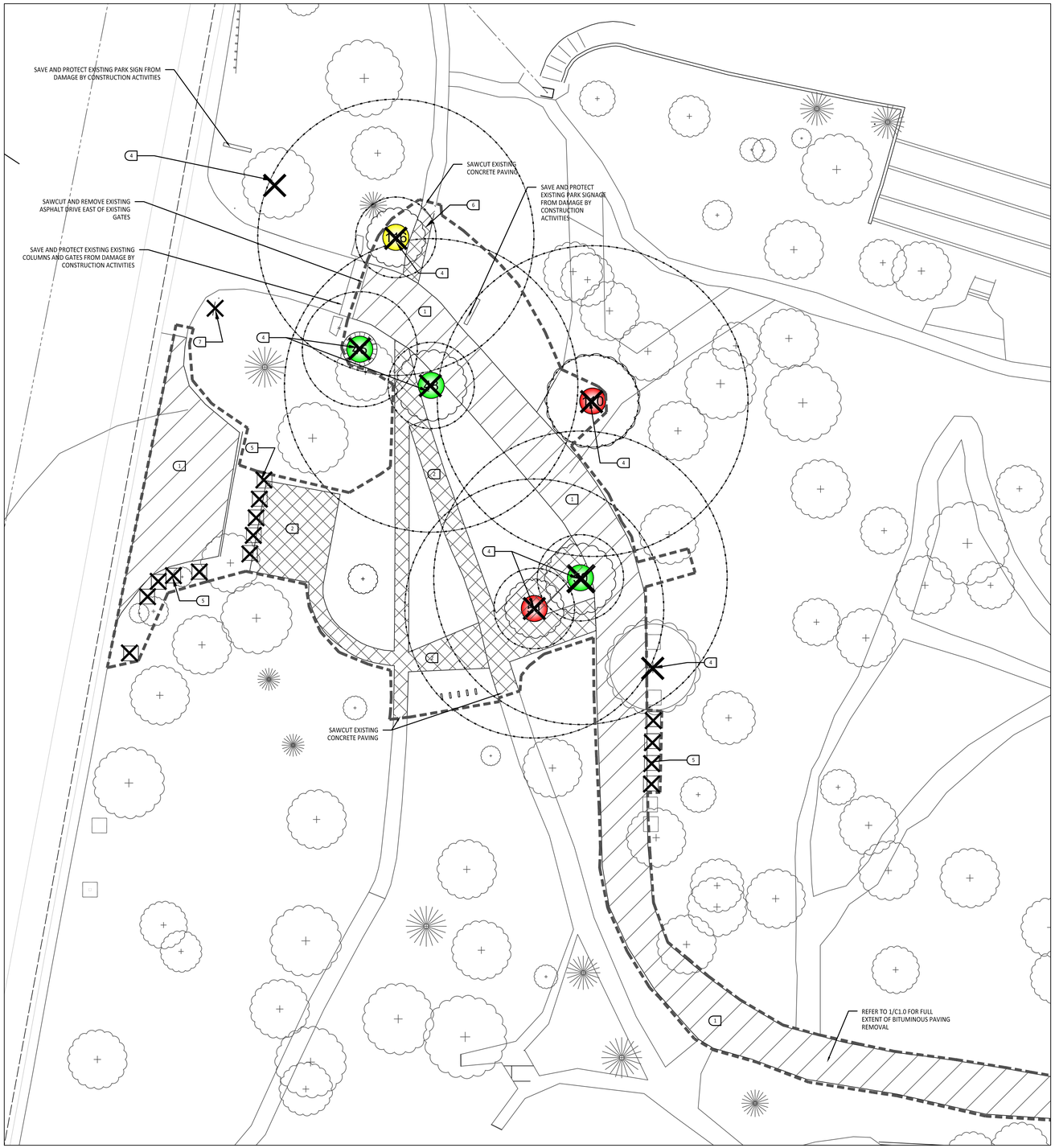
Sheet Title

Demolition Plan

0 100 200 300
North
SCALE IN FEET

Job No. OCBA: 52606
COK: XXXXX.XXXX

Sheet No. C1.0



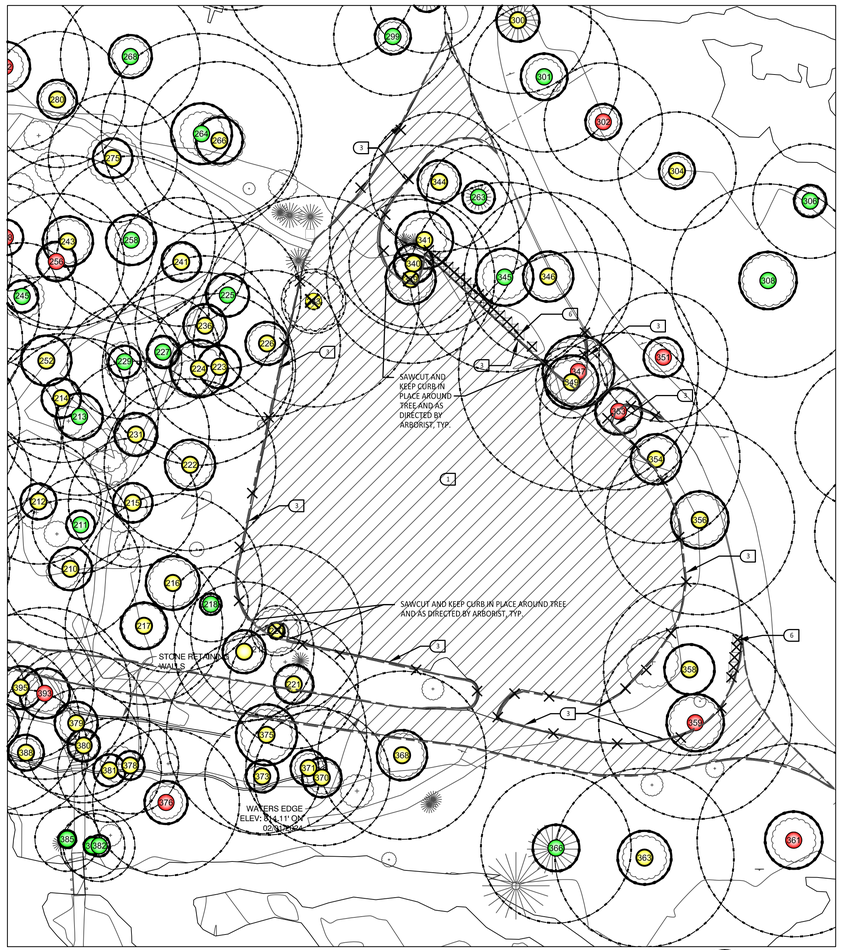
1 Central Parking Lot Demolition Plan

Scale: 1" = 20'-0"

0 20 40 60

SCALE IN FEET

North



2 Eastern Parking Lot Demolition Plan

Scale: 1" = 40'-0"

0 40 80 120

SCALE IN FEET

North

DEMOLITION NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC., 5725 VENTURE PARK DRIVE, SUITE A, KALAMAZOO, MICHIGAN 49009, (269)250-5991.
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3. PROTECT ALL TREES & EXISTING FEATURES TO REMAIN AS SPECIFIED.
4. REFER TO LAYOUT PLAN FOR LIMITS OF WORK.
5. DISCREPANCIES BETWEEN SITE AND PLANS SHOULD BE REPORTED TO THE PROJECT MANAGER IMMEDIATELY.
6. ALL AREAS OF TREE CLEARING SHALL BE STAKED FOR ARCHITECT'S APPROVAL PRIOR TO CLEARING.
7. ALL TOPSOIL AND EXCESS FILL MATERIAL SHALL BE STOCKPILED ON SITE SEPARATELY FOR LATER RE-USE. LOCATE STOCKPILES IN AREAS AS DIRECTED BY CONSTRUCTION MANAGER AND PROTECT FROM EFFECTS OF EROSION.

TREE PROTECTION NOTES:

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2. EXISTING GROUND COVER AND TOPSOIL SHALL NOT BE REMOVED FROM TREE PROTECTION AREAS DURING EARTHWORK PHASE.
3. VEHICULAR TRAFFIC, PARKING, EQUIPMENT OR MATERIAL STORAGE MAY NOT OCCUR WITHIN THE TREE PROTECTION AREAS AT ANY TIME.
4. NO EXCAVATION SHALL BE MADE WITHIN THE TREE PROTECTION AREAS EXCEPT AS NOTED OTHERWISE.

DEMOLITION LEGEND:

- REMOVE BITUMINOUS PAVEMENT AND BASE
- SAWCUT & REMOVE CONCRETE
- REMOVE TREE
- REMOVE MISCELLANEOUS FEATURE AS NOTED
- TEMPORARY TREE PROTECTION FENCE; REFER DETAIL 5/C5.2
- LIMIT OF WORK

SITE DEMOLITION KEY

1. SAWCUT & REMOVE EXISTING BITUMINOUS PAVING INCLUDING SUB-BASE.
2. SAWCUT & REMOVE EXISTING CONCRETE PAVING INCLUDING SUB-BASE.
3. REMOVE EXISTING CURB (AND GUTTER).
4. REMOVE EXISTING TREE INCLUDING ALL ROOT SYSTEMS.
5. REMOVE EXISTING WOOD BOLLARDS COMPLETELY (INCLUDING CONCRETE FOOTINGS).
6. REMOVE EXISTING FENCING COMPLETELY (INCLUDING CONCRETE FOOTINGS)
7. REMOVE SIGN COMPLETELY (INCLUDING CONCRETE FOOTINGS)

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Milham Park Ph 1 Improvements LWCF: 26-01921

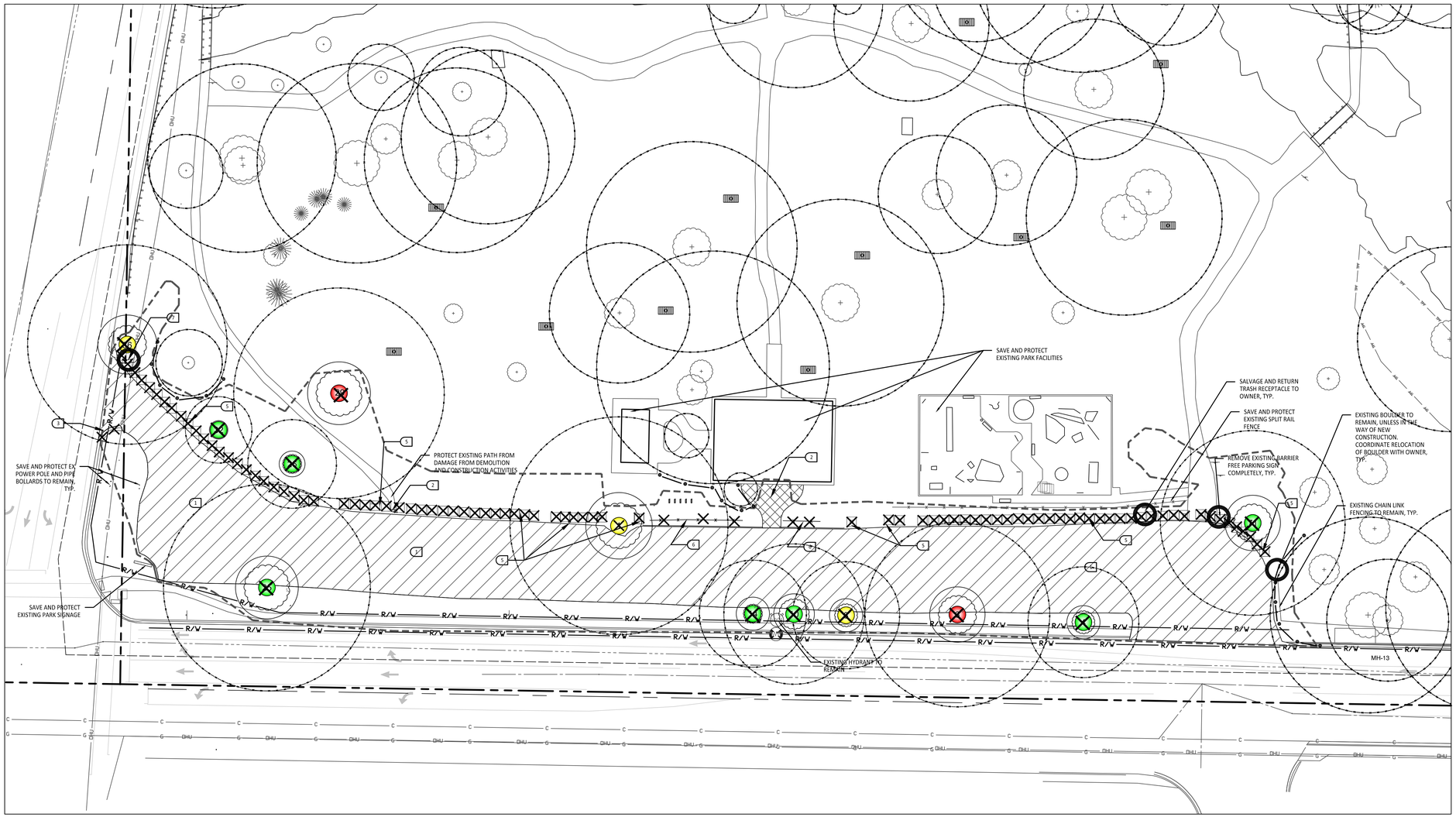
Kalamazoo, Michigan

Sheet Title

Demolition Plan

Job No. OCBA: 52606 COK: XXXXX.XXXX

Sheet No. C1.1



1 Southern Parking Lot Demolition Plan

Scale: 1" = 30'-0"

TREE PROTECTION NOTES:

PROVIDE AND MAINTAIN TEMPORARY TREE PROTECTION FENCING IN ALL LOCATIONS MARKED ●——●——●——●——●. TREE FENCING SHALL BE PROVIDED AND IN PLACE PRIOR TO ANY WORK ON SITE (INCLUDING TOPSOIL STRIPPING OPERATIONS). REFER TO THE FOLLOWING NOTES AND THE SPECIFICATIONS FOR TREE PROTECTION REQUIREMENTS.

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4. NO EXCAVATION SHALL BE MADE WITHIN THE TREE PROTECTION AREAS EXCEPT AS NOTED OTHERWISE.

SITE DEMOLITION KEY

1. SAWCUT & REMOVE EXISTING BITUMINOUS PAVING INCLUDING SUB-BASE.
2. SAWCUT & REMOVE EXISTING CONCRETE PAVING INCLUDING SUB-BASE.
3. REMOVE EXISTING CURB (AND GUTTER).
4. REMOVE EXISTING TREE INCLUDING ALL ROOT SYSTEMS.
5. REMOVE EXISTING WOOD BOLLARDS COMPLETELY (INCLUDING CONCRETE FOOTINGS).
6. REMOVE EXISTING FENCING COMPLETELY (INCLUDING CONCRETE FOOTINGS).
7. REMOVE SIGN COMPLETELY (INCLUDING CONCRETE FOOTINGS)

DEMOLITION NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC., 5725 VENTURE PARK DRIVE, SUITE A, KALAMAZOO, MICHIGAN 49009, (269)250-5991.
2. VERIFY LOCATIONS OF ALL BELOW GRADE UTILITIES PRIOR TO BEGINNING WORK. 72 HOURS BEFORE YOU DIG CALL "MISS DIG" AT 1-800-482-7171.
3. PROTECT ALL TREES & EXISTING FEATURES TO REMAIN AS SPECIFIED.
4. REFER TO LAYOUT PLAN FOR LIMITS OF WORK.
5. DISCREPANCIES BETWEEN SITE AND PLANS SHOULD BE REPORTED TO THE PROJECT MANAGER IMMEDIATELY.
6. ALL AREAS OF TREE CLEARING SHALL BE STAKED FOR ARCHITECT'S APPROVAL PRIOR TO CLEARING.
7. ALL TOPSOIL AND EXCESS FILL MATERIAL SHALL BE STOCKPILED ON SITE SEPARATELY FOR LATER RE-USE. LOCATE STOCKPILES IN AREAS AS DIRECTED BY CONSTRUCTION MANAGER AND PROTECT FROM EFFECTS OF EROSION.

DEMOLITION LEGEND:

- REMOVE BITUMINOUS PAVEMENT AND BASE
- SAWCUT & REMOVE CONCRETE
- REMOVE TREE
- REMOVE MISCELLANEOUS FEATURE AS NOTED
- TEMPORARY TREE PROTECTION FENCE REFER TO DETAIL 5/C5.2
- LIMIT OF WORK

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Issued For:	Date
COK PROJECT REVIEW	03-30-26
COK CHECKLIST MEETING	04-10-26
SPR SUBMISSION	06-08-26

Project:

Milham Park Ph 1 Improvements LWCF: 26-01921

Kalamazoo, Michigan

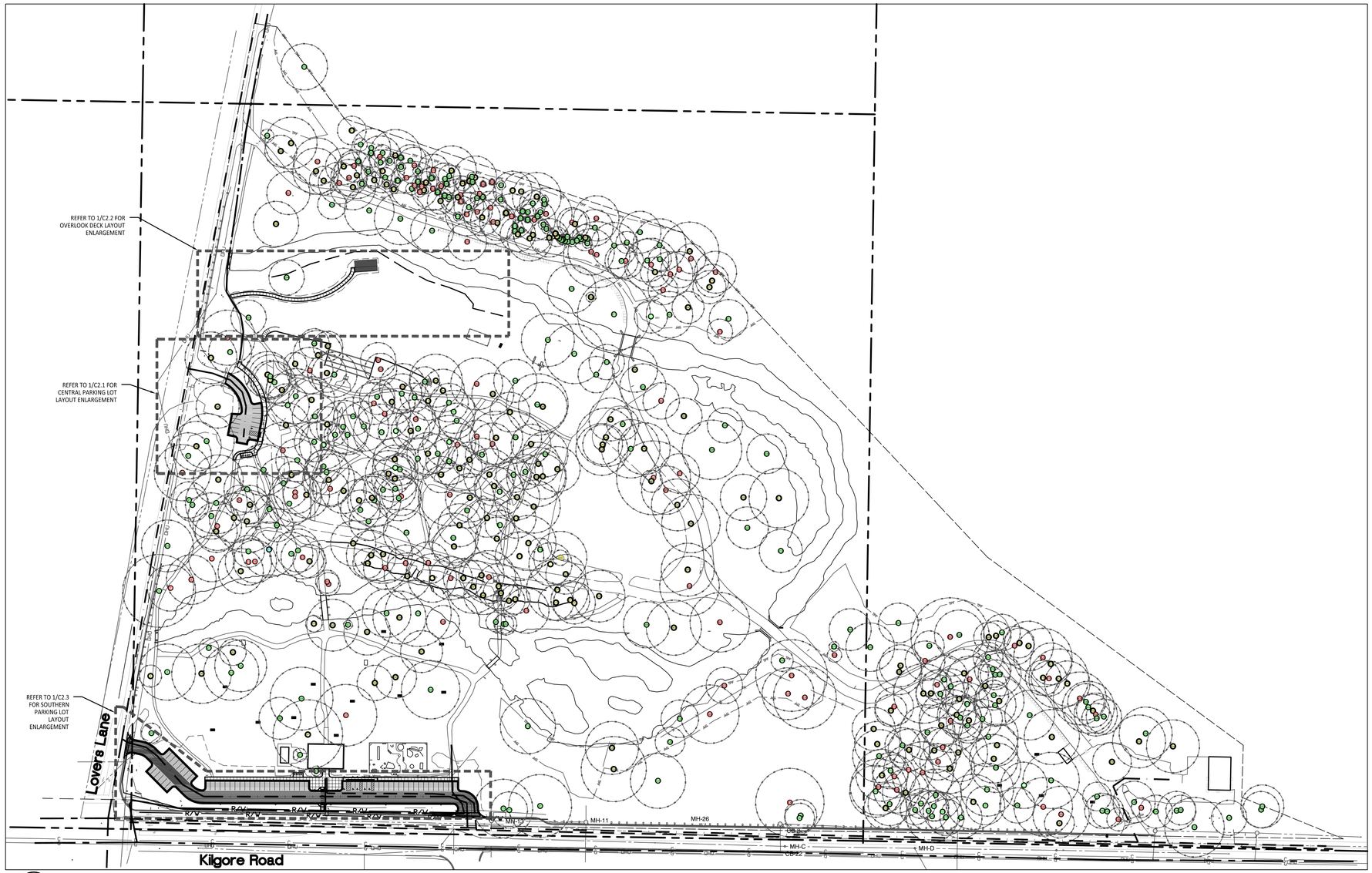
Sheet Title

Southern Parking Lot Demolition Plan

0 30 60 90
North
SCALE IN FEET

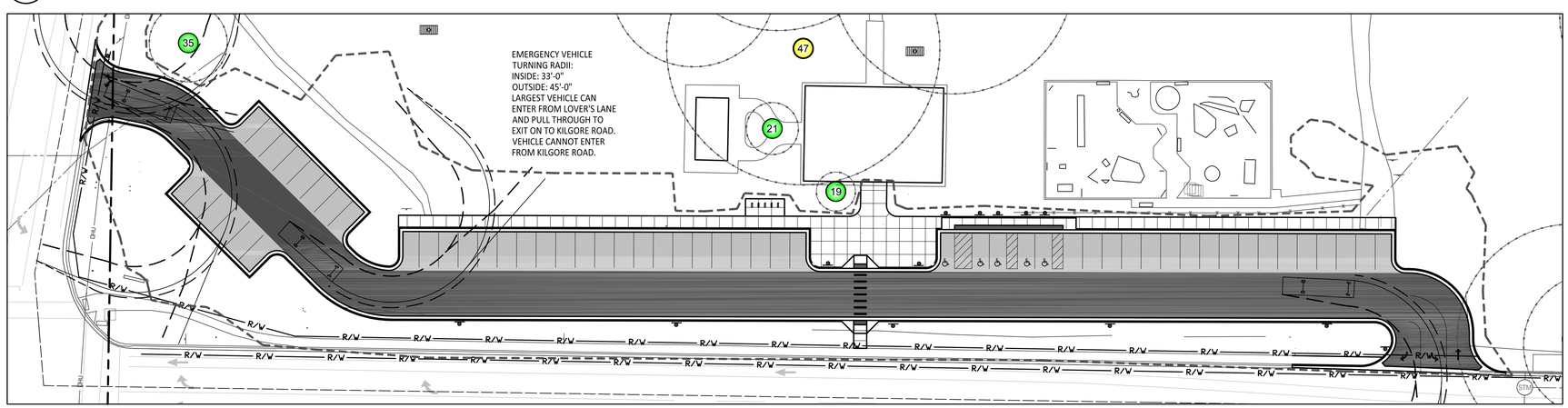
Job No. OCBA: 52606 COK: XXXXXXXX

Sheet No. C1.2



1 Overall Layout Plan

Scale: 1" = 100'-0"



2 Southern Parking Lot Turning Radius Layout Plan

Scale: 1" = 30'-0"

0 30 60 90

North

SCALE IN FEET

LAYOUT NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC., 5725 VENTURE PARK DRIVE, SUITE A, KALAMAZOO, MICHIGAN 49009, (269)250-5991.
2. PAVEMENT DIMENSIONS AND RADII ARE TO EDGE OF PAVEMENT OR BACK OF CURB.
3. DISCREPANCIES BETWEEN SITE AND PLANS SHOULD BE REPORTED TO THE PROJECT MANAGER IMMEDIATELY.
4. VERIFY LOCATIONS OF ALL BELOW GRADE UTILITIES PRIOR TO BEGINNING WORK. 72 HOURS BEFORE YOU DIG CALL "MISS DIG" AT 1-800-482-7171.
5. PROVIDE BARRIER FREE PARKING SIGNS FOR ALL BARRIER FREE PARKING SPACES. ALL SIGNS TO COMPLY WITH THE MDOT MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
6. SITE LAYOUT POINTS SHOULD BE ESTABLISHED AND PROTECTED FOR FUTURE SITE WORK.

BARRIER-FREE NOTES

BARRIER-FREE PARKING AND ACCESSIBLE ROUTE(S) MUST COMPLY WITH THE AMERICANS WITH DISABILITIES ACT AND MICHIGAN BARRIER-FREE CODE REQUIREMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

- 1:50 (2%) MAXIMUM CROSS-SLOPE ON ACCESSIBLE ROUTE.
- NO CHANGES IN LEVEL GREATER THAN 1/2" ALONG ACCESSIBLE ROUTE.
- 1:20 (5%) MAXIMUM LONGITUDINAL SLOPE ON ACCESSIBLE ROUTE (EXCEPT WHERE RAMPS ARE PROVIDED).
- 1:50 (2%) MAXIMUM SLOPE (IN ANY DIRECTION) IN B.F. PARKING AND ACCESS AISLES.

PROPOSED FEATURES LEGEND:

SYMBOL	DESCRIPTION
(H)	BITUMINOUS PAVING- STANDARD DUTY
(D)	BITUMINOUS PAVING - HEAVY DUTY
	PAVEMENT FLUSH WITH BIT. PAVEMENT / BARRIER FREE RAMP - TYPE I
	BARRIER FREE RAMP - TYPE II
	LIMIT OF WORK
	ENLARGEMENT LIMIT LINE
	PROPOSED CONCRETE CURB AND GUTTER
	WETLAND DELINEATION LINE

KEY	DESCRIPTION	DETAIL
(A)	CONCRETE CURB AND GUTTER	8 /C5.1
(B)	BARRIER FREE RAMP TYPE 1	10 /C5.1
(C)	BARRIER FREE RAMP TYPE II	11/C5.1
(D)	BITUMINOUS PAVING - HEAVY DUTY	3 /C5.1
(E)	CONCRETE WALK TO OVERLOOK DECK	6 /C5.1
(F)	CONCRETE WALK	1 /C5.1
(G)	WOODEN OVERLOOK DECK	1 /C5.3
(H)	BITUMINOUS PAVING - STANDARD DUTY	2 /C5.1
(J)	CONCRETE VALLEY GUTTER	9 /C5.1
(K)	ASPHALT PAINT ARROWS	7 /C5.2
(L)	BARRIER FREE PARKING SPACE LAYOUT	9 /C5.2
(M)	CROSS WALK STRIPING	13 /C5.2

SIGNS		
(S1)	STOP SIGN	SEE SPECS.
(S2)	NO PARKING-FIRE LANE	SEE SPECS.
(S3)	BARRIER FREE PARKING	SEE SPECS.
(S4)	BARRIER FREE PARKING- VAN ACCESSIBLE	SEE SPECS.

MODES OF ACCESS:

- VEHICULAR MODE OF ACCESS
- PEDESTRIAN MODE OF ACCESS
- BICYCLE MODE OF ACCESS

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Project:

Milham Park Ph 1 Improvements LWCF: 26-01921

Kalamazoo, Michigan

Sheet Title

Overall Layout Plan

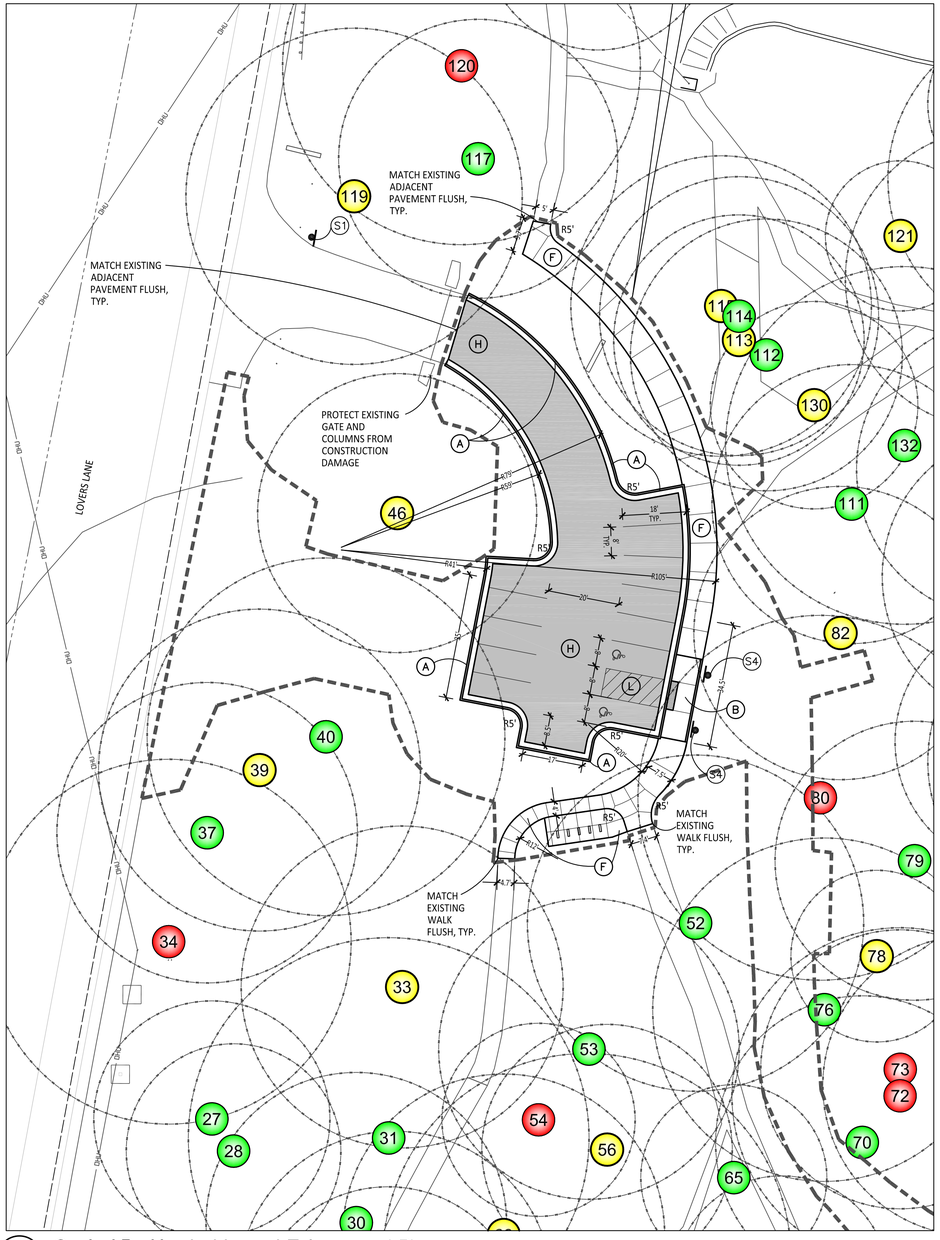
0 100 200 300

North

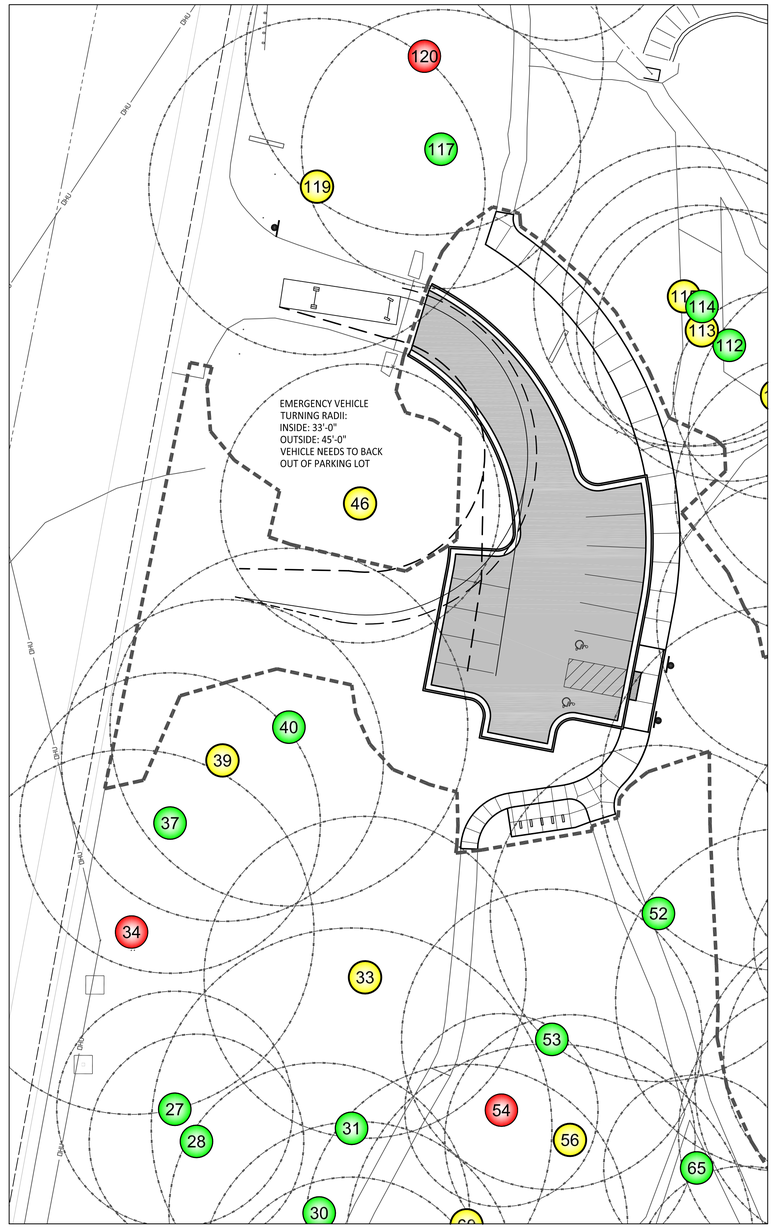
SCALE IN FEET

Job No. OCBA: 52606
COK: XXXXXXXXX

Sheet No. C2.0



1 **Central Parking Lot Layout Enlargement Plan**
Scale: 1" = 20'-0"



2 **Central Parking Lot Turning Radius Plan**
Scale: 1" = 20'-0"

LAYOUT NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC., 5725 VENTURE PARK DRIVE, SUITE A, KALAMAZOO, MICHIGAN 49009, (269)250-5991.
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BARRIER-FREE NOTES

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PROPOSED FEATURES LEGEND:

SYMBOL	DESCRIPTION
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(D)	BITUMINOUS PAVING - HEAVY DUTY
	PAVEMENT FLUSH WITH BIT. PAVEMENT / BARRIER FREE RAMP - TYPE I
	BARRIER FREE RAMP - TYPE II
	LIMIT OF WORK
	ENLARGEMENT LIMIT LINE
	PROPOSED CONCRETE CURB AND GUTTER
	WETLAND DELINEATION LINE

KEY	DESCRIPTION	DETAIL
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(E)	CONCRETE WALK TO OVERLOOK DECK	6 /C5.1
(F)	CONCRETE WALK	1/C5.1
(G)	WOODEN OVERLOOK DECK	1 /C5.3
(H)	BITUMINOUS PAVING - STANDARD DUTY	2/C5.1
(J)	CONCRETE VALLEY GUTTER	9 /C5.1
(K)	ASPHALT PAINT ARROWS	7 /C5.2
(L)	BARRIER FREE PARKING SPACE LAYOUT	9 /C5.2
(M)	CROSS WALK STRIPING	13 /C5.2

SIGNS		DETAIL
(S1)	STOP SIGN	8 /C5.2
(S2)	NO PARKING-FIRE LANE	11 /C5.2
(S3)	BARRIER FREE PARKING	12 /C5.2
(S4)	BARRIER FREE PARKING- VAN ACCESSIBLE	12 /C5.2

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Project:

Milham Park Ph 1 Improvements
LWCF: 26-01921

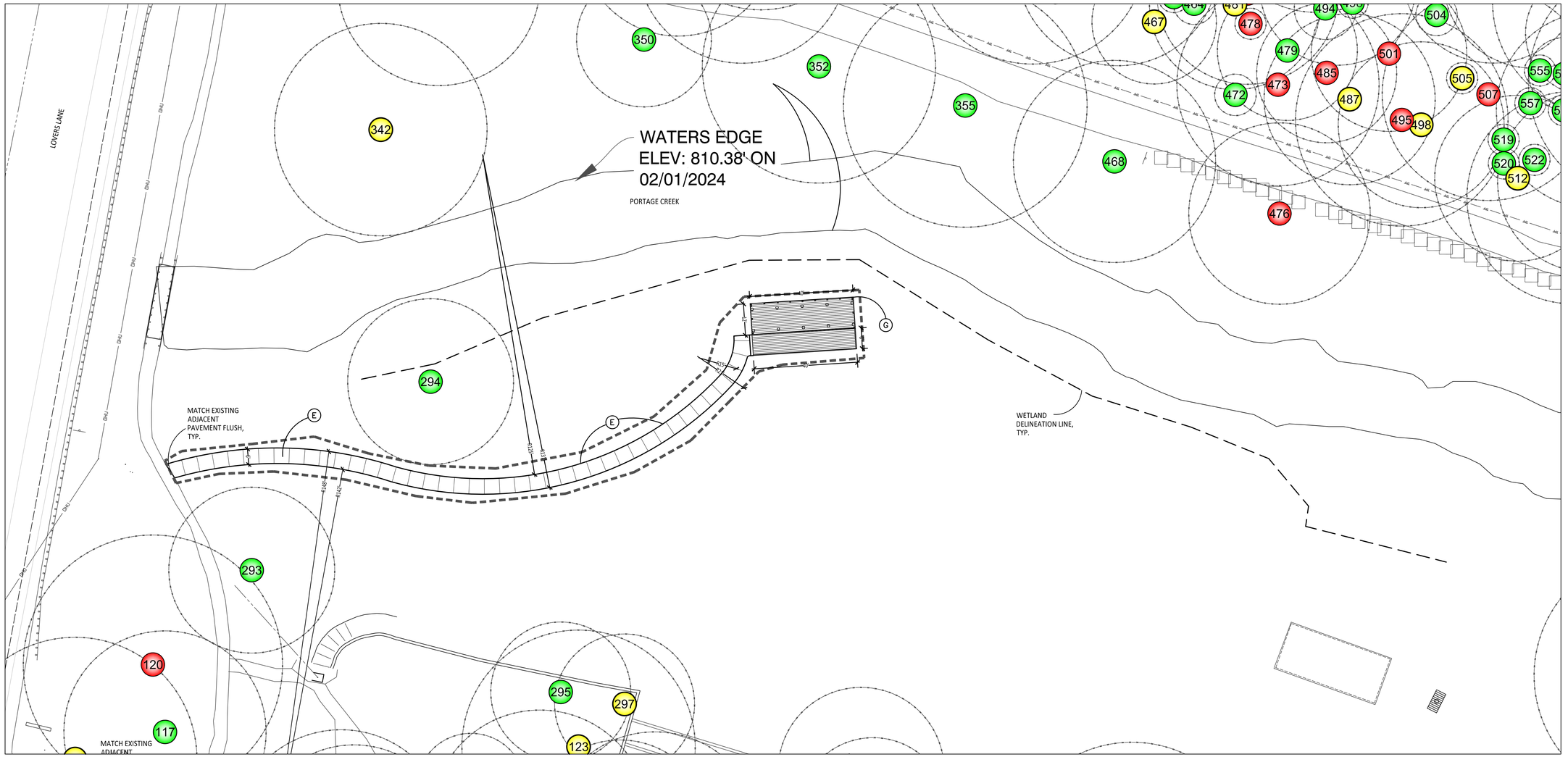
Kalamazoo, Michigan

Sheet Title
Central Parking Lot Layout Enlargement Plan

0 20 40 60
North
SCALE IN FEET

Job No.
OCBA: 52606
COK: XXXXXXXX

Sheet No.
C2.1



1 Overlook Deck Layout Enlargement Plan

Scale: 1" = 20'-0"

PROPOSED FEATURES LEGEND:

SYMBOL	DESCRIPTION
(H)	BITUMINOUS PAVING- STANDARD DUTY
(D)	BITUMINOUS PAVING - HEAVY DUTY
	PAVEMENT FLUSH WITH BIT. PAVEMENT / BARRIER FREE RAMP - TYPE I
	BARRIER FREE RAMP - TYPE II
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	ENLARGEMENT LIMIT LINE
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K	ASPHALT PAINT ARROWS	7 /C5.2
L	BARRIER FREE PARKING SPACE LAYOUT	9 /C5.2
M	CROSSWALK STRIPING	13 /C5.1

SIGNS		
S1	STOP SIGN	8 /C5.2
S2	NO PARKING-FIRE LANE	11 /C5.2
S3	BARRIER FREE PARKING	12 /C5.2
S4	BARRIER FREE PARKING- VAN ACCESSIBLE	12 /C5.2

BARRIER-FREE NOTES

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Project:

Milham Park Ph 1 Improvements LWCF: 26-01921

Kalamazoo, Michigan

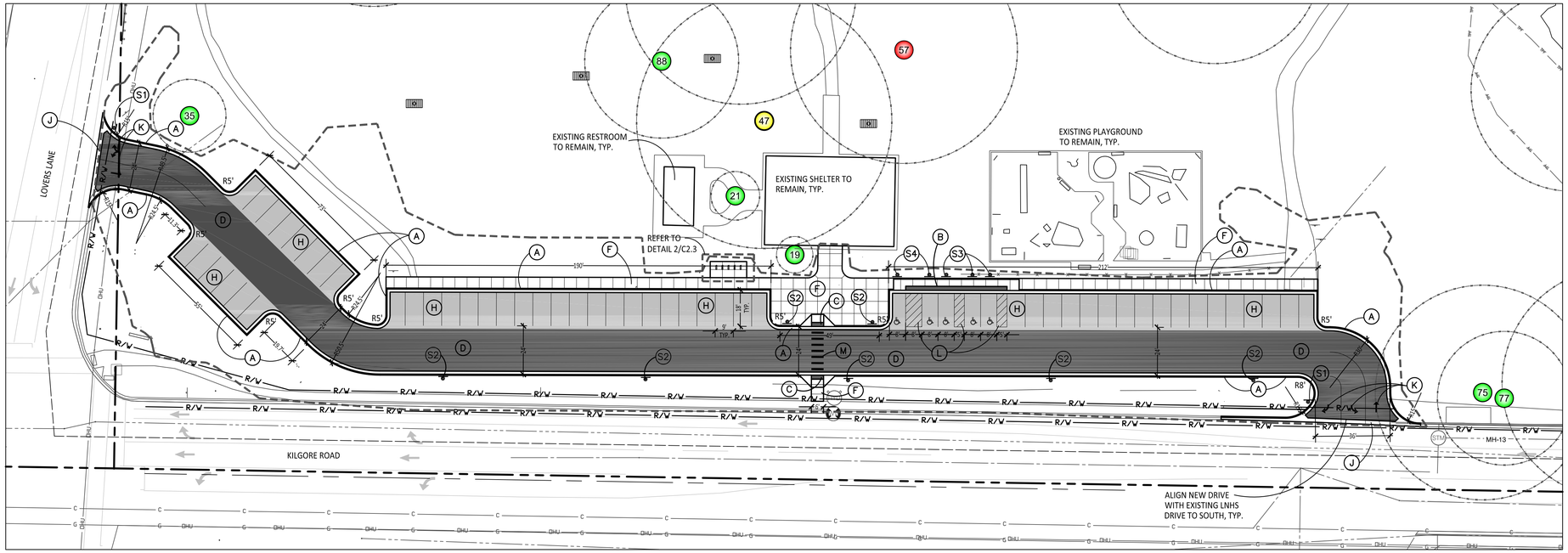
Sheet Title

Overlook Deck Layout Enlargement Plan

0 20 40 60
North
SCALE IN FEET

Job No. OCBA: 52606
COK: XXXX.XXXX

Sheet No. C2.2



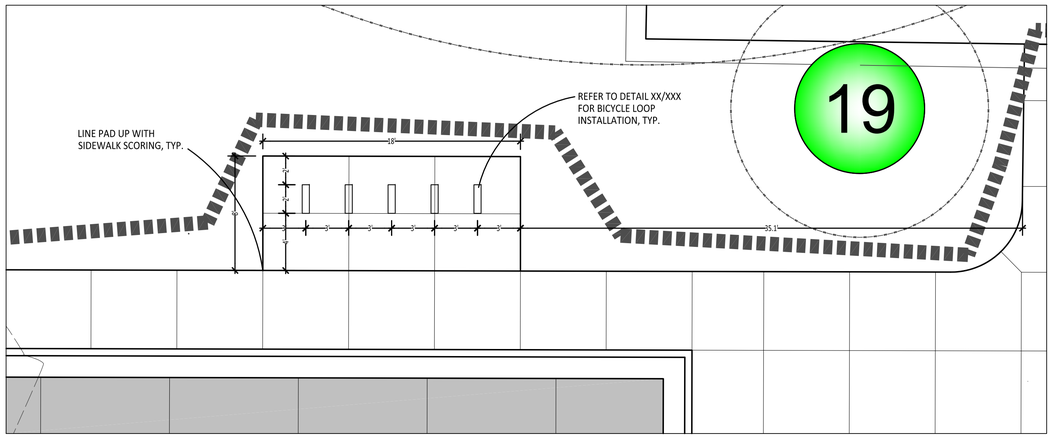
1 Southern Parking Lot Layout Enlargement Plan

Scale: 1" = 30'-0"

0 30 60 90

North

SCALE IN FEET



2 Bicycle Loop Layout Enlargement Plan

Scale: 1" = 5'-0"

0 5 10 15

North

SCALE IN FEET

LAYOUT NOTES:

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PROPOSED FEATURES LEGEND:

SYMBOL	DESCRIPTION
(H)	BITUMINOUS PAVING- STANDARD DUTY
(D)	BITUMINOUS PAVING - HEAVY DUTY
	PAVEMENT FLUSH WITH BIT. PAVEMENT / BARRIER FREE RAMP - TYPE I
	BARRIER FREE RAMP - TYPE II
	LIMIT OF WORK
	ENLARGEMENT LIMIT LINE
	PROPOSED CONCRETE CURB AND GUTTER
	WETLAND DELINEATION LINE

KEY	DESCRIPTION	DETAIL
(A)	CONCRETE CURB AND GUTTER	8 /C5.1
(B)	BARRIER FREE RAMP TYPE 1	10 /C5.1
(C)	BARRIER FREE RAMP TYPE II	11 /C5.1
(D)	BITUMINOUS PAVING - HEAVY DUTY	3 /C5.1
(E)	CONCRETE WALK TO OVERLOOK DECK	6 /C5.1
(F)	CONCRETE WALK	1/C5.1
(G)	WOODEN OVERLOOK DECK	1 /C5.3
(H)	BITUMINOUS PAVING - STANDARD DUTY	2 /C5.1
(J)	CONCRETE VALLEY GUTTER	9 /C5.1
(K)	ASPHALT PAINT ARROWS	7 /C5.2
(L)	BARRIER FREE PARKING SPACE LAYOUT	9 /C5.2
(M)	CROSSWALK STRIPING	13 /C5.2

SIGNS		DETAIL
(S1)	STOP SIGN	8 /C5.2
(S2)	NO PARKING-FIRE LANE	11 /C5.2
(S3)	BARRIER FREE PARKING	12 /C5.2
(S4)	BARRIER FREE PARKING- VAN ACCESSIBLE	12 /C5.2

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Project:

Milham Park Ph 1 Improvements LWCF: 26-01921

Kalamazoo, Michigan

Sheet Title

South Parking Lot Layout Enlargement Plan

Job No. OCBA: 52606
COK: XXXXXXXX

Sheet No. C2.3

SITE MATERIALS & CONSTRUCTION NOTES

1. SOILS EXPOSED IN THE BASE OF ALL SATISFACTORY FOUNDATION EXCAVATIONS SHOULD BE PROTECTED AGAINST ANY DETRIMENTAL CHANGES IN CONDITION SUCH AS FROM DISTURBANCE, RAIN AND FREEZING. SURFACE RUN-OFF WATER SHOULD BE DRAINED AWAY FROM THE EXCAVATION AND NOT ALLOWED TO POND. IF POSSIBLE, ALL FOOTING CONCRETE SHOULD BE POURED THE SAME DAY THE EXCAVATION IS MADE. IF THIS IS NOT PRACTICAL, THE FOOTING EXCAVATIONS SHOULD BE ADEQUATELY PROTECTED.
2. REMOVE ALL SUBGRADE GRADE MATERIAL THAT MAY BE SOFTENED BY RAINS, FREEZING, OR CONSTRUCTION TRAFFIC, ETC. AND REPLACE WITH COMPACTED GRANULAR FILL.
3. STORM SEWER SHALL BE CORRUGATED HDPE PIPE WITH SMOOTH INTERIOR WALL, BY ADS OR EQUAL. LEACHING BASINS AND MANHOLES ARE TO BE REINFORCED CONCRETE WITH RIM AND SLOTTED GRATING (AS SHOWN). STORM SEWER & LEACHING BASINS ARE TO BE WRAPPED WITH FILTER FABRIC.
4. SANITARY SEWER PIPE MAY BE PVC SDR 3034 MATERIAL.
5. ALL WATER SERVICE LINES SHALL BE 1" TYPE K COPPER PIPE OR PE AND SHALL BE BROUGHT TO WITHIN 5' OF BUILDING, WITH COMPRESSION FITTINGS OR MECHANICAL FITTINGS OTHER THAN FLARED ENDS.
6. PROVIDE MINIMUM 5' COVER FROM FINISHED GRADE FOR ALL WATER SERVICE LINES. IF COVER CANNOT BE MAINTAINED DUE TO SITE CONDITIONS OR INVERT ELEVATIONS THE ENTIRE LENGTH OF THE EXTERIOR PIPE MUST BE PROTECTED WITH 2" RIGID INSULATION BOARD ON THE TOP AND SIDES.
7. PROVIDE MINIMUM 5' COVER FROM FINISHED GRADE FOR ALL SANITARY SEWER LINES. IF COVER CANNOT BE MAINTAINED DUE TO SITE CONDITIONS OR INVERT ELEVATIONS THE ENTIRE LENGTH OF THE EXTERIOR PIPE MUST BE PROTECTED WITH 2" RIGID INSULATION BOARD ON THE TOP AND SIDES.
8. MAINTAIN 10 FOOT MINIMUM HORIZONTAL SEPARATION BETWEEN THE SEWER AND WATER MAIN UTILITIES. PROVIDE 18" MINIMUM VERTICAL SEPARATION WHERE UTILITIES CROSS.
9. THE CONTRACTOR SHALL INSTALL A PEDESTRIAN FENCE AROUND ALL EXCAVATIONS TO BE LEFT OPEN OVERNIGHT AS REQUIRED.
10. EXTERIOR CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4000 PSI AND SHALL HAVE LIMESTONE AGGREGATE AND SHALL HAVE 4 - 6 % AIR ENTRAINMENT WITH A BROOM FINISH.
11. EXPANSION JOINTS IN CONCRETE PAVEMENT AND WALLS SHALL BE 1/2" ASPHALT IMPREGNATED FULL DEPTH 40' O.C. MAXIMUM & AT SIDEWALK INTERSECTIONS. CRACK CONTROL SCORING AT SIDEWALK WIDTH DIMENSION AND @ 10'-0" O.C. IN DRIVES.

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO ALL LOCAL, STATE AND FEDERAL LAWS, RULES AND REGULATIONS IN FORCE AT TIME OF CONSTRUCTION.
2. ALL WORK SHALL CONFORM TO THE MICHIGAN HANDICAPPED ACCESSIBILITY CODE AND THE AMERICANS WITH DISABILITIES ACT.
3. ALL REGULATORY SIGNAGE (IF SPECIFIED) SHALL BE PER THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT).
4. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS, PERMIT COSTS, TAP FEES, METER DEPOSITS, PERMANENT UTILITY APPLICATIONS, BONDS, AND OTHER FEES REQUIRED FOR PROPOSED WORK.
5. CONTACT "MISS DIG 811" AT 1-800-482-7171 FOR LOCATION OF UNDERGROUND UTILITIES A MINIMUM OF 48 HOURS BEFORE COMMENCING EXCAVATION WORK. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO ARE NOT PART OF THE "MISS DIG" ALERT SYSTEM. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.
6. ANY SANITARY SEWER, SANITARY SEWER SERVICE LEADS, WATER MAIN, WATER SERVICES, OR STORM SEWER WHICH IS DAMAGED BY THE CONTRACTOR DURING HIS OPERATIONS SHALL BE REPAIRED TO THE OWNERS SATISFACTION, AND AT THE CONTRACTORS EXPENSE. IF ANY ELEMENTS OF THE SANITARY SEWER SYSTEM ARE DAMAGED AND NEED REPAIRED, IT MUST MEET CITY OF KALAMAZOO SPECIFICATIONS.
7. REFER TO ELECTRICAL DRAWINGS FOR UNDERGROUND ELECTRICAL REQUIREMENTS FOR SITE LIGHTING & SITE DETAILS SHEETS FOR THE FIXTURE AND & POLE SPECIFICATIONS.
8. CONTRACTOR IS TO UNCOVER AND CONFIRM ALL TAP LOCATIONS. LOCATION DISCREPANCIES ARE TO BE BROUGHT TO THE ENGINEERS ATTENTION FOR RESOLUTION.
9. CONTRACTOR/OWNER SHALL OBTAIN UTILITY CONNECTION PERMITS AND SETTLE APPLICABLE UTILITY ASSESSMENTS PRIOR TO EXTENSION OF PUBLIC UTILITIES ONSITE.
10. MANHOLE AND CATCH BASIN STRUCTURES SHALL BE PRECAST AND HAVE A MAXIMUM OF 2 ADJUSTING RINGS FOR FINISH GRADE ADJUSTMENT. STORM STRUCTURES MUST ALL HAVE A SUMP OF TWO FEET.
11. DEMOLISH & REMOVE ALL EXISTING SITE FEATURES AS REQUIRED.
12. THE CONTRACTOR SHALL REVIEW THE GEOTECHNICAL REPORT.
13. DRIVEWAY LAYOUT AND CONNECTION TO KILGORE ROAD SHALL COMPLY WITH ALL ASPECTS OF THE MDOT / COUNTY ROAD COMMISSION DRIVE PERMITS, RESPECTIVELY.
14. GEOTEXTILE FABRIC SHALL BE PLACED UNDER ALL APPLICATIONS OF RIP RAP OUTFALLS AND SPILLWAYS.

EXISTING STORM STRUCTURE INFORMATION

CB-1, 2' CONC. STRUCTURE
RIM = 815.73'
NE 12" RCP (INV. = 813.83')
SUMP = 813.63'

CB-2, 4' x 3' CONC. STRUCTURE
RIM = 818.50'
NNW 12" CLAY (INV. = 816.95')
SUMP = 816.90'

CB-3, 2' CONC. STRUCTURE
RIM = 857.29'
N 12" RCP (INV. = 852.74')
SUMP = 852.39'

MH-4, 6' CONC. STRUCTURE
RIM = 857.92'
S 12" RCP (INV. = 853.27')
E 12" RCP (INV. = 850.17')
S 12" RCP (INV. = 845.72')
W 12" RCP (INV. = 845.52')
SUMP = 845.22'

CB-5, 2' CONC. STRUCTURE
RIM = 854.13'
N 12" RCP (INV. = 849.33')
SUMP = 848.93'

MH-6, 6' CONC. STRUCTURE
RIM = 854.43'
S 12" RCP (INV. = 849.53')
E 12" RCP (INV. = 844.63')
S 12" RCP (INV. = 844.78')
W 12" RCP (INV. = 844.68')
SUMP = 844.13'

CB-7, 6' CONC. STRUCTURE
RIM = 845.21'
E 12" RCP (INV. = 834.51')
W 12" RCP (INV. = 834.31')
S 12" RCP (INV. = 834.66')
SUMP = 834.21'

CB-8, 2' CONC. STRUCTURE
RIM = 834.77'
N 12" RCP (INV. = 830.17')
SUMP = 829.77'

MH-9, 6' CONC. STRUCTURE
RIM = 835.14'
S 12" RCP (INV. = 830.39')
E 12" RCP (INV. = 829.54')
W 12" RCP (INV. = 825.74')
S 12" RCP (INV. = 825.84')
SUMP = 825.64'

CB-10, 2' CONC. STRUCTURE
RIM = 827.42'
N 12" RCP (INV. = 823.32')
SUMP = 823.02'

MH-11, 6' CONC. STRUCTURE
RIM = 827.91'
S 12" RCP (INV. = 823.11')
E 12" RCP (INV. = 821.41')
W 12" RCP (INV. = 816.91')
S 24" RCP (INV. = 816.96')
N 24" RCP (INV. = 816.81')
SUMP = 816.76'

CB-12, 2' CONC. STRUCTURE
RIM = 825.36'
S 12" RCP (INV. = 817.96')
SUMP = 817.91'

MH-13, 4' CONC. STRUCTURE
RIM = 825.52'
N 12" RCP (INV. = 817.87')
E 12" RCP (INV. = 817.57')
S 12" RCP (INV. = 817.72')
SUMP = 817.62'

CB-14, 4' x 2' CONC. STRUCTURE
RIM = 822.70'
NE 8" CLAY (INV. = 820.60')
SUMP = 820.55'

CB-15, 2' CONC. STRUCTURE
RIM = 825.08'
NE 4" CPE (INV. = 822.03')
W 4" CPE (INV. = 823.88')
SW 4" CPE (INV. = 821.98')
SUMP = 821.53'

CB-16, 2' CONC. STRUCTURE
RIM = 813.89'
FULL OF DEBRIS

CB-18, 2' CONC. STRUCTURE
RIM = 826.83'
FULL OF DEBRIS

CB-19, 2' CONC. STRUCTURE
RIM = 825.74'
S 12" CONC (INV. = 822.54')
SUMP = 822.44'

CB-20, 2' CONC. STRUCTURE
RIM = 826.12'
S 12" RCP (INV. = 818.77')
SUMP = 818.72'

CB-21, 6' CONC. STRUCTURE
RIM = 827.41'
N 24" RCP (INV. = 817.71')
S 24" RCP (INV. = 817.46')
SUMP = 817.11'

CB-22, 2' CONC. STRUCTURE
RIM = 834.66'
N 12" RCP (INV. = 826.66')
SUMP = 826.51'

CB-23, 2' CONC. STRUCTURE
RIM = 845.13'
N 12" RCP (INV. = 834.38')
S 12" RCP (INV. = 834.43')
SUMP = 834.33'

CB-24, 2' CONC. STRUCTURE
RIM = 854.30'
N 12" RCP (INV. = 846.55')
SUMP = 846.50'

CB-25, 2' CONC. STRUCTURE
RIM = 857.30'
N 12" RCP (INV. = 847.65')
SUMP = 847.50'

CB-26, 4' CONC. STRUCTURE
RIM = 830.67'
E 12" RCP (INV. = 825.47')
W 12" RCP (INV. = 821.57')
SUMP = 821.27'

UTILITY PLAN NOTES

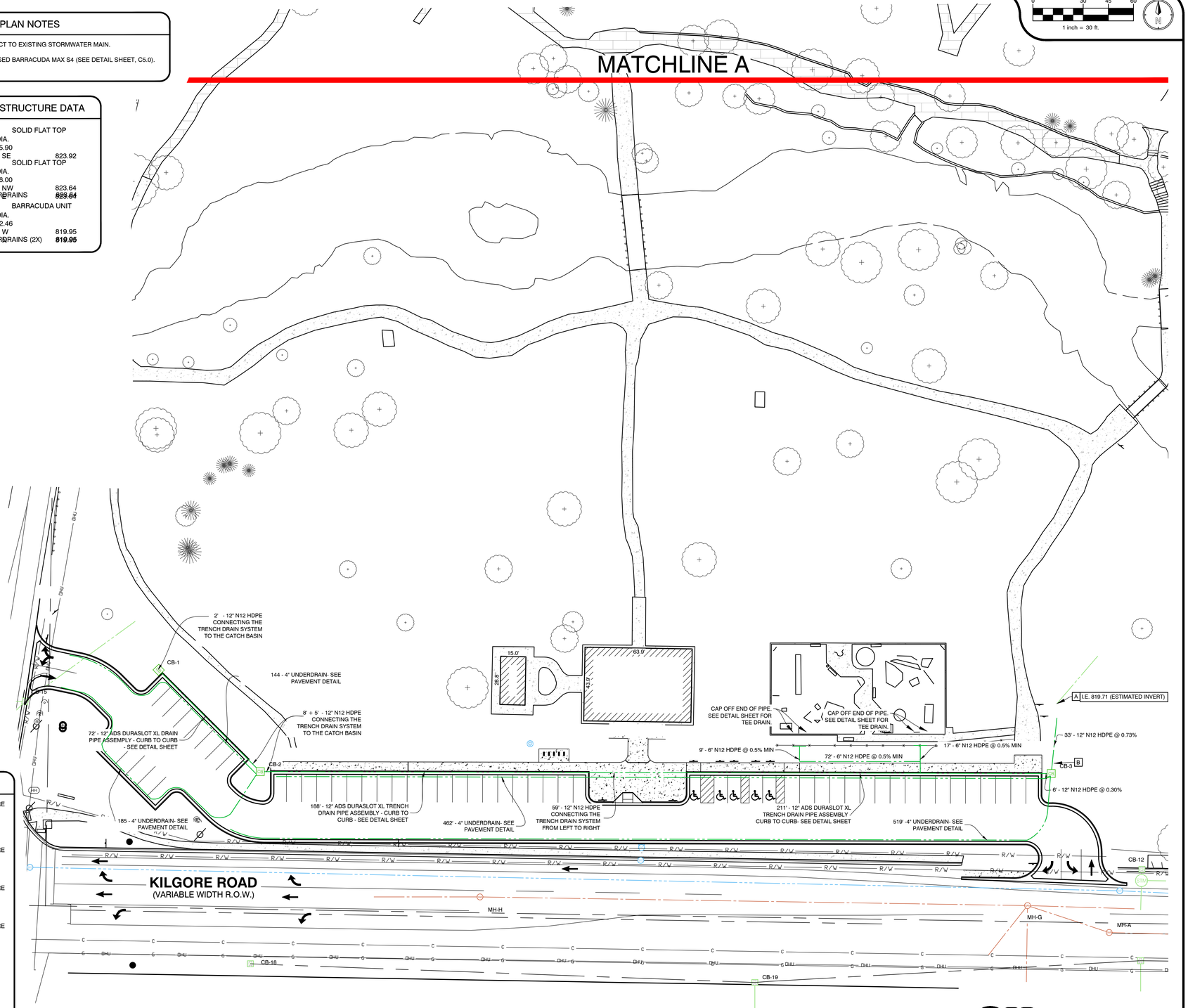
A. CONNECT TO EXISTING STORMWATER MAIN.
B. PROPOSED BARRACUDA MAX S4 (SEE DETAIL SHEET, C5.0).

STORM STRUCTURE DATA

SOLID FLAT TOP
CB-1, 4' DIA.
RIM = 825.90
12" HDPE SE 823.92

SOLID FLAT TOP
CB-2, 4' DIA.
RIM = 826.00
12" HDPE NW 823.64
12" UNDERDRAINS ~~823.64~~

BARRACUDA UNIT
CB-3, 4' DIA.
RIM = 822.46
12" HDPE W 819.95
12" UNDERDRAINS (2X) ~~819.95~~



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ALL UTILITIES AS SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THE AREA. FIELD WORK PERFORMED BY: AR ENGINEERING, LLC

PLANS PREPARED BY:

AR ENGINEERING
CIVIL ENGINEERING & SURVEYING
MICHIGAN | INDIANA | ILLINOIS | OHIO
269.250.5991 PHONE | 866.589.0934 FAX
www.arengineeringllc.com

DRAWN:	LM
CHECKED:	AF

STATE OF MICHIGAN
AARON MICHAEL FELSKE
No. 6201045105
LICENSED PROFESSIONAL ENGINEER

AARON FELSKE, P.E.
No. 6201045105

No.	ISSUED FOR:	DATE	BY
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UTILITY PLAN SOUTH
MILHAM PARK IMPROVEMENTS
OCBA
LAWRENCE MI
SECTION 15,16,9,10, T03S, R15W.

PROJECT:
CLIENT:
SITE ADDRESS:
SITE SECTION:

JOB NUMBER
26029004

DATE
06/08/2026

SHEET NUMBER
C3.0

SITE MATERIALS & CONSTRUCTION NOTES

1. SOILS EXPOSED IN THE BASE OF ALL SATISFACTORY FOUNDATION EXCAVATIONS SHOULD BE PROTECTED AGAINST ANY DETRIMENTAL CHANGES IN CONDITION SUCH AS FROM DISTURBANCE, RAIN AND FREEZING. SURFACE RUN-OFF WATER SHOULD BE DRAINED AWAY FROM THE EXCAVATION AND NOT ALLOWED TO POND. IF POSSIBLE, ALL FOOTING CONCRETE SHOULD BE POURED THE SAME DAY THE EXCAVATION IS MADE. IF THIS IS NOT PRACTICAL, THE FOOTING EXCAVATIONS SHOULD BE ADEQUATELY PROTECTED.
2. REMOVE ALL SUBGRADE GRADE MATERIAL THAT MAY BE SOFTENED BY RAINS, FREEZING, OR CONSTRUCTION TRAFFIC, ETC. AND REPLACE WITH COMPACTED GRANULAR FILL.
3. STORM SEWER SHALL BE CORRUGATED HDPE PIPE WITH SMOOTH INTERIOR WALL, BY ADS OR EQUAL. LEACHING BASINS AND MANHOLES ARE TO BE REINFORCED CONCRETE WITH RIM AND SLOTTED GRATING (AS SHOWN). STORM SEWER & LEACHING BASINS ARE TO BE WRAPPED WITH FILTER FABRIC.
4. SANITARY SEWER PIPE MAY BE PVC SDR 3034 MATERIAL.
5. ALL WATER SERVICE LINES SHALL BE 1" TYPE K COPPER PIPE OR PE AND SHALL BE BROUGHT TO WITHIN 5' OF BUILDING, WITH COMPRESSION FITTINGS OR MECHANICAL FITTINGS OTHER THAN FLARED ENDS.
6. PROVIDE MINIMUM 5' COVER FROM FINISHED GRADE FOR ALL WATER SERVICE LINES. IF COVER CANNOT BE MAINTAINED DUE TO SITE CONDITIONS OR INVERT ELEVATIONS THE ENTIRE LENGTH OF THE EXTERIOR PIPE MUST BE PROTECTED WITH 2" RIGID INSULATION BOARD ON THE TOP AND SIDES.
7. PROVIDE MINIMUM 5' COVER FROM FINISHED GRADE FOR ALL SANITARY SEWER LINES. IF COVER CANNOT BE MAINTAINED DUE TO SITE CONDITIONS OR INVERT ELEVATIONS THE ENTIRE LENGTH OF THE EXTERIOR PIPE MUST BE PROTECTED WITH 2" RIGID INSULATION BOARD ON THE TOP AND SIDES.
8. MAINTAIN 10 FOOT MINIMUM HORIZONTAL SEPARATION BETWEEN THE SEWER AND WATER MAIN UTILITIES. PROVIDE 18" MINIMUM VERTICAL SEPARATION WHERE UTILITIES CROSS.
9. THE CONTRACTOR SHALL INSTALL A PEDESTRIAN FENCE AROUND ALL EXCAVATIONS TO BE LEFT OPEN OVERNIGHT AS REQUIRED.
10. EXTERIOR CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4000 PSI AND SHALL HAVE LIMESTONE AGGREGATE AND SHALL HAVE 4 - 6 % AIR ENTRAINMENT WITH A BROOM FINISH.
11. EXPANSION JOINTS IN CONCRETE PAVEMENT AND WALLS SHALL BE 1/2" ASPHALT IMPREGNATED FULL DEPTH 40' O.C. MAXIMUM & AT SIDEWALK INTERSECTIONS. CRACK CONTROL SCORING AT SIDEWALK WIDTH DIMENSION AND @ 10'-0" O.C. IN DRIVES.

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO ALL LOCAL, STATE AND FEDERAL LAWS, RULES AND REGULATIONS IN FORCE AT TIME OF CONSTRUCTION.
2. ALL WORK SHALL CONFORM TO THE MICHIGAN HANDICAPPED ACCESSIBILITY CODE AND THE AMERICANS WITH DISABILITIES ACT.
3. ALL REGULATORY SIGNAGE (IF SPECIFIED) SHALL BE PER THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT).
4. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS, PERMIT COSTS, TAP FEES, METER DEPOSITS, PERMANENT UTILITY APPLICATIONS, BONDS, AND OTHER FEES REQUIRED FOR PROPOSED WORK.
5. CONTACT "MISS DIG 811" AT 1-800-482-7171 FOR LOCATION OF UNDERGROUND UTILITIES A MINIMUM OF 48 HOURS BEFORE COMMENCING EXCAVATION WORK. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO ARE NOT PART OF THE "MISS DIG" ALERT SYSTEM. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.
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13. DRIVEWAY LAYOUT AND CONNECTION TO KILGORE ROAD SHALL COMPLY WITH ALL ASPECTS OF THE MDOT / COUNTY ROAD COMMISSION DRIVE PERMITS, RESPECTIVELY.
14. GEOTEXTILE FABRIC SHALL BE PLACED UNDER ALL APPLICATIONS OF RIP RAP OUTFALLS AND SPILLWAYS.

UTILITY PLAN NOTES

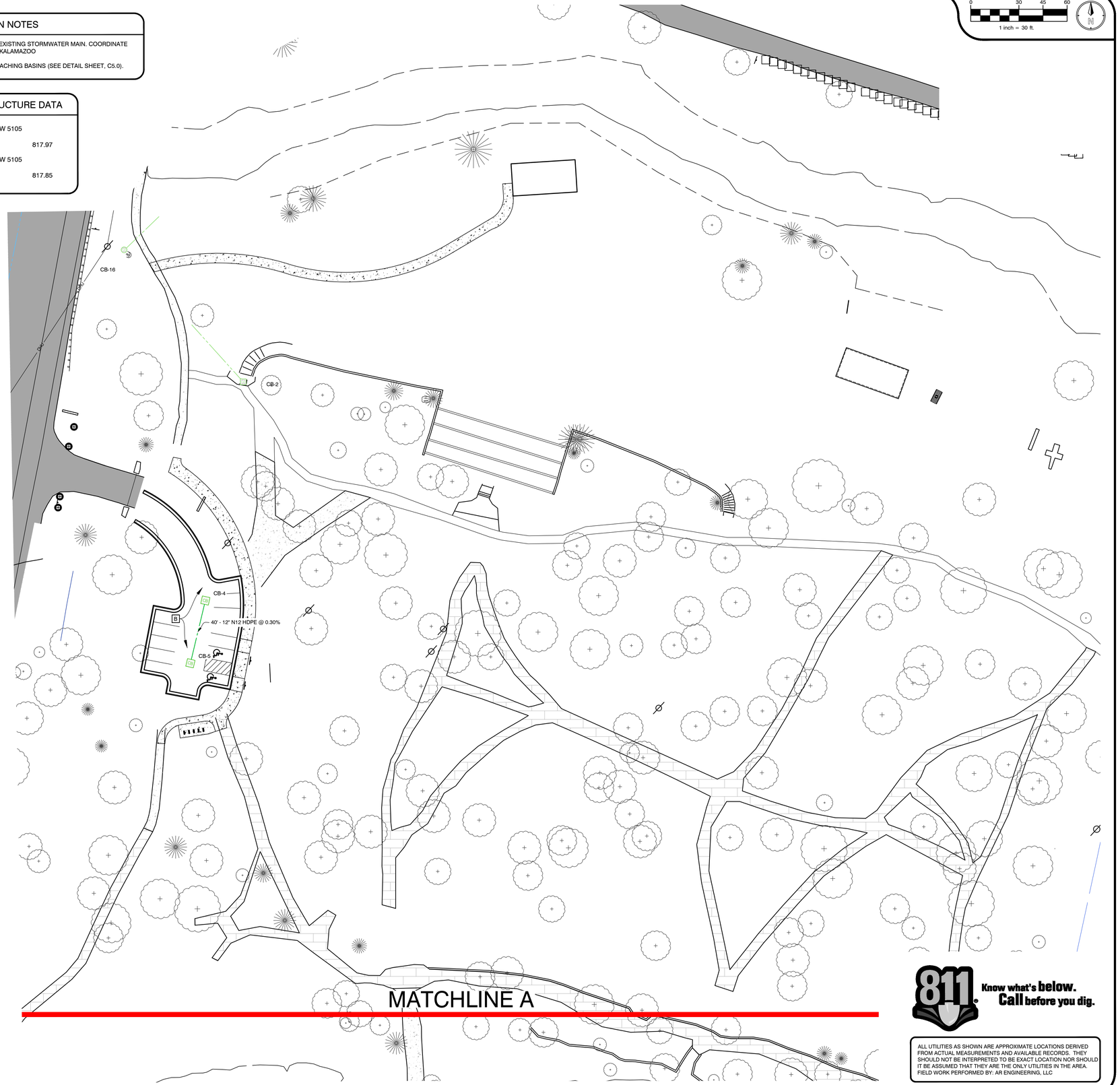
A. CONNECT TO EXISTING STORMWATER MAIN. COORDINATE WITH CITY OF KALAMAZOO

B. PROPOSED LEACHING BASINS (SEE DETAIL SHEET, C5.0).

STORM STRUCTURE DATA

CB-4, 4' DIA. EJIW 5105
RIM = 820.10
12" HDPE S 817.97

CB-5, 4' DIA. EJIW 5105
RIM = 820.00
12" HDPE N 817.85



EXISTING STORM STRUCTURE INFORMATION

CB-1, 2' CONC. STRUCTURE
RIM = 815.73'
NE 12" RCP (INV. = 813.83')
SUMP = 813.63'

CB-2, 4' x 3' CONC. STRUCTURE
RIM = 818.50'
NNW 12" CLAY (INV. = 816.95')
SUMP = 816.90'

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RIM = 857.29'
N 12" RCP (INV. = 852.74')
SUMP = 852.39'

MH-4, 6' CONC. STRUCTURE
RIM = 857.92'
S 12" RCP (INV. = 853.27')
E 12" RCP (INV. = 850.17')
S 12" RCP (INV. = 845.72')
W 12" RCP (INV. = 845.52')
SUMP = 845.22'

CB-5, 2' CONC. STRUCTURE
RIM = 854.13'
N 12" RCP (INV. = 849.33')
SUMP = 848.93'

MH-6, 6' CONC. STRUCTURE
RIM = 854.43'
S 12" RCP (INV. = 849.53')
E 12" RCP (INV. = 844.63')
S 12" RCP (INV. = 844.78')
W 12" RCP (INV. = 844.68')
SUMP = 844.13'

CB-7, 6' CONC. STRUCTURE
RIM = 845.21'
E 12" RCP (INV. = 834.51')
W 12" RCP (INV. = 834.31')
S 12" RCP (INV. = 834.66')
SUMP = 834.21'

CB-8, 2' CONC. STRUCTURE
RIM = 834.77'
N 12" RCP (INV. = 830.17')
SUMP = 829.77'

MH-9, 6' CONC. STRUCTURE
RIM = 835.14'
S 12" RCP (INV. = 830.39')
E 12" RCP (INV. = 829.54')
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S 12" RCP (INV. = 825.84')
SUMP = 825.64'

CB-10, 2' CONC. STRUCTURE
RIM = 827.42'
N 12" RCP (INV. = 823.32')
SUMP = 823.02'

MH-11, 6' CONC. STRUCTURE
RIM = 827.91'
S 12" RCP (INV. = 823.11')
E 12" RCP (INV. = 821.41')
W 12" RCP (INV. = 816.91')
S 24" RCP (INV. = 816.96')
N 24" RCP (INV. = 816.81')
SUMP = 816.76'

CB-12, 2' CONC. STRUCTURE
RIM = 825.36'
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SUMP = 817.91'

MH-13, 4' CONC. STRUCTURE
RIM = 825.52'
N 12" RCP (INV. = 817.87')
E 12" RCP (INV. = 817.57')
S 12" RCP (INV. = 817.72')
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CB-14, 4' x 2' CONC. STRUCTURE
RIM = 822.70'
NE 8" CLAY (INV. = 820.60')
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RIM = 825.08'
NE 4" CPE (INV. = 822.03')
W 4" CPE (INV. = 823.88')
SW 4" CPE (INV. = 821.98')
SUMP = 821.53'

CB-16, 2' CONC. STRUCTURE
RIM = 813.89'
FULL OF DEBRIS

CB-18, 2' CONC. STRUCTURE
RIM = 826.83'
FULL OF DEBRIS

CB-19, 2' CONC. STRUCTURE
RIM = 825.74'
S 12" CONC (INV. = 822.54')
SUMP = 822.44'

CB-20, 2' CONC. STRUCTURE
RIM = 826.12'
S 12" RCP (INV. = 818.77')
SUMP = 818.72'

CB-21, 6' CONC. STRUCTURE
RIM = 827.41'
N 24" RCP (INV. = 817.71')
S 24" RCP (INV. = 817.46')
SUMP = 817.11'

CB-22, 2' CONC. STRUCTURE
RIM = 834.66'
N 12" RCP (INV. = 826.66')
SUMP = 826.51'

CB-23, 2' CONC. STRUCTURE
RIM = 845.13'
N 12" RCP (INV. = 834.38')
S 12" RCP (INV. = 834.43')
SUMP = 834.33'

CB-24, 2' CONC. STRUCTURE
RIM = 854.30'
N 12" RCP (INV. = 846.55')
SUMP = 846.50'

CB-25, 2' CONC. STRUCTURE
RIM = 857.30'
N 12" RCP (INV. = 847.65')
SUMP = 847.50'

CB-26, 4' CONC. STRUCTURE
RIM = 830.67'
E 12" RCP (INV. = 825.47')
W 12" RCP (INV. = 821.57')
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PLANS PREPARED BY:

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CIVIL ENGINEERING & SURVEYING
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269.250.5991 PHONE | 866.589.0834 FAX
www.arengineeringllc.com

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STATE OF MICHIGAN
AARON MICHAEL FELSKE
No. 6201045105
LICENSED PROFESSIONAL ENGINEER

AARON FELSKE, P.E.
No. 6201045105

No.	ISSUED FOR:	DATE	BY
0	SITE PLAN REVIEW	06/08/2026	LM
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UTILITY PLAN NORTH
MILHAM PARK IMPROVEMENTS
OCBA
LAWRENCE MI
SECTION 15,16,9,10, T03S, R15W.

PROJECT:
CLIENT:
SITE ADDRESS:
SITE SECTION:

JOB NUMBER
26029004

DATE
06/08/2026

SHEET NUMBER
C3.1

SOIL EROSION & SEDIMENTATION CONTROL NOTES

1 ALL CONSTRUCTION METHODS SHALL BE DONE IN COMPLIANCE WITH MDOT-EGLE. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING A "SOIL EROSION PERMIT" FROM THE COUNTY AND A "PERMIT BY RULE/NOTICE OF COVERAGE" FROM EGLE, IF APPLICABLE, PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL REQUIREMENTS OF THE COUNTY "SOIL EROSION PERMIT" AND FOR ALL CERTIFIED STORM WATER INSPECTION SERVICE REQUIRED BY THE "PERMIT BY RULE." EROSION CONTROL MEASURES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS AND SHALL NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITY FOR PROVIDING ALL REQUIRED EROSION CONTROL MEASURES.

2. AVOID UNNECESSARY DISTURBING OR REMOVING OF EXISTING VEGETATED TOPSOIL OR EARTH COVER, THESE COVER AREAS ACT AS SEDIMENT FILTERS.

3. ALL TEMPORARY SOIL EROSION PROTECTION SHALL REMAIN IN PLACE UNTIL REMOVAL IS REQUIRED FOR FINAL CLEAN UP AND APPROVAL.

4. GEOTEXTILE SILT FENCE SHALL BE INSTALLED AS REQUIRED WHEN CROSSING CREEKS OR WHEN ADJACENT TO WETLANDS OR SURFACE WATER BODIES TO PREVENT SILTATION AND ELSEWHERE AS DIRECTED BY THE ENGINEER. SEEDING AND/OR SODDING SHALL BE INSTALLED ON CREEK BANKS IMMEDIATELY AFTER CONSTRUCTION TO PREVENT EROSION.

5. MAINTENANCE, CLEANING, AND REMOVAL OF THE VARIOUS SEDIMENT CONTROL MEASURES SHALL BE INCLUDED IN THE VARIOUS EROSION CONTROL ITEMS.

(##) NUMBER IN CIRCLE REFERS TO NUMBERED DETAILS ON MDOT STANDARD PLAN R-96-D, SOIL EROSION & SEDIMENTATION CONTROL MEASURES. "P" DENOTES PERMANENT MEASURE AND "T" DENOTES TEMPORARY MEASURE. SOIL EROSION CONTROL PLANS DENOTE MINIMUM EROSION MEASURES REQUIRED AS DESCRIBED BELOW.

(3P) DENOTES PERMANENT SEEDING. ALL DISTURBED AREAS NOT PAVED OR GRAVELED SHALL BE RESTORED. PLACE TOPSOIL SURFACE, SALV, 3 INCH, MDOT SEEDING, MIXTURE TUF APPLIED AT A RATE OF 220 LB/ACRE, FERTILIZER, CHEMICAL NUTRIENT, CL A APPLIED AT A RATE OF 228 LB/ACRE; MULCH AT A RATE OF 2 TON/ACRE AND MULCH ANCHORING. (APPLIES TO ENTIRE PROJECT)

(3T) DENOTES TEMPORARY SEEDING. TEMPORARY SEEDING SHALL BE PLACED AT LOCATIONS DETERMINED BY THE ENGINEER IN THE FIELD AND SHALL INCLUDE CEREAL RYE SEED APPLIED AT A RATE OF 70 LB/ACRE AND MULCH.

(4T) DENOTES DUST CONTROL. DUST CONTROL MAY BE REQUIRED ON THE SUBGRADE CONSTRUCTION AND WILL INCLUDE APPLYING FRESH WATER TO BE INCLUDED IN THE ITEM OF EMBANKMENT. DUST CONTROL ON THE AGGREGATE BASE COURSE WILL BE ACCOMPLISHED BY APPLYING FRESH WATER (INCLUDED IN THE ITEM OF AGGREGATE BASE, 6 INCH) AND APPLYING DUST PALLIATIVE, APPLIED, $CACL_2$ (TON) AS DIRECTED BY THE PROJECT ENGINEER.

(8P) DENOTES AGGREGATE COVER/PERMANENT PAVEMENT RESTORATION

(14T) DENOTES GRAVEL ACCESS APPROACH. APPROACH SHALL BE INSTALLED TO PROVIDE STABLE ACCESS TO ROADWAYS AND MINIMIZE DUST AND TRACKING OF MATERIALS ONTO PUBLIC STREETS AND HIGHWAYS. THE APPROACH SHALL BE A MINIMUM OF 12' WIDE, 6" DEEP, AND CONSIST OF 2"-4" AGGREGATE

(26T) DENOTES TEMPORARY SILT FENCE. SILT FENCE SHALL BE INSTALLED AT CREEK CROSSINGS, ADJACENT TO ALL WETLANDS AND SURFACE WATERS, AND OTHER LOCATIONS AS DIRECTED BY THE ENGINEER. EACH SILT FENCE SHALL BE INSTALLED GENERALLY ALONG THE SAME CONTOUR ELEVATION.

(29T) DENOTES INLET PROTECTION FABRIC DROP. SHALL BE INSTALLED AT EXISTING AND PROPOSED STORM SEWER INLETS TO PROVIDE SETTLING AND FILTERING OF SILT LADEN WATER PRIOR TO ENTRY INTO THE DRAINAGE SYSTEM.

(33T) DENOTES MULCH BLANKET OR MATTING. SHALL BE NORTH AMERICAN GREEN DS150, OR APPROVED EQUAL. MULCH BLANKETS SHALL BE PLACED ON ALL 1:3 SLOPES OR GREATER, IN AND AROUND DITCH BOTTOMS WHERE THERE IS NO BIOSWALE BY CONTRACTOR RESPONSIBLE FOR RESTORING THAT AREA.

GRADING NOTES

1. ALL WORK SHALL CONFORM TO ALL LOCAL, STATE AND FEDERAL LAWS, RULES AND REGULATIONS IN FORCE AT TIME OF CONSTRUCTION.

2. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS, PERMIT COSTS, TAP FEES, METER DEPOSITS, PERMANENT UTILITY APPLICATIONS, BONDS, AND OTHER FEES REQUIRED FOR PROPOSED WORK. THIS SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO THOSE REQUIRED BY THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

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4. DEMOLISH & REMOVE ALL EXISTING SITE FEATURES AS REQUIRED.

5. MATCH EXISTING GRADES AROUND PERIMETER WITH SLOPES AS SHOWN.

6. ALL SPOT ELEVATIONS ARE TOP OF PAVEMENT GRADES AT EDGE OF METAL (EOM) UNLESS OTHERWISE NOTED.

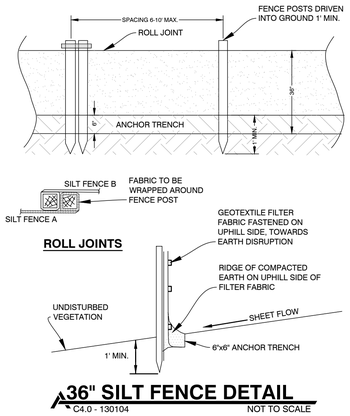
7. ALL SOIL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO MASS GRADING.

8. ALL EXCAVATION SHALL BE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS AND GEOTECHNICAL REPORT.

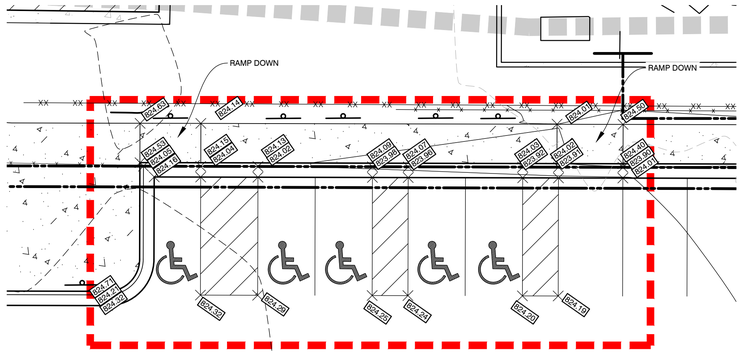
9. ALL EXISTING ELEVATIONS ARE TO BE VERIFIED AND ACCEPTED AS SHOWN PRIOR TO COMMENCEMENT OF WORK.

10. CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID TRACKING SOIL ONTO ADJACENT ROADWAYS. CONTRACTOR SHALL SWEEP IMMEDIATELY IF OCCURS.

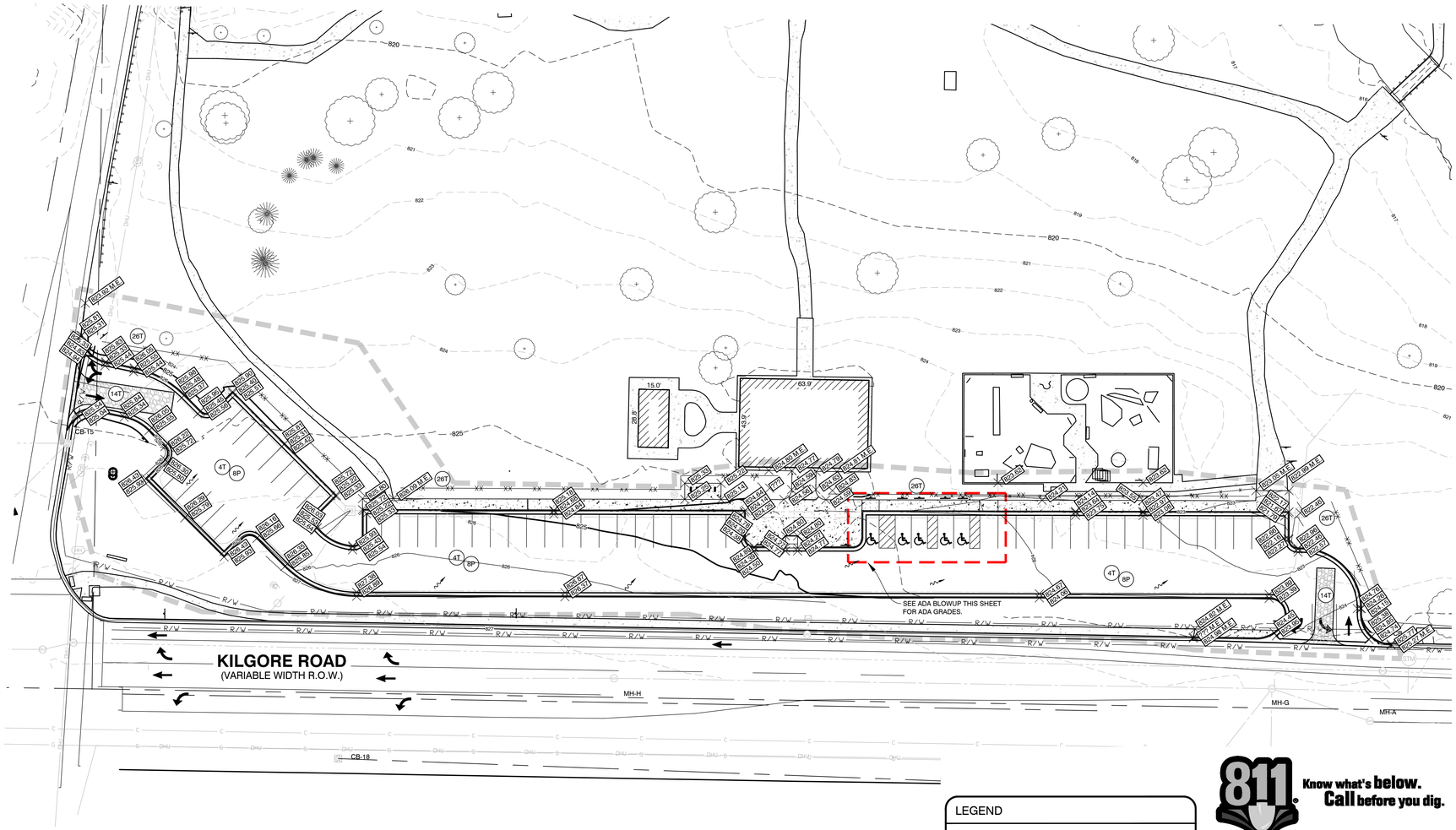
11. ANY DISTURBED AREA WHICH WILL BE LEFT UNWORKED 15 DAYS OR LONGER MUST BE SEEDED TO ESTABLISH VEGETATION FOR TEMPORARY STABILIZATION. BASINS TO BE SEEDED AND MULCH BLANKETS APPLIED IMMEDIATELY TO PROVIDE A STABLE BASE AND AVOID EXCESSIVE EROSION.



36" SILT FENCE DETAIL
C4.0 - 130104 NOT TO SCALE



ADA ENLARGED PLAN



LEGEND

- LIMITS OF CONSTRUCTION
- SILT FENCE
- DRAINAGE ARROW

811 Know what's below. Call before you dig.

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1 inch = 30 ft.

PLANS PREPARED BY:
AR ENGINEERING
CIVIL ENGINEERING & SURVEYING
MICHIGAN | INDIANA | ILLINOIS | OHIO
269.250.5991 PHONE | 866.589.0934 FAX
www.arengineeringllc.com

DRAWN:	LM
CHECKED:	AF

STATE OF MICHIGAN
AARON MICHAEL FELSKE
No. 6201045105
REGISTERED PROFESSIONAL ENGINEER

AARON FELSKE, P.E.
No. 6201045105

No.	ISSUED FOR:	DATE	BY
0	SITE PLAN REVIEW	06/08/2026	LM
1			
2			
3			
4			

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GRADING & SESC PLAN SOUTH
MILHAM PARK IMPROVEMENTS
OCBA
LAWRENCE MI
SECTION 15,16,9,10, T03S, R15W.

PROJECT:
CLIENT:
SITE ADDRESS:
SITE SECTION:

JOB NUMBER
26029004

DATE
06/08/2026

SHEET NUMBER
C4.0

SOIL EROSION & SEDIMENTATION CONTROL NOTES

1. ALL CONSTRUCTION METHODS SHALL BE DONE IN COMPLIANCE WITH MDOT-EGLE. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING A "SOIL EROSION PERMIT" FROM THE COUNTY AND A "PERMIT BY RULE/NOTICE OF COVERAGE" FROM EGLE, IF APPLICABLE, PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL REQUIREMENTS OF THE COUNTY "SOIL EROSION PERMIT" AND FOR ALL CERTIFIED STORM WATER INSPECTION SERVICE REQUIRED BY THE "PERMIT BY RULE." EROSION CONTROL MEASURES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS AND SHALL NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITY FOR PROVIDING ALL REQUIRED EROSION CONTROL MEASURES.

2. AVOID UNNECESSARY DISTURBING OR REMOVING OF EXISTING VEGETATED TOPSOIL OR EARTH COVER, THESE COVER AREAS ACT AS SEDIMENT FILTERS.

3. ALL TEMPORARY SOIL EROSION PROTECTION SHALL REMAIN IN PLACE UNTIL REMOVAL IS REQUIRED FOR FINAL CLEAN UP AND APPROVAL.

4. GEOTEXTILE SILT FENCE SHALL BE INSTALLED AS REQUIRED WHEN CROSSING CREEKS OR WHEN ADJACENT TO WETLANDS OR SURFACE WATER BODIES TO PREVENT SILTATION AND ELSEWHERE AS DIRECTED BY THE ENGINEER. SEEDING AND/OR SODDING SHALL BE INSTALLED ON CREEK BANKS IMMEDIATELY AFTER CONSTRUCTION TO PREVENT EROSION.

5. MAINTENANCE, CLEANING, AND REMOVAL OF THE VARIOUS SEDIMENT CONTROL MEASURES SHALL BE INCLUDED IN THE VARIOUS EROSION CONTROL ITEMS.

(##) NUMBER IN CIRCLE REFERS TO NUMBERED DETAILS ON MDOT STANDARD PLAN R-96-D, SOIL EROSION & SEDIMENTATION CONTROL MEASURES. "P" DENOTES PERMANENT MEASURE AND "T" DENOTES TEMPORARY MEASURE. SOIL EROSION CONTROL PLANS DENOTE MINIMUM EROSION MEASURES REQUIRED AS DESCRIBED BELOW.

(3P) DENOTES PERMANENT SEEDING. ALL DISTURBED AREAS NOT PAVED OR GRAVELED SHALL BE RESTORED. PLACE TOPSOIL SURFACE, SALV, 3 INCH, MDOT SEEDING, MIXTURE TUF APPLIED AT A RATE OF 220 LB/ACRE, FERTILIZER, CHEMICAL NUTRIENT, CL A APPLIED AT A RATE OF 228 LB/ACRE; MULCH AT A RATE OF 2 TON/ACRE AND MULCH ANCHORING. (APPLIES TO ENTIRE PROJECT)

(3T) DENOTES TEMPORARY SEEDING. TEMPORARY SEEDING SHALL BE PLACED AT LOCATIONS DETERMINED BY THE ENGINEER IN THE FIELD AND SHALL INCLUDE CEREAL RYE SEED APPLIED AT A RATE OF 70 LB/ACRE AND MULCH.

(4T) DENOTES DUST CONTROL. DUST CONTROL MAY BE REQUIRED ON THE SUBGRADE CONSTRUCTION AND WILL INCLUDE APPLYING FRESH WATER TO BE INCLUDED IN THE ITEM OF EMBANKMENT. DUST CONTROL ON THE AGGREGATE BASE COURSE WILL BE ACCOMPLISHED BY APPLYING FRESH WATER (INCLUDED IN THE ITEM OF AGGREGATE BASE, 6 INCH) AND APPLYING DUST PALLIATIVE, APPLIED, $CACL_2$ (TON) AS DIRECTED BY THE PROJECT ENGINEER.

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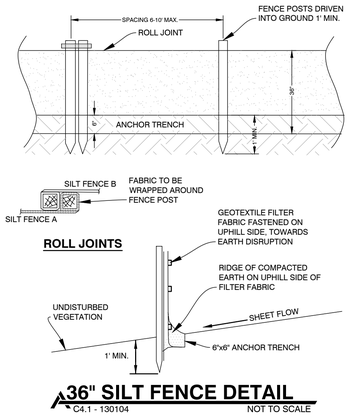
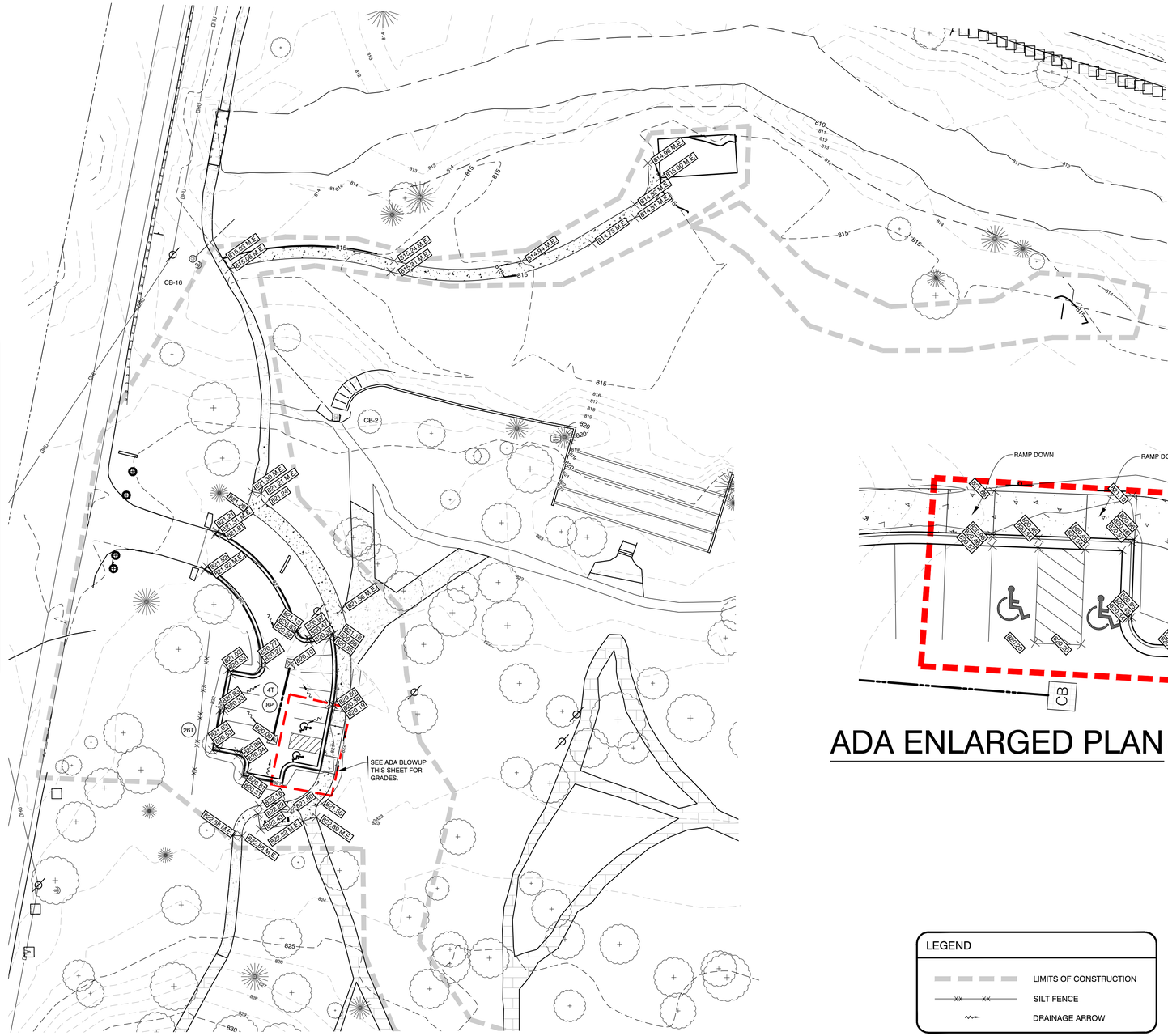
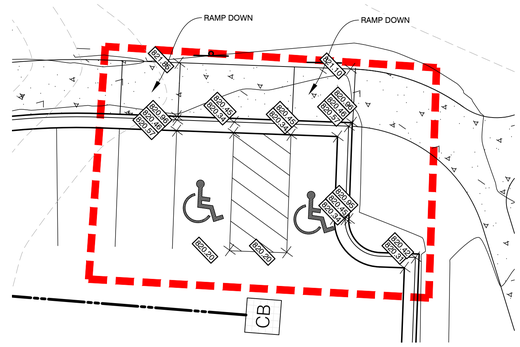


36" SILT FENCE DETAIL
C4.1 - 130104 NOT TO SCALE





ADA ENLARGED PLAN

LEGEND

- LIMITS OF CONSTRUCTION
- SILT FENCE
- DRAINAGE ARROW

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PLANS PREPARED BY:

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CIVIL ENGINEERING & SURVEYING
MICHIGAN | INDIANA | ILLINOIS | OHIO
269.250.5991 PHONE | 866.589.0934 FAX
www.arengineeringllc.com

DRAWN:	LM
CHECKED:	AF

STATE OF MICHIGAN
AARON MICHAEL FELSKE
No. 6201045105
REGISTERED PROFESSIONAL ENGINEER

AARON FELSKE, P.E.
No. 6201045105

No.	ISSUED FOR:	DATE	BY
0	SITE PLAN REVIEW	06/08/2026	LM
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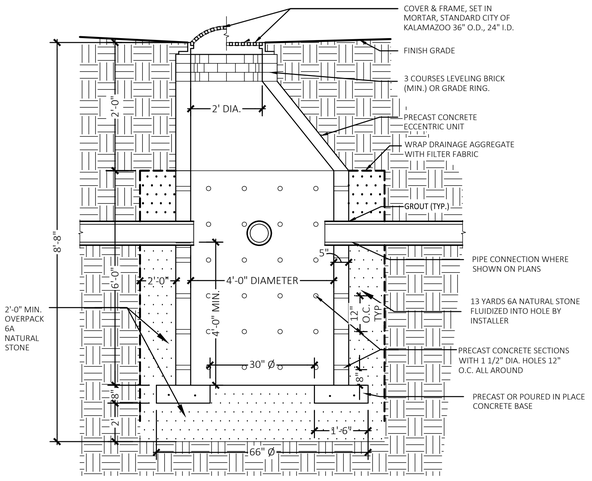
GRADING & SESC PLAN NORTH
MILHAM PARK IMPROVEMENTS
OCBA
LAWRENCE MI
SECTION 15,16,9,10, T03S, R15W.

PROJECT:
CLIENT:
SITE ADDRESS:
SITE SECTION:

JOB NUMBER
26029004

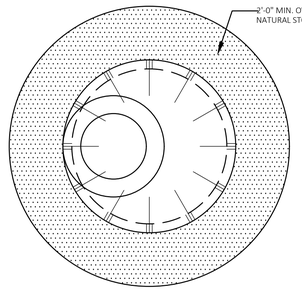
DATE
06/08/2026

SHEET NUMBER
C4.1



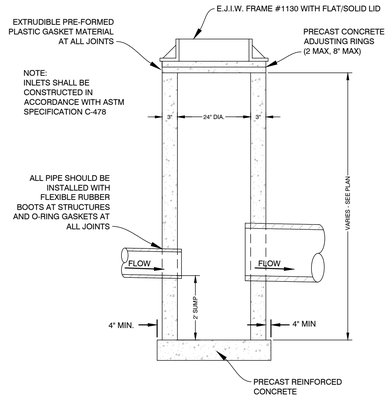
LEACHING BASIN DETAIL

C5.0 - 050006 NOT TO SCALE



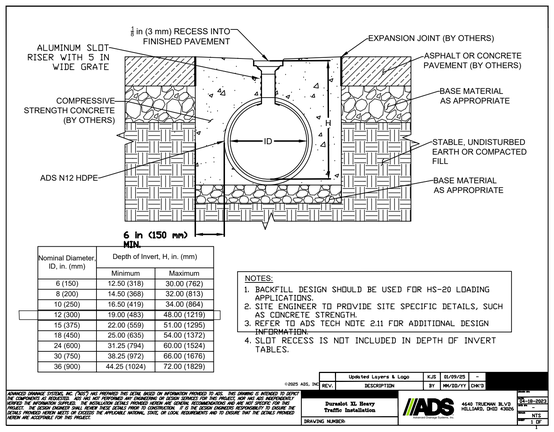
NOTE: SET LEACHING BASIN FIRST ON 2'-0" DEPTH STONE BED THEN HAVE STONE INSTALLER TRUCK LOAD FLUIDIZED 6A NATURAL STONE INTO HOLE

LEACHING BASIN INSTALLATION TO MEET CITY OF KALAMAZOO ENGINEERING STANDARDS.



24" STORM CATCH BASIN

06011 NOT TO SCALE



Nominal Diameter, ID, in. (mm)	Depth of Invert, H, in. (mm)	
	Minimum	Maximum
6 (150)	12.50 (318)	30.00 (762)
8 (200)	14.50 (368)	32.00 (813)
10 (250)	16.50 (419)	34.00 (864)
12 (300)	19.00 (483)	48.00 (1219)
15 (375)	22.00 (559)	51.00 (1295)
18 (450)	25.00 (635)	54.00 (1372)
24 (600)	31.25 (794)	60.00 (1524)
30 (750)	38.25 (972)	66.00 (1676)
36 (900)	44.25 (1024)	72.00 (1829)

NOTES:
1. BACKFILL DESIGN SHOULD BE USED FOR HS-20 LOADING APPLICATIONS.
2. SITE ENGINEER TO PROVIDE SITE SPECIFIC DETAILS, SUCH AS CONCRETE STRENGTH.
3. REFER TO ADS TECH NOTE 2.11 FOR ADDITIONAL DESIGN INFORMATION.
4. SLOT RECESS IS NOT INCLUDED IN DEPTH OF INVERT TABLES.

REV.	DESCRIPTION	BY	DATE
	Updated Layers & Logo	KJS	01/09/25
		MK/SS/YT	CHK'D

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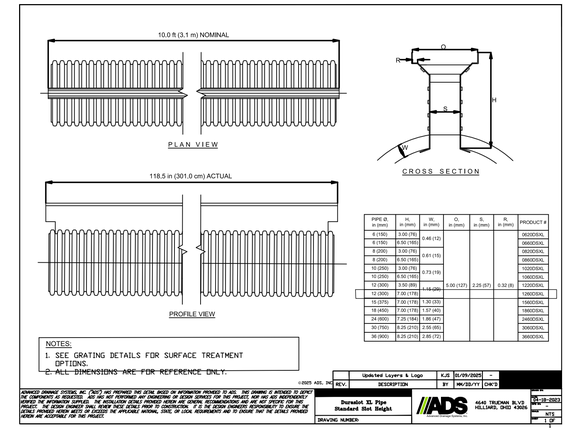
Drawing Number	Duraslot XL Heavy Traffic Installation

4640 TRUEMAN BLVD HILLIARD, OHIO 43026

DATE	05-28-2021
SCALE	NTS
SHEET	1 OF 1

DURASLOT STANDARD DETAIL 1

MODIFY PER DETAIL THIS PAGE TO ADD CURB AND GUTTER ABOVE NOT TO SCALE



PIPE Ø, in (mm)	H, in (mm)	W, in (mm)	O, in (mm)	S, in (mm)	R, in (mm)	PRODUCT #
6 (150)	3.00 (76)	3.46 (12)	5.00 (127)	2.25 (57)	0.32 (8)	0620DSXL
8 (150)	6.50 (165)					0660DSXL
8 (200)	3.00 (76)	3.61 (15)				0630DSXL
8 (200)	6.50 (165)					0860DSXL
10 (250)	3.00 (76)	3.73 (19)				1020DSXL
10 (250)	6.50 (165)					1060DSXL
12 (300)	3.50 (89)	3.85 (22)				1220DSXL
12 (300)	7.00 (178)					1260DSXL
15 (375)	7.00 (178)	1.30 (33)				1560DSXL
18 (450)	7.00 (178)	1.57 (40)				1860DSXL
24 (600)	7.25 (184)	1.88 (47)				2460DSXL
30 (750)	8.25 (210)	2.55 (65)				3060DSXL
36 (900)	8.25 (210)	2.85 (72)				3660DSXL

NOTES:
1. SEE GRATING DETAILS FOR SURFACE TREATMENT OPTIONS.
2. ALL DIMENSIONS ARE FOR REFERENCE ONLY.

REV.	DESCRIPTION	BY	DATE
	Updated Layers & Logo	KJS	01/09/2025
		MK/SS/YT	CHK'D

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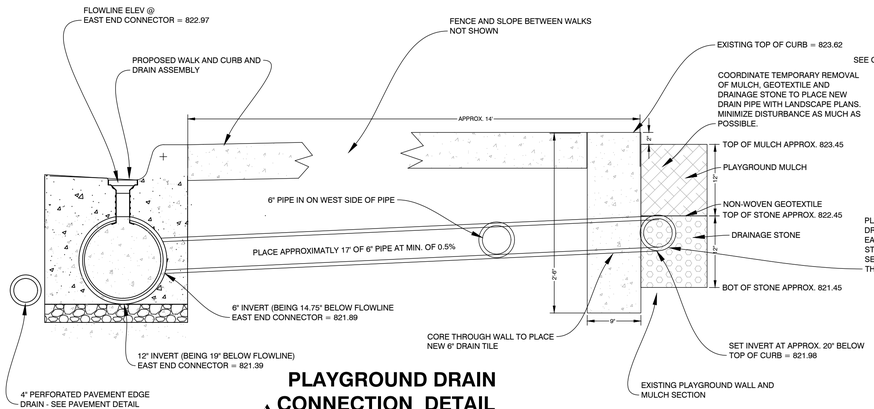
Drawing Number	Duraslot XL Pipe Standard Slot Height

4640 TRUEMAN BLVD HILLIARD, OHIO 43026

DATE	05-28-2021
SCALE	NTS
SHEET	1 OF 1

DURASLOT STANDARD DETAIL 2

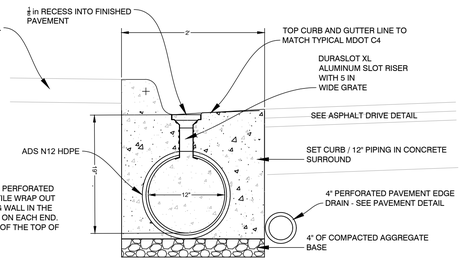
MODIFY PER DETAIL THIS PAGE TO ADD CURB AND GUTTER ABOVE NOT TO SCALE



PLAYGROUND DRAIN CONNECTION DETAIL

NOT TO SCALE

SECTION VIEW BETWEEN NEW NORTH CURB LINE AND EXISTING PLAYGROUND AREA

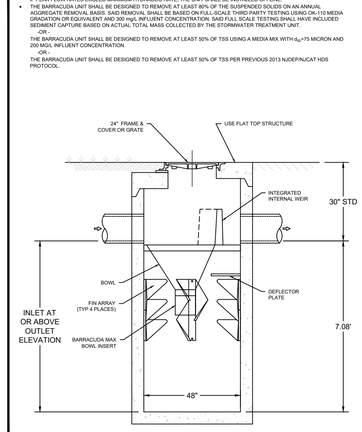


MODIFIED DURASLOT XL DRAIN WITH CURB AND GUTTER

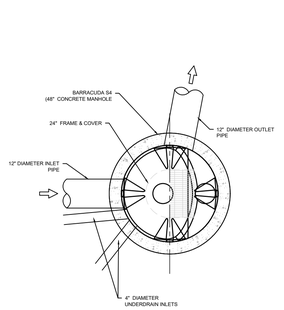
NOT TO SCALE

PRODUCT SPECIFICATIONS

- THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW. IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE, THE UNIT SHALL BE INSTALLED OFFLINE.
- THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 80% OF THE SUSPENDED SOLIDS ON AN ANNUAL AGGREGATE REMOVAL BASIS. SAID REMOVAL SHALL BE BASED ON FULL-SCALE THIRD PARTY TESTING USING OK-110 MEDIA GRADATION OR EQUIVALENT AND 300 mg/L INFLUENT CONCENTRATION. SAID FULL SCALE TESTING SHALL HAVE INCLUDED SEDIMENT CAPTURE BASED ON ACTUAL TOTAL MASS COLLECTED BY THE STORMWATER TREATMENT UNIT.
  - OR -
  THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS USING A MEDIA MIX WITH d_{50}=75 MICRON AND 200 MG/L INFLUENT CONCENTRATION.
  - OR -
  THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS PER PREVIOUS 2013 NJDEP/NJCAT HDS PROTOCOL.



SECTION VIEW A-A
NOT TO SCALE



PLAN VIEW
NOT TO SCALE

BARRACUDA MAX S4		
	Q/Q$_b$	L/L$_b$
NJDEP (50% Removal)	1.52	43.0
CK-110 (80% Removal)	1.52	43.0

BARRACUDA MAX S4 CONCRETE MANHOLE

DATE:	05/05/25	DRAWN:	EJM
DRAWING #	S24-1412	CHECKED:	MAH

REV.	DATE	DESCRIPTION
1	05/05/25	ADDED 24" FRAME & COVER

Barracuda Max
Stormwater Separator

4640 TRUEMAN BLVD HILLIARD, OH 43026

1 SHEET OF 1

BARRACUDE STORM TREATMENT UNIT DETAIL

NOT TO SCALE

NOTE: TYPICAL MANUFACTURE STANDARD DETAIL SHOWN HERE FOR REFERENCE. PROVIDE FULL SYSTEM AS NEEDED FOR INSTALLATION AT THE PROPOSED LOCATION. SEE C3,0

PLANS PREPARED BY:

AR ENGINEERING
CIVIL ENGINEERING & SURVEYING
MICHIGAN | INDIANA | ILLINOIS | OHIO
269.250.5991 PHONE | 866.589.0604 FAX
www.arengineeringllc.com

DRAWN:	LM
CHECKED:	AF

STATE OF MICHIGAN
AARON MICHAEL FELSKE No. 6201045105
REGISTERED PROFESSIONAL ENGINEER

AARON FELSKE, P.E.
No. 6201045105

No.	DATE	BY
0	06/08/2026	LM
1	.	.
2	.	.
3	.	.
4	.	.

ISSUED FOR:
SITE PLAN REVIEW

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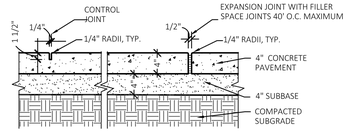
DETAILS
MILHAM PARK IMPROVEMENTS
OCBA
LAWRENCE MI
SECTION 15,16,9,10, T03S, R15W.

PROJECT:
CLIENT:
SITE ADDRESS:
SITE SECTION:

JOB NUMBER
26029004

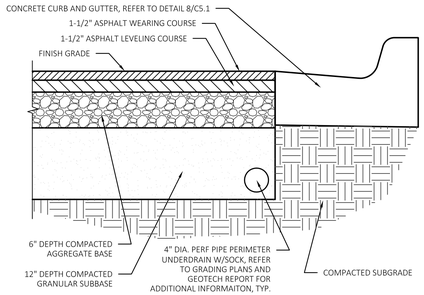
DATE
06/08/2026

SHEET NUMBER
C5.0



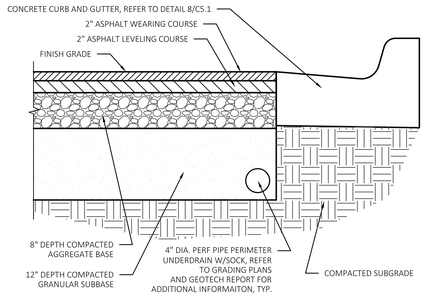
1 Concrete Paving Detail

NOT TO SCALE



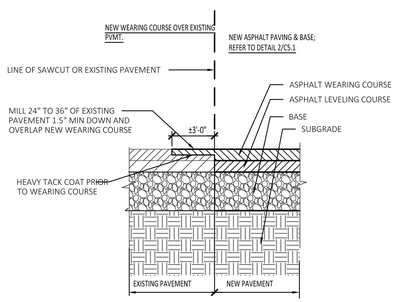
2 Asphalt Pavement - Standard Duty Detail

NOT TO SCALE



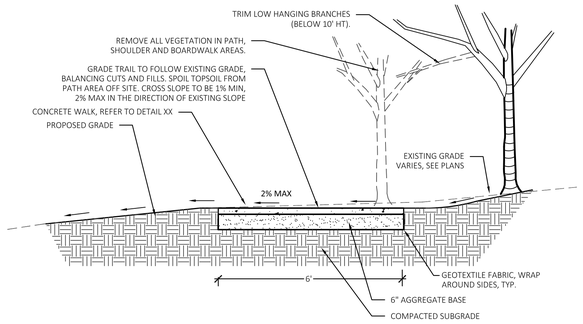
3 Asphalt Pavement - Heavy Duty Detail

NOT TO SCALE



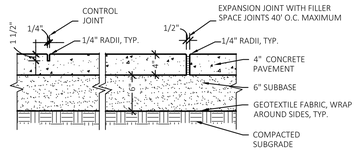
4 Section - Bituminous Pavement Existing/New Detail

NOT TO SCALE



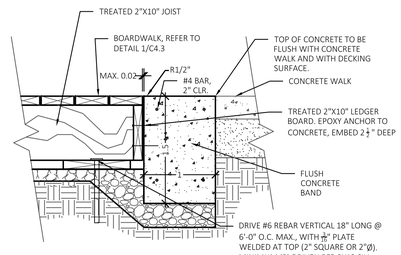
5 Concrete Walk on Existing Grade Detail

NOT TO SCALE



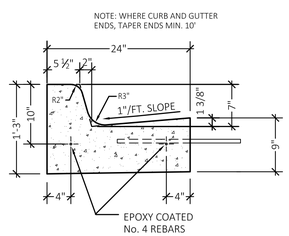
6 Concrete Walk to Overlook Deck Detail

NOT TO SCALE



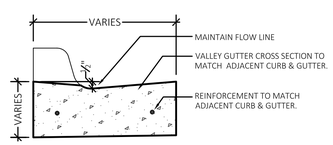
7 Concrete Ledger Curb to Concrete Walk and Boardwalk Detail

NOT TO SCALE



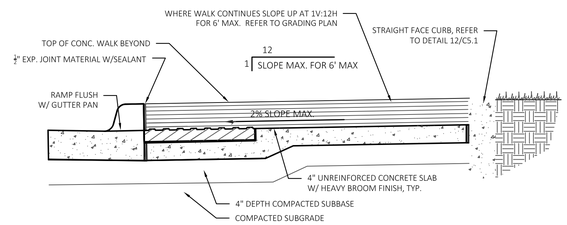
8 Concrete Curb and Gutter

NOT TO SCALE

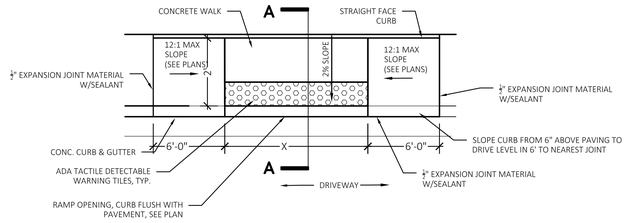


9 Section-Valley Gutter

Not to Scale

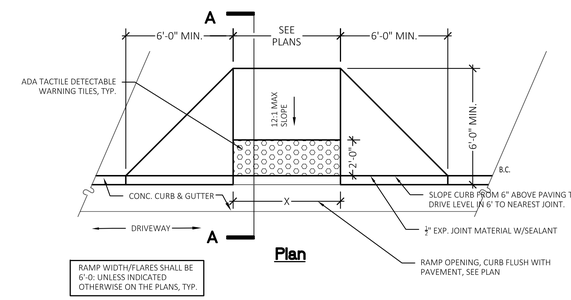


Section 'A-A'



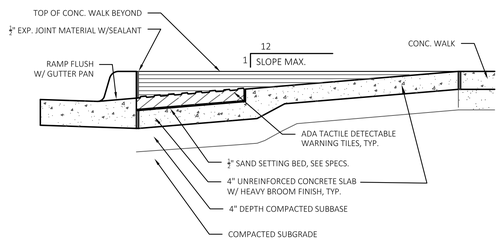
10 Barrier Free Ramp - Type I Detail

NOT TO SCALE



Plan

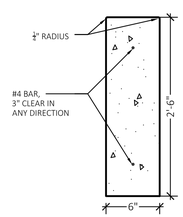
RAMP WIDTH/FLARES SHALL BE 6'-0: UNLESS INDICATED OTHERWISE ON THE PLANS, TYP.



Section 'A-A'

11 Barrier Free Ramp - Type II Detail

NOT TO SCALE



12 Straight Face Concrete Curb Detail

NOT TO SCALE

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COK PROJECT REVIEW	03-30-26
COK CHECKLIST MEETING	04-10-26
SPR SUBMISSION	06-08-26

Project:

Milham Park Ph 1 Improvements LWCF: 26-01921

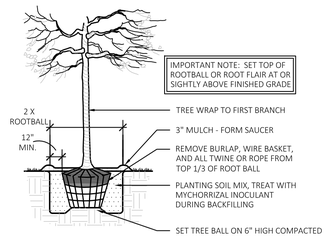
Kalamazoo, Michigan

Sheet Title

Details

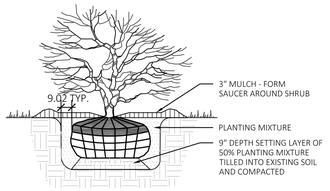
Job No. OCBA: 52606 COK: XXXXX.XXX.X

Sheet No. C5.1



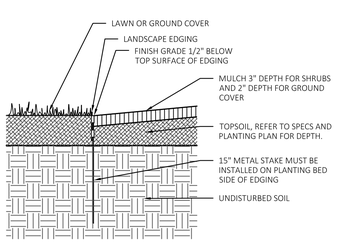
1 Tree Planting Detail

NOT TO SCALE



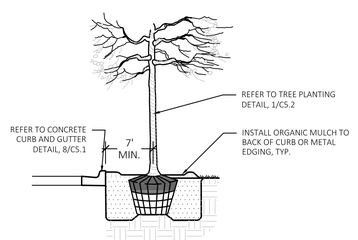
2 Shrub Planting Detail

NOT TO SCALE



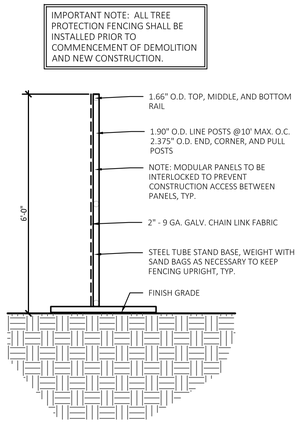
3 Metal Edging Detail

NOT TO SCALE



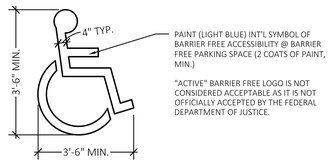
4 Parking Lot Curbed Tree Island Detail

NOT TO SCALE



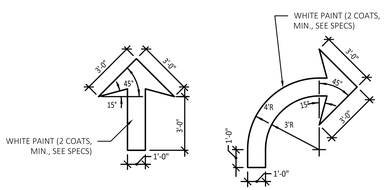
5 Tree Protection Fencing Detail

Not To Scale



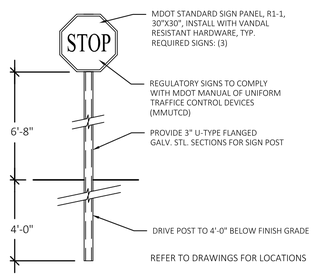
6 Barrier Free Logo

Not to Scale



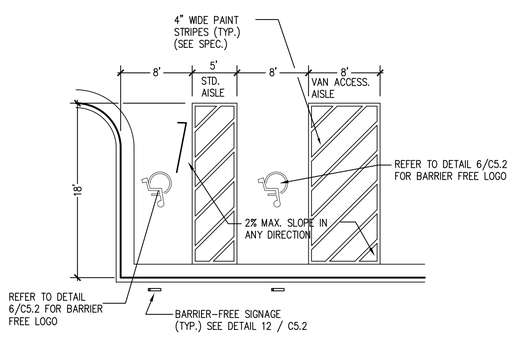
7 Paint Arrows

Not To Scale



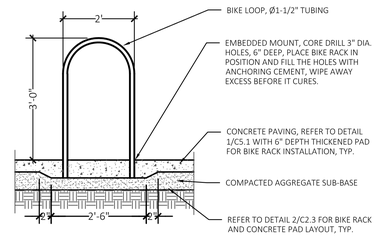
8 Stop Signage Detail

NOT TO SCALE



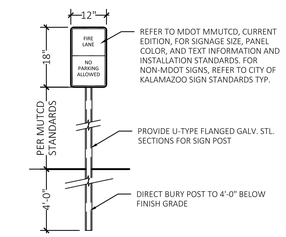
9 Barrier Free Parking Space Detail

NOT TO SCALE



10 Bike Rack Detail

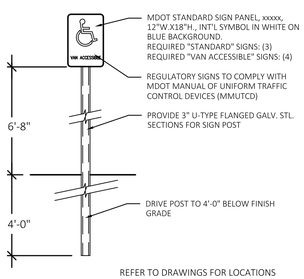
Not To Scale



REFER TO DRAWINGS FOR LOCATIONS

11 No Parking-Fire Lane Sign Detail

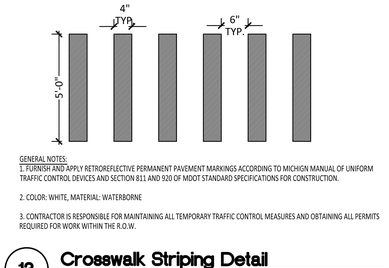
Not to Scale



REFER TO DRAWINGS FOR LOCATIONS

12 Barrier Free Signage Detail

NOT TO SCALE



13 Crosswalk Striping Detail

Not to Scale

OCBA LANDSCAPE ARCHITECTS

141 E. Michigan Avenue, Suite 500
Kalamazoo Michigan 49007
Phone (269) 381-3357
Fax (269) 381-2944

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Issued For:	Date
COK PROJECT REVIEW	03–30–26
COK CHECKLIST MEETING	04–10–26
SPR SUBMISSION	06–08–26

Project:

Milham Park Ph 1 Improvements
LWCF: 26-01921

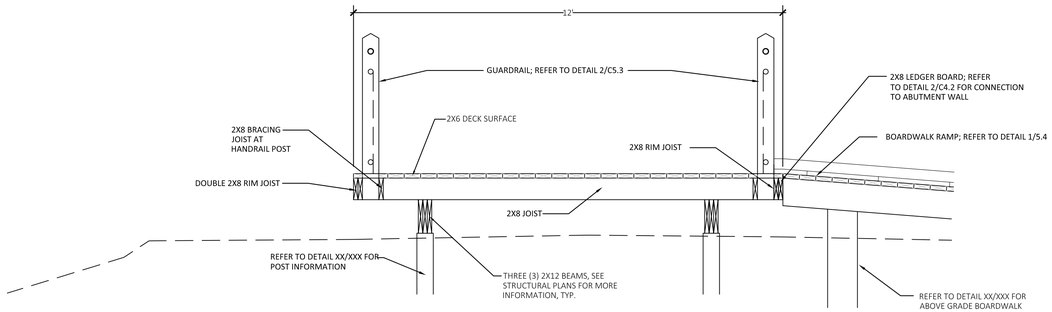
Kalamazoo, Michigan

Sheet Title

Details

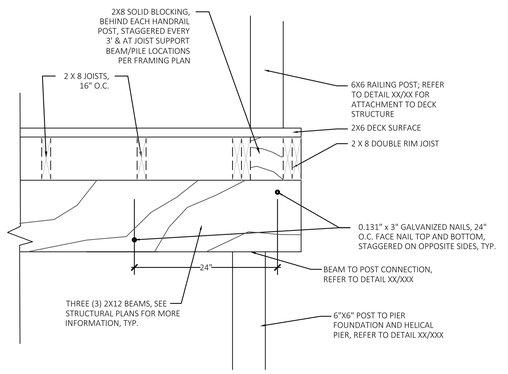
Job No. OCBA: 52606
COK: XXXXX.XXXX

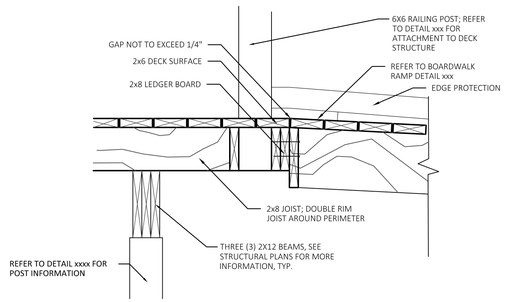
Sheet No. C5.2



Overall Section

SCALE: 1/2"=1'-0"

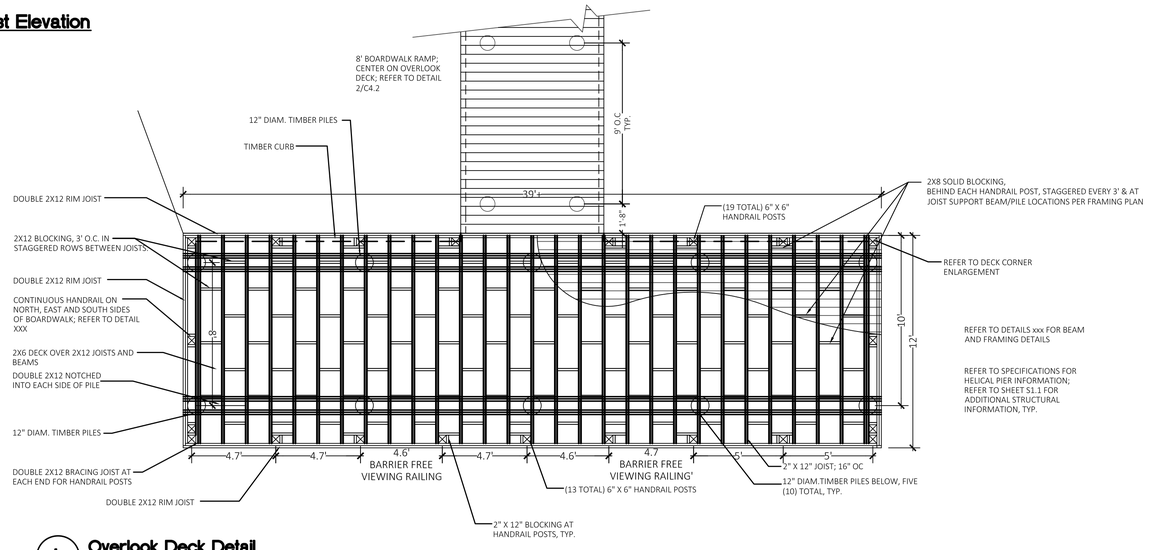




Ramp Connection to Boardwalk

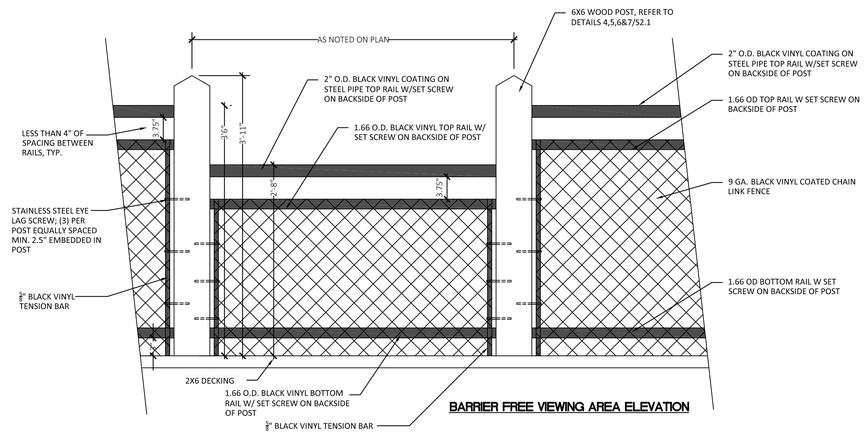
SCALE: 1"=1'-0"

+/- East Elevation

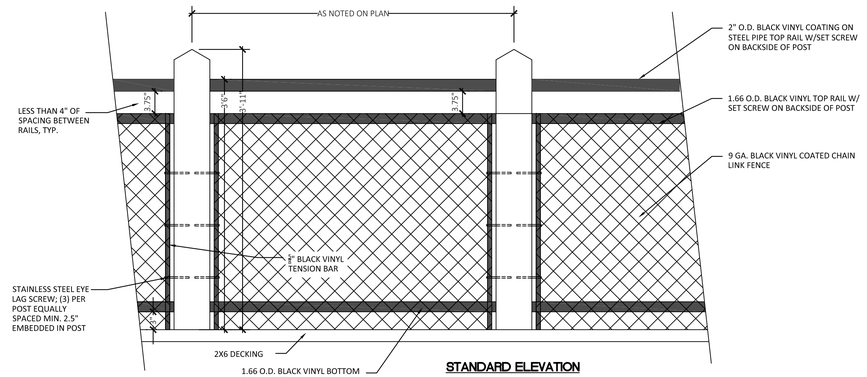


1 Overlook Deck Detail

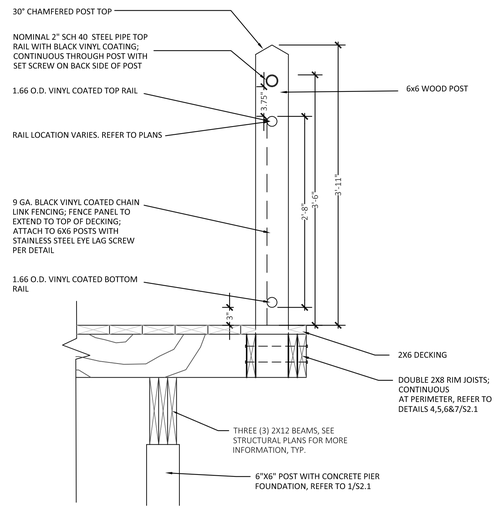
SCALE: 1/4"=1'-0"



BARRIER FREE VIEWING AREA ELEVATION



STANDARD ELEVATION



2 Overlook Deck Guard Railing Detail

SCALE: 1"=1'-0"

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Project:

Milham Park Ph 1 Improvements LWCF: 26-01921

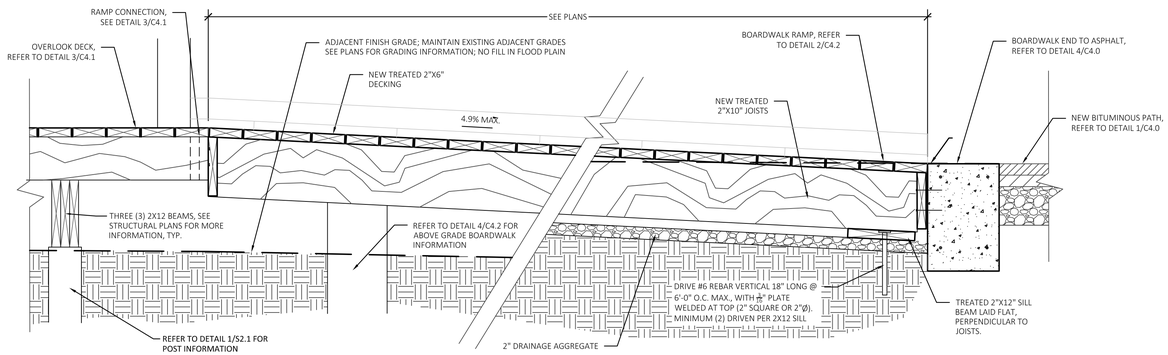
Kalamazoo, Michigan

Sheet Title

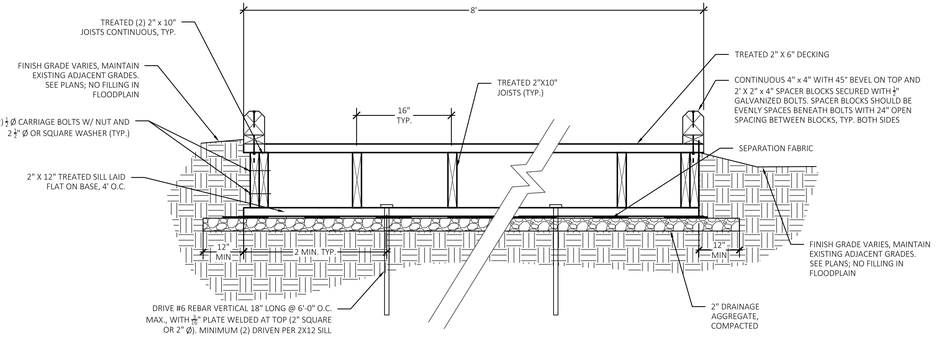
Details

Job No. OCBA: 52606 COK: XXXX.XXX.X

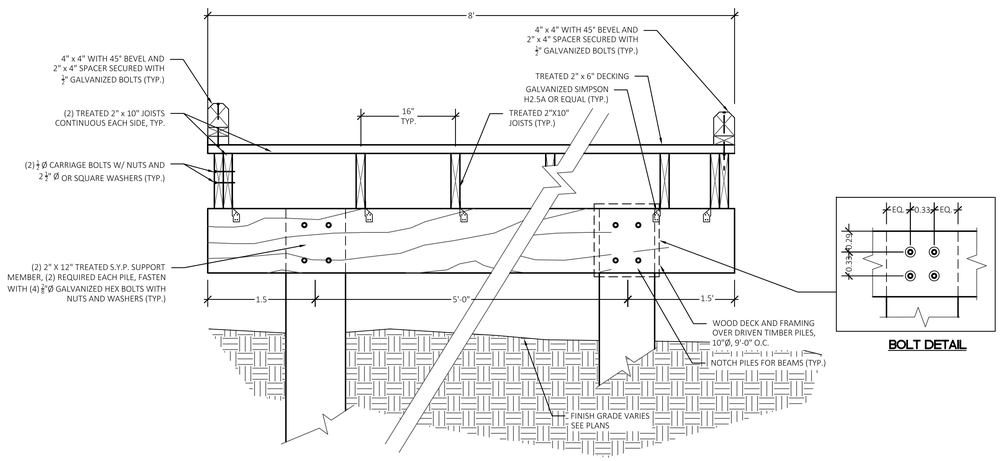
Sheet No. C5.3



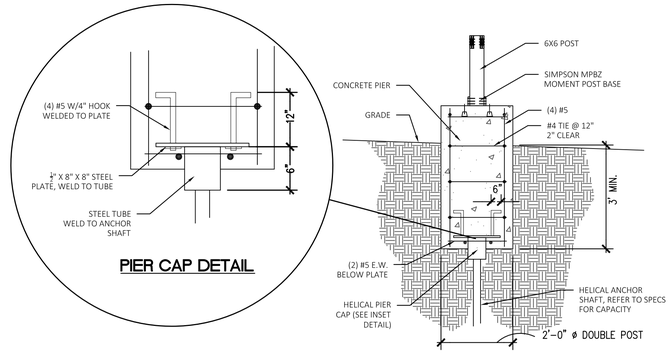
1 Boardwalk Ramp
NOT TO SCALE



2 At Grade Boardwalk Ramp with Edge Treatments
NOT TO SCALE



3 Above-Grade Boardwalk Ramp Section
NOT TO SCALE



4 Type HP-1 – Concrete Pier With Helical Pier
NOT TO SCALE

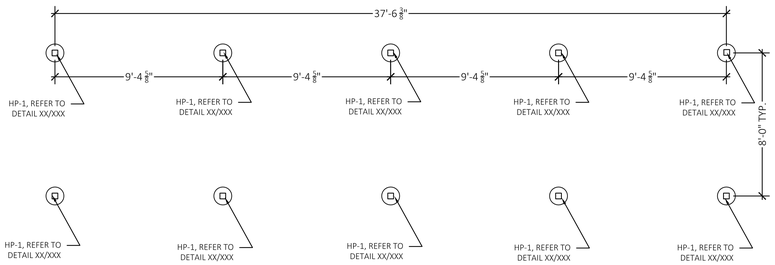
CONCRETE PIER SCHEDULE		
TYPE	DIAMETER	DETAIL
HP-1	18"	1/SX.X

NOTES:
1) EACH CONCRETE PIER TO HAVE HELICAL PIER EMBEDDED IN BASE. REFER TO DETAIL 1/SX.X

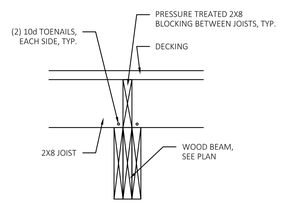
2) ALL JOISTS, BEAMS, AND POSTS ARE PRESSURE TREATED WITH PRESERVATIVES MEETING CURRENT FEDERAL STANDARDS. REFER TO SPECIFICATIONS.

3) ALL FASTENERS TO BE HOT-DIPPED ZINC COATED AND COMPLYING WITH ASTM A 153.

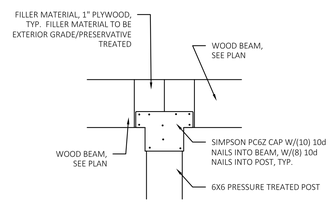
4) DECK HELICAL PIERS TO BE DESIGNED FOR 8 KIPS DOWNWARD FORCE (ASD).



5 Overlook Deck Foundation Plan
NOT TO SCALE



6 Framing Section
NOT TO SCALE



7 Beam Connection Detail
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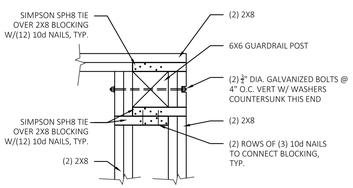
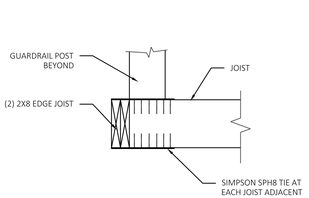
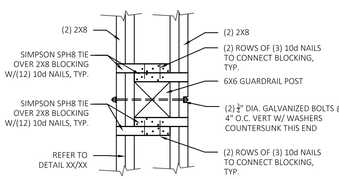


8 Guardrail Post Plan Detail
NOT TO SCALE



9 Tie Connection at Guardrails Detail
NOT TO SCALE



10 Guardrail Post Plan Detail
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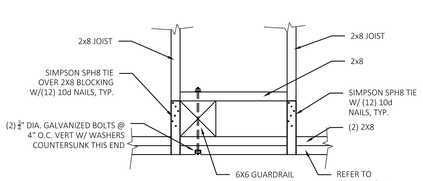

11 Guardrail Post Plan Detail
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OCBA LANDSCAPE ARCHITECTS

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Issued For:	Date
COK PROJECT REVIEW	03–30–26
COK CHECKLIST MEETING	04–10–26
SPR SUBMISSION	06–08–26

Project:

Milham Park Ph 1 Improvements LWCF: 26-01921

Kalamazoo, Michigan

Sheet Title

Details

Job No. OCBA: 52606
COK: XXXX.XXXX

Sheet No. C5.4

OCBA
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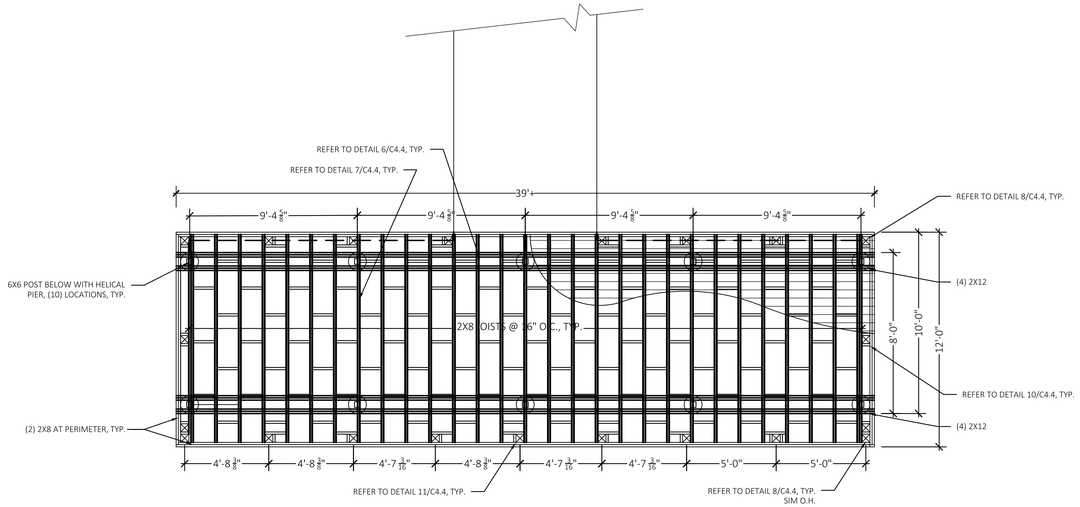

X **Overlook Deck Structural Framing Detail**
SCALE: 1/4"=1'-0"

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Milham Park Ph 1 Improvements LWCF: 26-01921

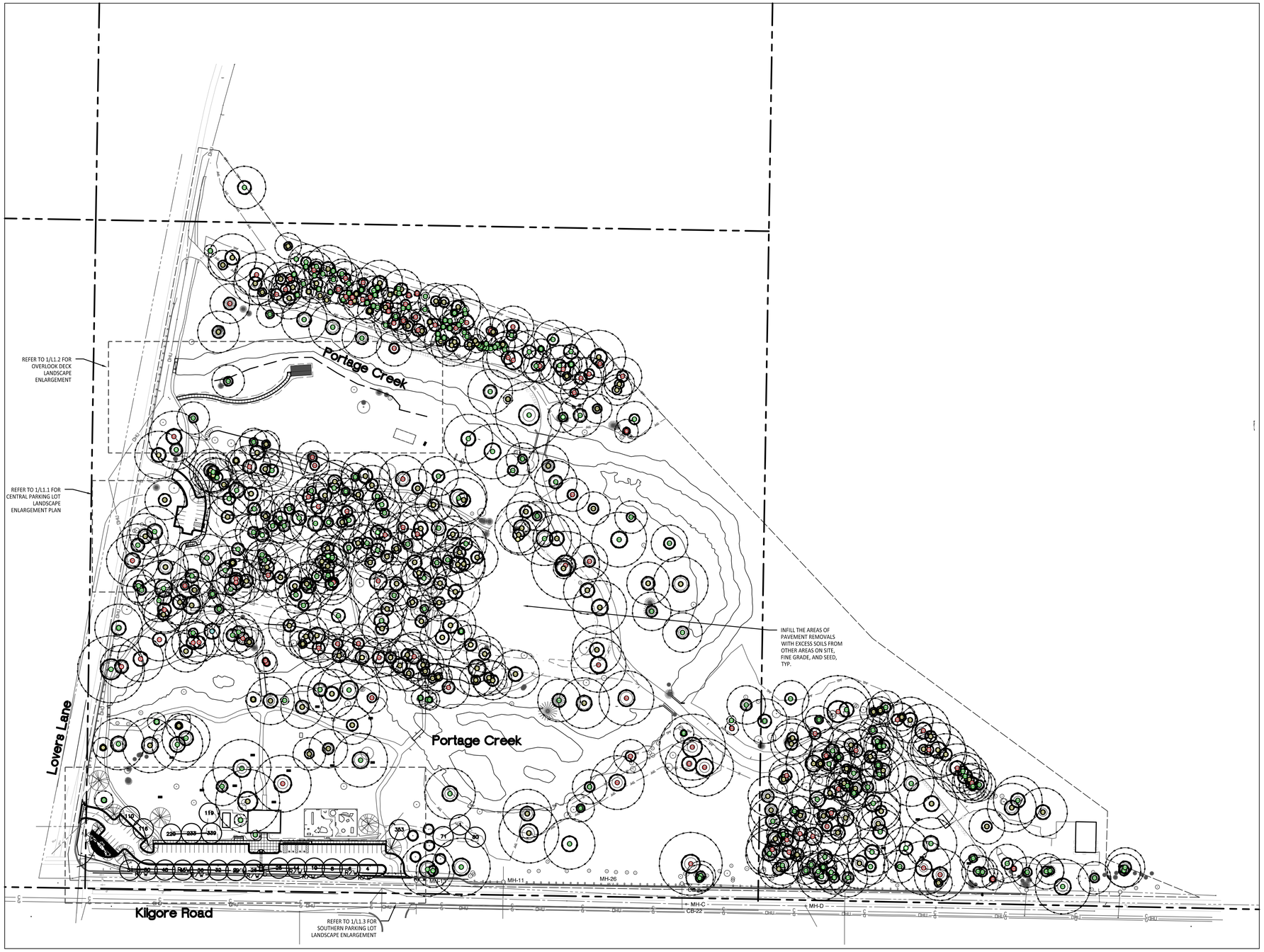
Kalamazoo, Michigan

Sheet Title

Details

Job No. OCBA: 52606 COK: XXXXXXXX

Sheet No. C5.5



1 **Overall Landscape Plan**
Scale: 1" = 100'-0"

LANDSCAPE NOTES:

1. SURVEY OF EXISTING CONDITIONS PROVIDED BY AR ENGINEERING, INC., 5725 VENTURE PARK DR. A, KALAMAZOO, MICHIGAN, 49009, (269)250-5991.
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NFP PROTECTED TREE REPLACEMENT INFORMATION:

1) QUANTITIY OF PROTECTED TREE REPLACEMENTS FOR PROJECT: (24) TREES
2) QUANTITY OF PROTECTED TREE REPLACEMENTS ON 607 EAST KILGORE ROAD PROPERTY: (24) TREES
3) QUANTITY OF PROTECTED TREE REPLACEMENTS ON 4200 PORTAGE ROAD PROPERTY: (0) TREES

ZONING TREE CANOPY REQUIREMENTS

1) 607 EAST KILGORE ROAD: 33.2 ACRES TOTAL = ONE (1) TREE PER ACRE = 33 TREES
2) 4200 PORTAGE ROAD: 6.8ACRES TOTAL = ONE (1) TREE PER ACRE = 7 TREES
3) TOTAL TREES REQUIRED: (40) TREES
4) TOTAL TREES PLANTED: (4) TREES. DUE TO THE EXISTING HEAVILY WOODED AREAS IN THE PARK, CITY OF KALAMAZOO STAFF WAIVED THE OVERALL PROPERTY SIZE REQUIREMENT AND STATED THAT ONLY THE AREA OF WORK SCOPE OF THIS PROJECT NEEDS TO BE USED FOR THE ACREAGE CALCULATIONS. THE OVERALL WORK SCOPE SIZE IS 3.7 ACRES, SO (4) TREES WILL BE REQUIRED FOR THIS PROJECT.

WATER EASEMENT TREE REQUIREMENTS

PROTECT ALL PUBLIC WATER MAINS, LINES, AND EASEMENTS. DO NOT PLANT TREES OR ANY INVASIVE SPECIES WITHIN 10' OF ALL PUBLIC WATER UTILITIES.

LANDSCAPE LEGEND:

- "PROTECTED" TREE. NOTE: TREE NUMBER CORRELATES WITH ARBORIST REPORT, REFER TO SUBMITTED REPORT AND SPREADSHEET. REFER TO REFER TO SHEET C0.6 FOR PROTECTED TREE REMOVAL INFORMATION.
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- PROPERTY LINE
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Milham Park Ph 1 Improvements
LWCF: 26-01921

Kalamazoo, Michigan

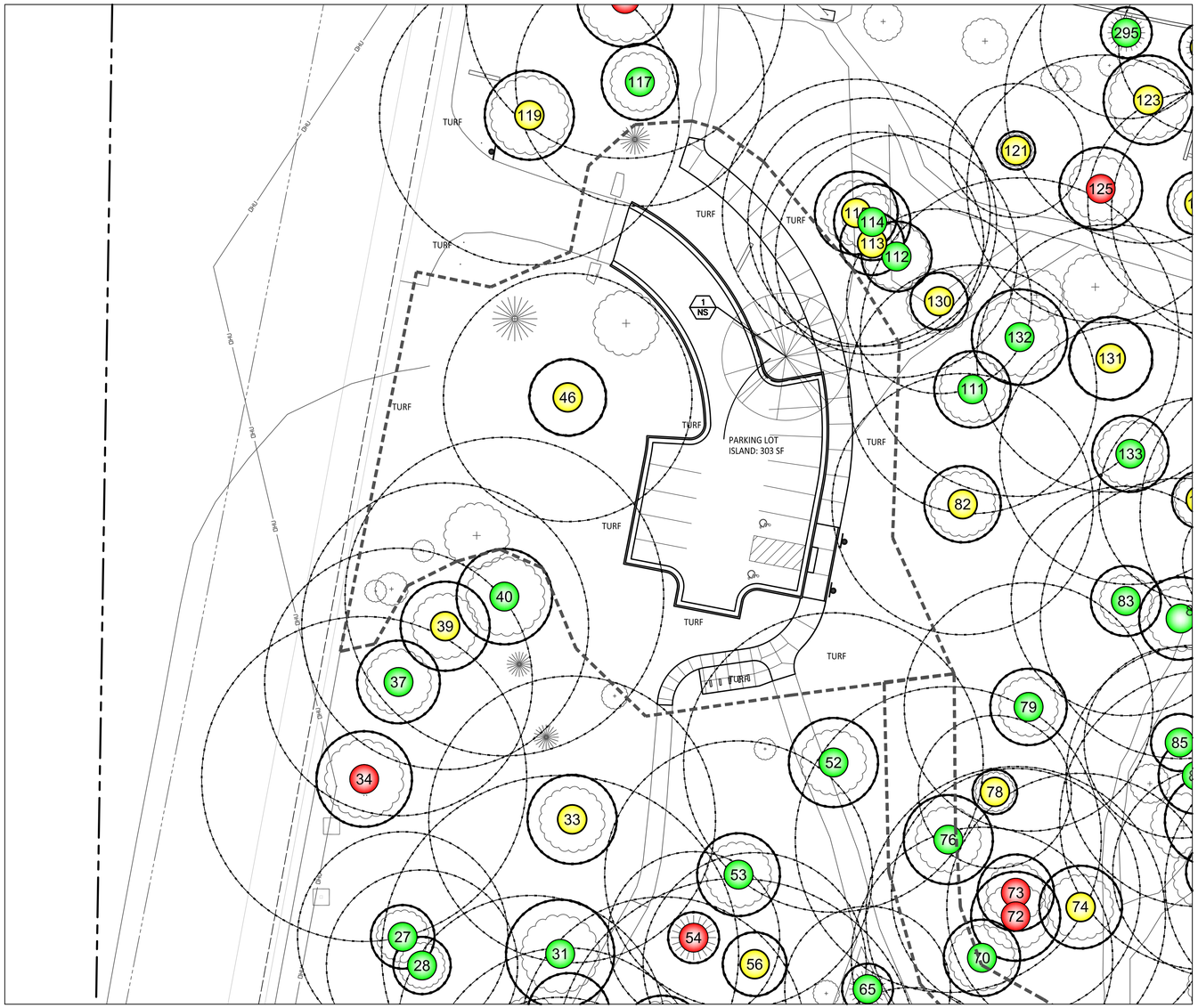
Sheet Title

Landscape Plan

0 100 200 300
North
SCALE IN FEET

Job No. OCBA: 52606
COK: XXXXXXXX

Sheet No. L1.0



1 **Central Parking Lot Landscape Enlargement Plan**
Scale: 1" = 20'-0"

LANDSCAPE NOTES:

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- METAL EDGING, REFER TO DETAIL 3/C5.2
- WOODLAND DELINEATION LIMITS
- PROPERTY LINE
- PLAN ENLARGEMENT LINE

PLANT LIST:

	SYM.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	STATUS
TREES	AR	Acer rubrum	Red Maple	2" CAL.	B&B	PER PLANS	NATIVE
	AL	Amelanchier laevis	Allegheny Serviceberry	6' HT.	B&B	PER PLANS	NATIVE
	LT	Liriodendron tulipifera	Tulip Tree	2" CAL.	B&B	PER PLANS	NATIVE
	NS	Nyssa sylvatica	Black Gum	2" CAL.	B&B	PER PLANS	NATIVE
	OV	Ostrya virginiana	American Hophornbeam	2" CAL.	B&B	PER PLANS	NATIVE
	QM	Quercus muehlenbergii	Chinkapin Oak	2" CAL.	B&B	PER PLANS	NATIVE
	TA	Tilia americana 'Redmond'	Redmond Linden	2" CAL.	B&B	PER PLANS	NATIVAR
	CA	Ceanothus americanus	New Jersey Tea	#3	CONT.	3' O.C.	NATIVE
	FI	Fothergilla x intermedia	Dwarf Fothergilla	#3	CONT.	3' O.C.	NATIVE
	PF	Potentilla fruticosa 'Mandarin Tango'	Mandarin Tango Potentilla	#3	CONT.	3' O.C.	NATIVAR
	PO	Physocarpus opulifolius 'Little Devil'	Little Devil Ninebark	#3	CONT.	5' O.C.	NATIVAR

PARKING PERIMETER LANDSCAPING REQUIREMENTS FOR CENTRAL PARKING LOT:

1) LENGTH OF STREET FRONTAGE ALONG LOVERS LANE: 146 LF
2) (1) TREE REQUIRED FOR EVERY 35 LF OF FRONTAGE: (4) TREES
3) (1) SHRUB REQUIRED FOR EVERY 6 LF OF FRONTAGE: (24) SHRUBS
4) DUE TO THE 85 LF DISTANCE FROM THE EDGE OF LOVER'S LANE AND THE EXISTING HEAVILY WOODED AREA, CITY OF KALAMAZOO STAFF HAS DETERMINED THAT THIS LANDSCAPING REQUIREMENT WILL BE WAIVED FOR THIS PARKING LOT.

INTERIOR PARKING LOT LANDSCAPING REQUIREMENTS FOR CENTRAL PARKING LOT:

1) OVERALL PARKING LOT SIZE: 4,814 SF
2) 5% OF PARKING LOT REQUIRED FOR PARKING LOT ISLANDS: 261 SF
3) PROPOSED PARKING LOT ISLAND SIZE: 303 SF TOTAL
4) ONE (1) TREE REQUIRED PER EACH 300 SF OF PARKING LOT ISLANDS: 1 TREE

WATER EASEMENT TREE REQUIREMENTS

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Project:

Milham Park Ph 1 Improvements LWCF: 26-01921

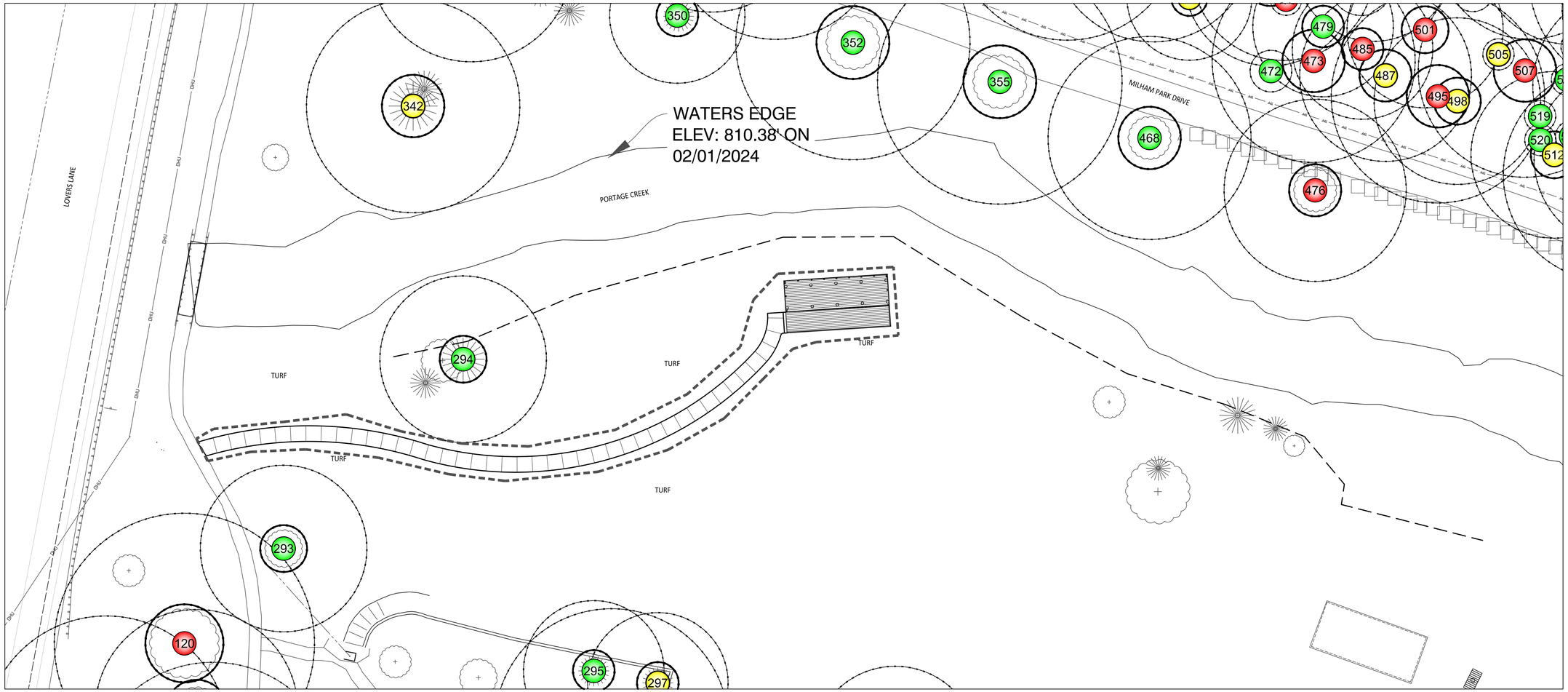
Kalamazoo, Michigan

Sheet Title
Central Parking Lot Landscape Enlargement Plan

0 20 40 60
North
SCALE IN FEET

Job No. OCBA: 52606
COK: XXXXXXXX

Sheet No. L1.1



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Scale: 1" = 20'-0"

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LWCF: 26-01921

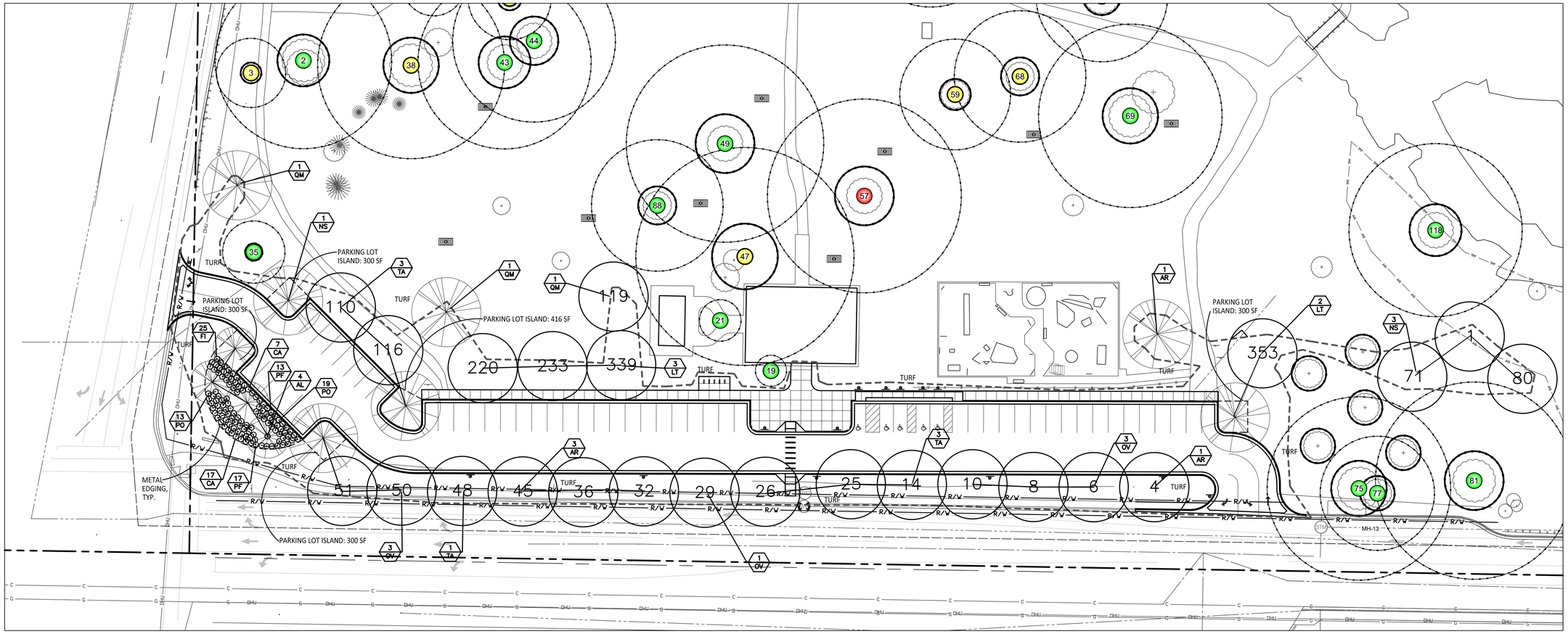
Kalamazoo, Michigan

Sheet Title
Overlook Deck Landscape Enlargement Plan

0 20 40 60
North
SCALE IN FEET

Job No.
OCBA: 52606
COK: XXXXX.XXX.X

Sheet No.
L1.2



1 Southern Parking Lot Landscape Enlargement Plan

Scale: 1" = 30'-0"

LANDSCAPE LEGEND:

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8. SEE SHEET L1.1 FOR PLANT LISTS.
9. PROTECT ALL TREES AND EXISTING FEATURES TO REMAIN AS SPECIFIED.
10. ALL TOPSOIL AND EXCESS FILL MATERIAL SHALL BE STOCKPILED ON SITE SEPARATELY FOR LATER RE-USE. LOCATE STOCKPILES IN AREAS AS DIRECTED BY CONSTRUCTION MANAGER AND PROTECT FROM EFFECTS OF EROSION.
11. ALL NURSERY STOCK SHALL BE TRUE TO TYPE AND NAME. ALL STOCK SHALL BE FIRST CLASS QUALITY WITH WELL DEVELOPED BRANCH SYSTEMS AND VIGOROUS HEALTHY ROOT SYSTEMS. ALL STOCK SHALL BE WELL FORMED AND THE TRUNKS OF TREES SHALL BE UNIFORM AND STRAIGHT.
12. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR IRRIGATION SCHEDULING FOR THE ENTIRE MAINTENANCE PERIOD UNLESS OTHERWISE NOTED.
13. CONTRACTOR RESPONSIBLE TO LOCATE SITE LIGHTING SERVICES. CONTRACTOR RESPONSIBLE TO NOTIFY CONSTRUCTION MANAGER IF DAMAGE TO LIGHTING ELECTRICAL DISTRIBUTION OCCURS.
14. ALL AREAS OF TREE CLEARING SHALL BE STAKED FOR ARCHITECTS APPROVAL PRIOR TO CLEARING.
15. UNLESS OTHERWISE SPECIFIED, ALL PERENNIALS, GRASSES AND GROUNDCOVERS SHALL BE GROWN IN THEIR CONTAINER FOR ONE YEAR PRIOR TO INSTALLATION.

PARKING PERIMETER LANDSCAPING REQUIREMENTS FOR SOUTHERN PARKING LOT:

1) LENGTH OF STREET FRONTAGE ALONG KILGORE ROAD: 664 LF
2) (1) TREE REQUIRED FOR EVERY 35 LF OF FRONTAGE: (19) TREES
3) (1) SHRUB REQUIRED FOR EVERY 6 LF OF FRONTAGE: (111) SHRUBS
4) (19) OF PROTECTED TREE REPLACEMENTS USED FOR PERIMETER PARKING

INTERIOR PARKING LOT LANDSCAPING REQUIREMENTS FOR SOUTHERN PARKING LOT:

1) OVERALL PARKING LOT SIZE: 27,281 SF
2) 5% OF PARKING LOT REQUIRED FOR PARKING LOT ISLANDS: 1,324 SF
3) PROPOSED PARKING LOT ISLAND SIZE: 1,616 SF TOTAL
4) ONE (1) TREE REQUIRED PER EACH 300 SF OF PARKING LOT ISLANDS: 4 TREES

WATER EASEMENT TREE REQUIREMENTS

PROTECT ALL PUBLIC WATER MAINS, LINES, AND EASEMENTS. DO NOT PLANT TREES OR ANY INVASIVE SPECIES WITHIN 10' OF ALL PUBLIC WATER UTILITIES.

OCBA LANDSCAPE ARCHITECTS

141 E. Michigan Avenue, Suite 500
Kalamazoo Michigan 49007
Phone (269) 381-3357
Fax (269) 381-2944

Landscape Architecture
Urban Planning
Parks & Recreation
Campus & Institutional Planning
Camp Planning & Design

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Issued For:	Date
COK PROJECT REVIEW	03-30-26
COK CHECKLIST MEETING	04-10-26
SPR SUBMISSION	06-08-26

Project:

Milham Park Ph 1 Improvements
LWCF: 26-01921

Kalamazoo, Michigan

Sheet Title
Southern Parking Lot Landscape Enlargement Plan

0 30 60 90
North
SCALE IN FEET

Job No.
OCBA: 52606
COK: XXXXXXXX

Sheet No.
L1.3

MAP VIEW (MV) LOCATION(S)

= Approximate assessment area (~40 acres)

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N

GRAPHIC SCALE

0 250 500

(IN FEET)

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DAVEY Resource Group

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141 East Michigan Avenue
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Tree Assessment
Milham Park
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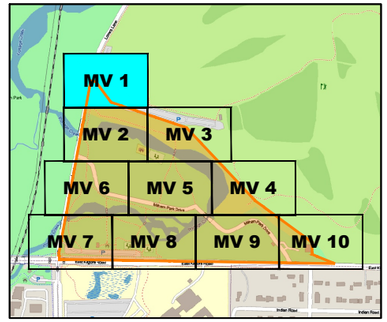
ISA® Certified Arborists
(IN-3555A, IN-3808A and KY-9842A)

Tree assessment mapped by:
Shawn W. Bruzda
ISA® Certified Arborist (OH-1342A)

Overview
Map



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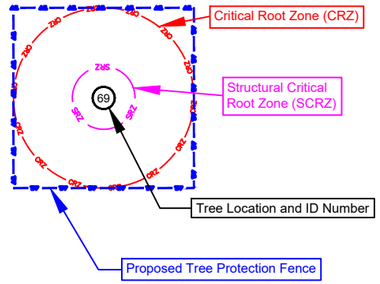

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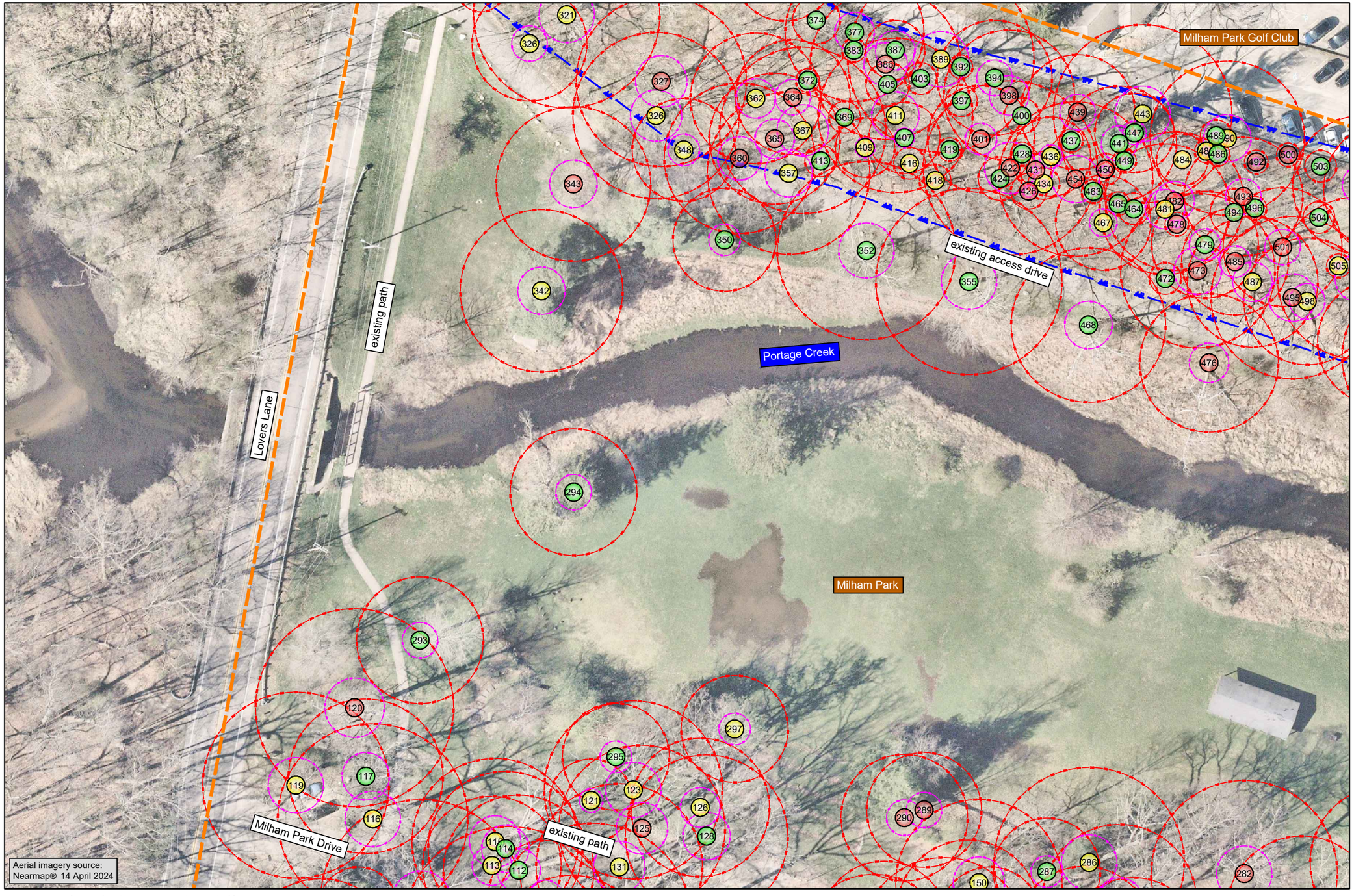

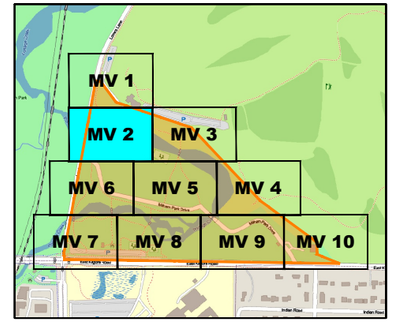

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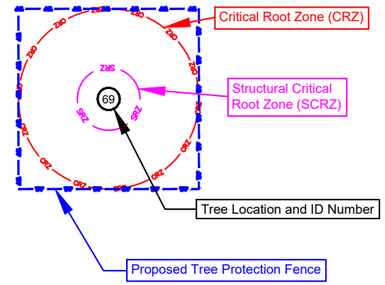

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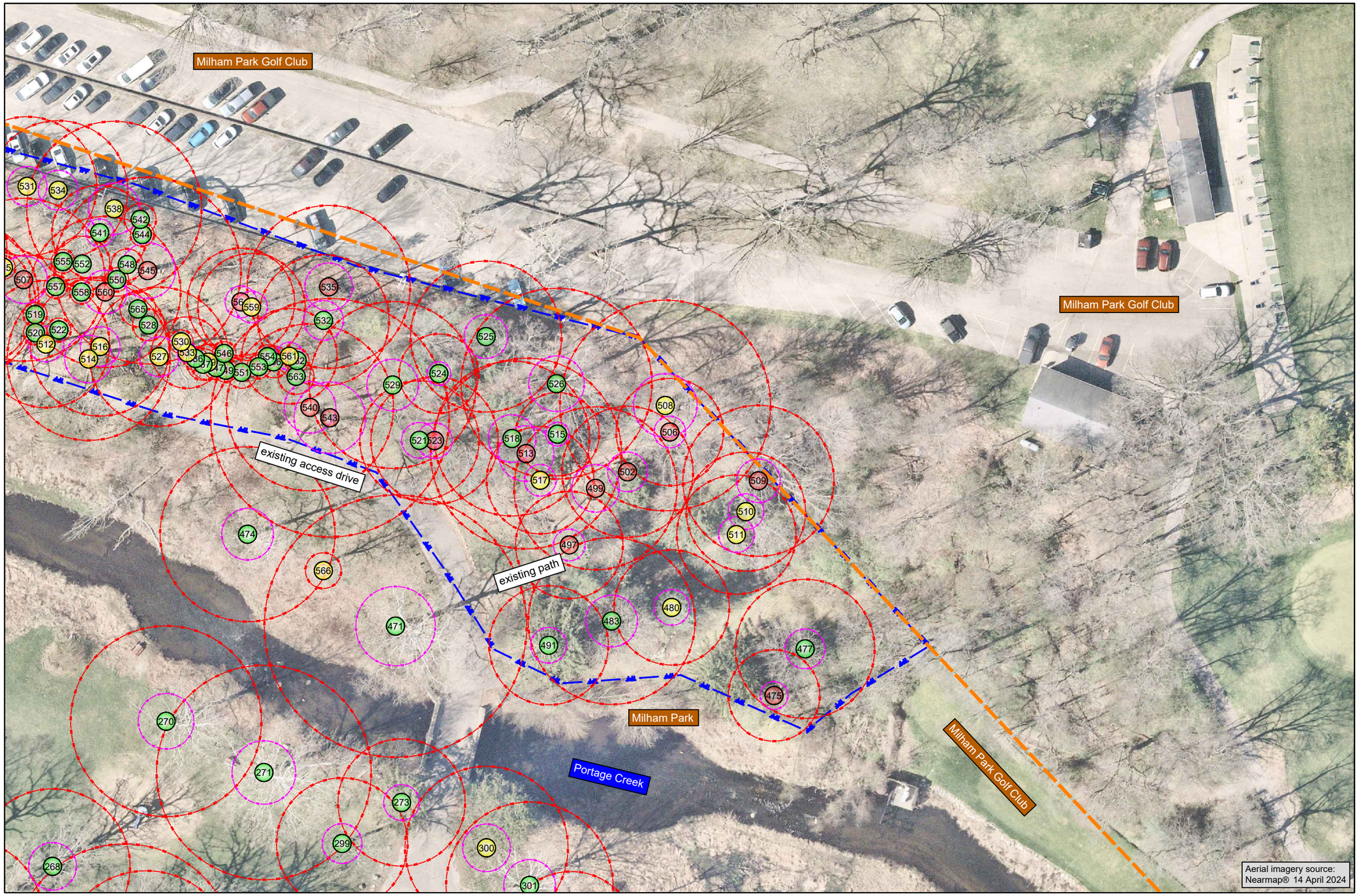

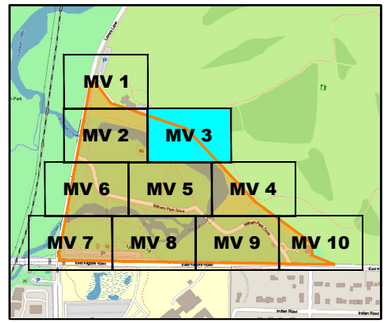

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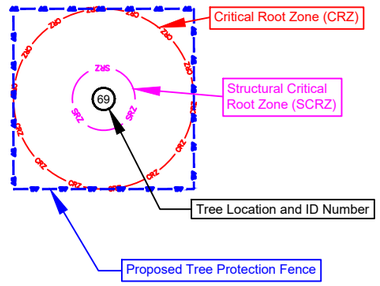

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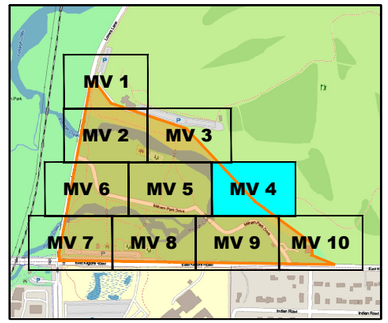

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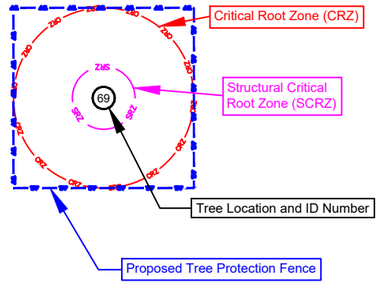

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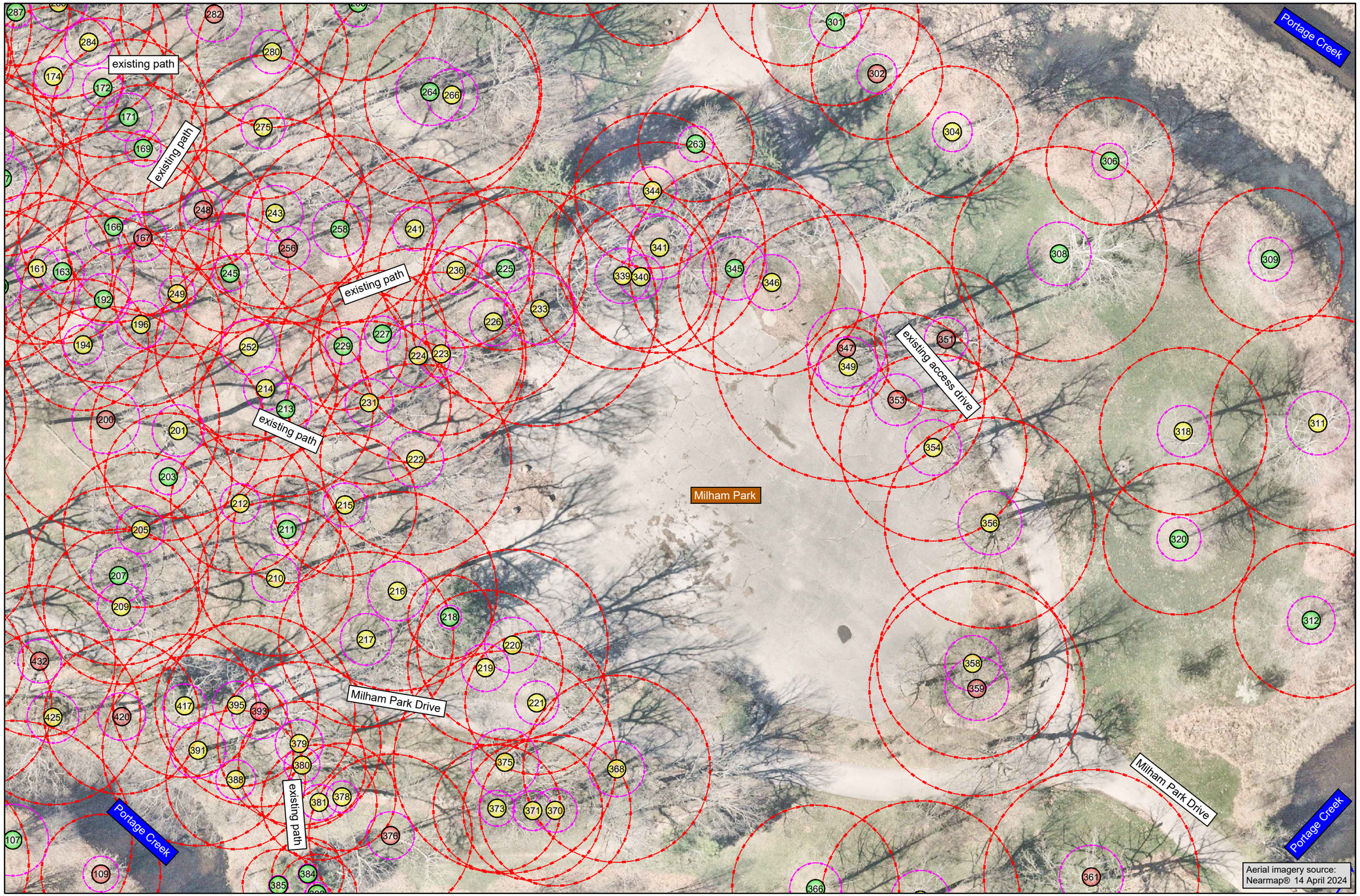

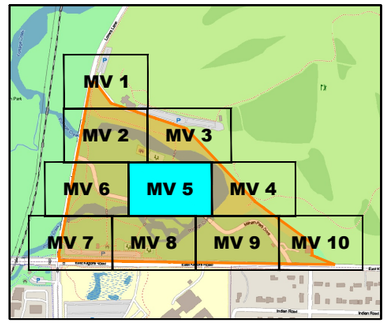

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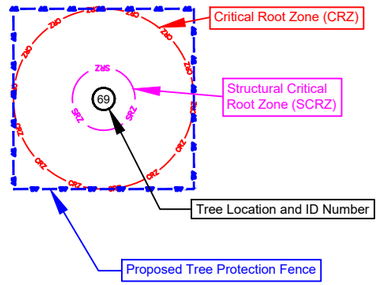

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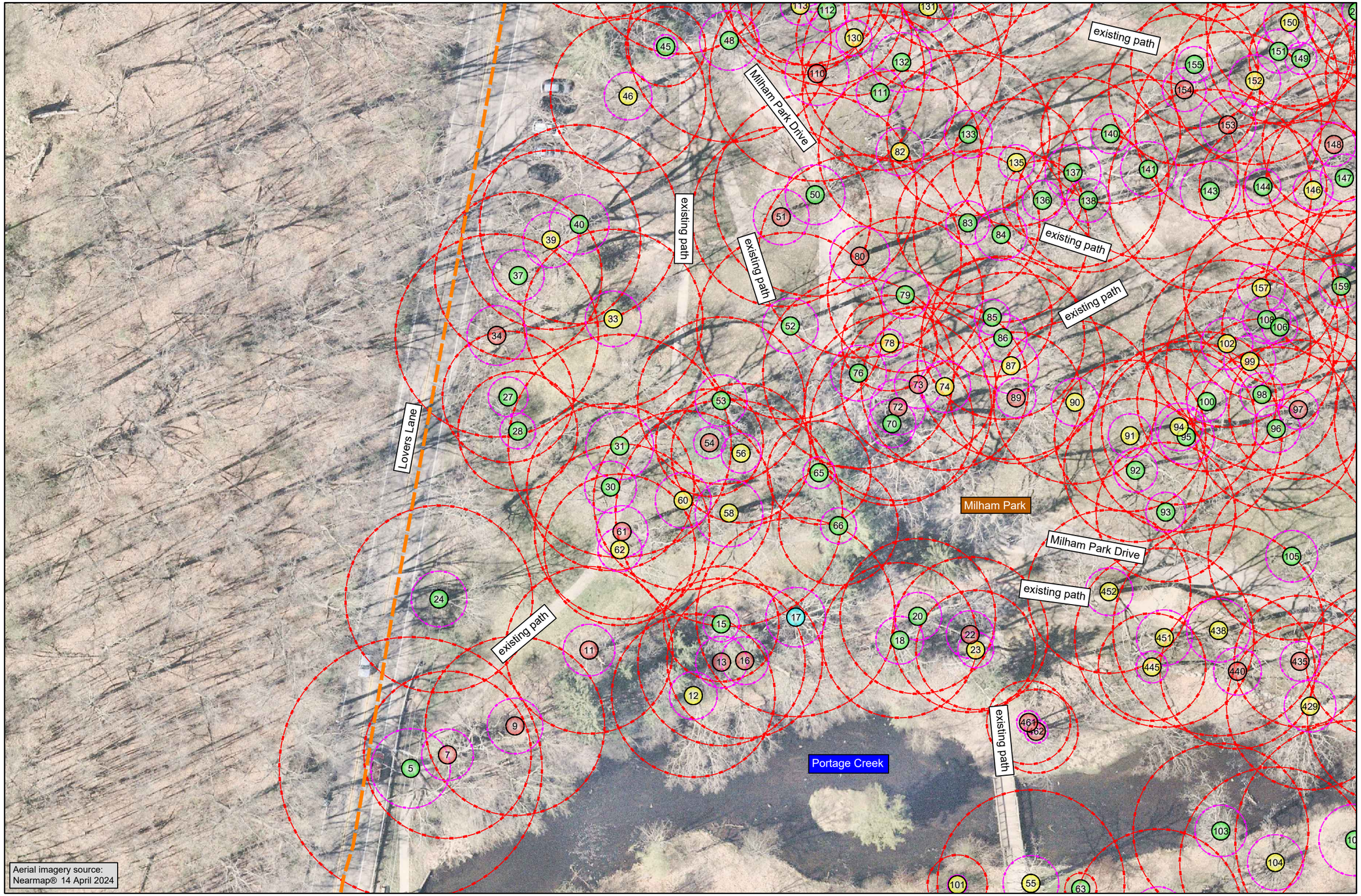

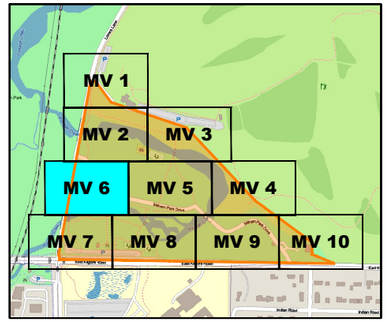

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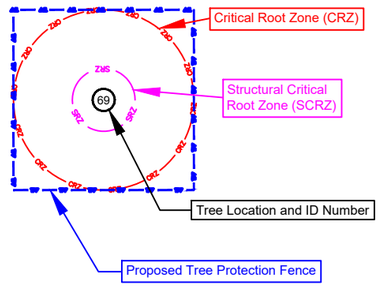

Aerial imagery source:
Nearmap® 14 April 2024

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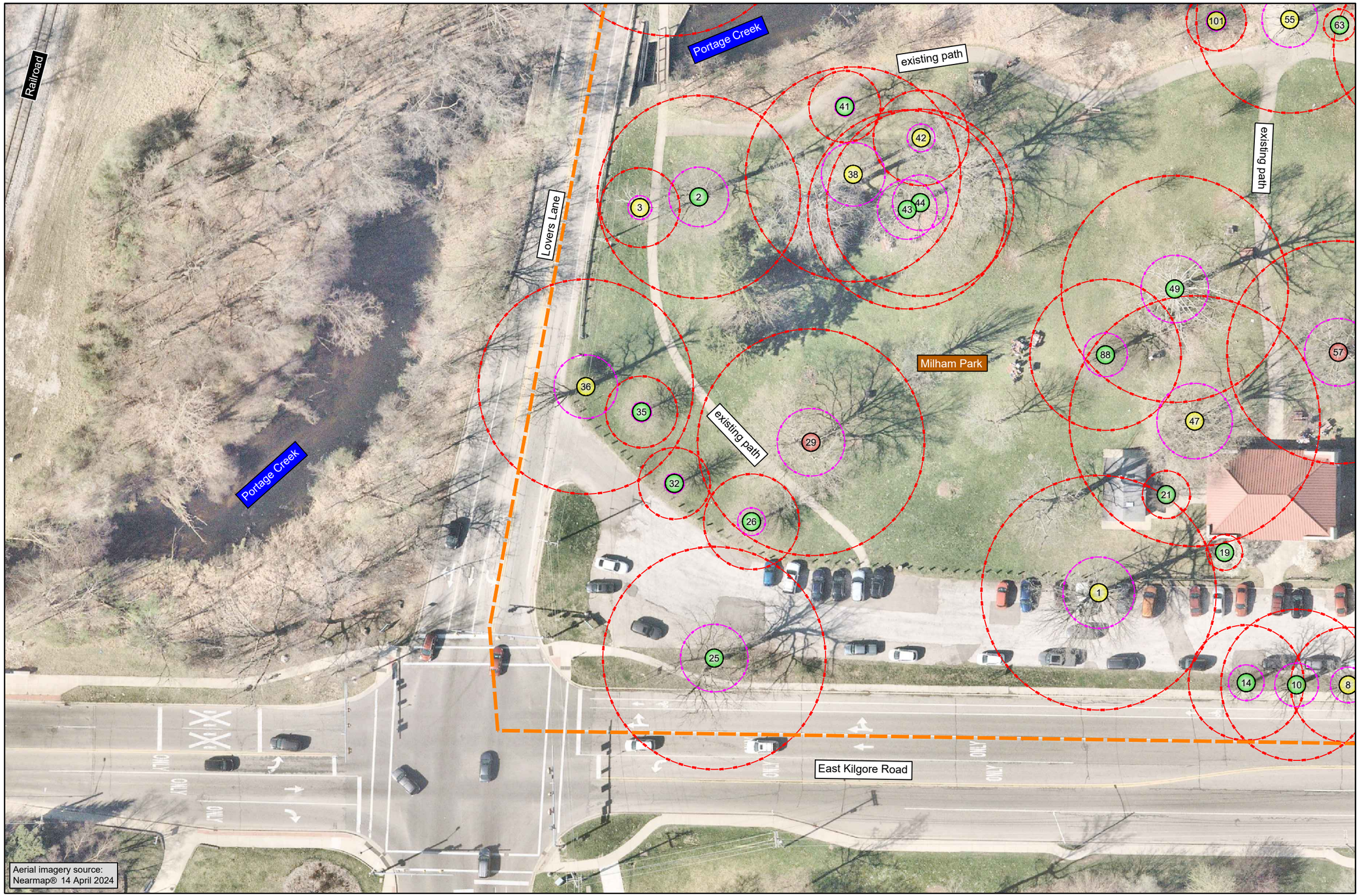

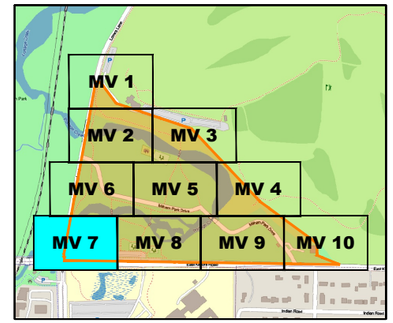

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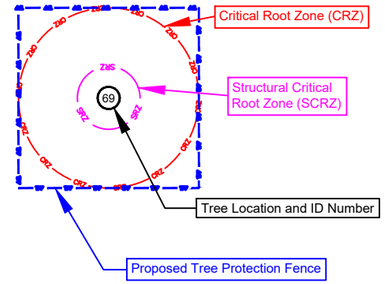

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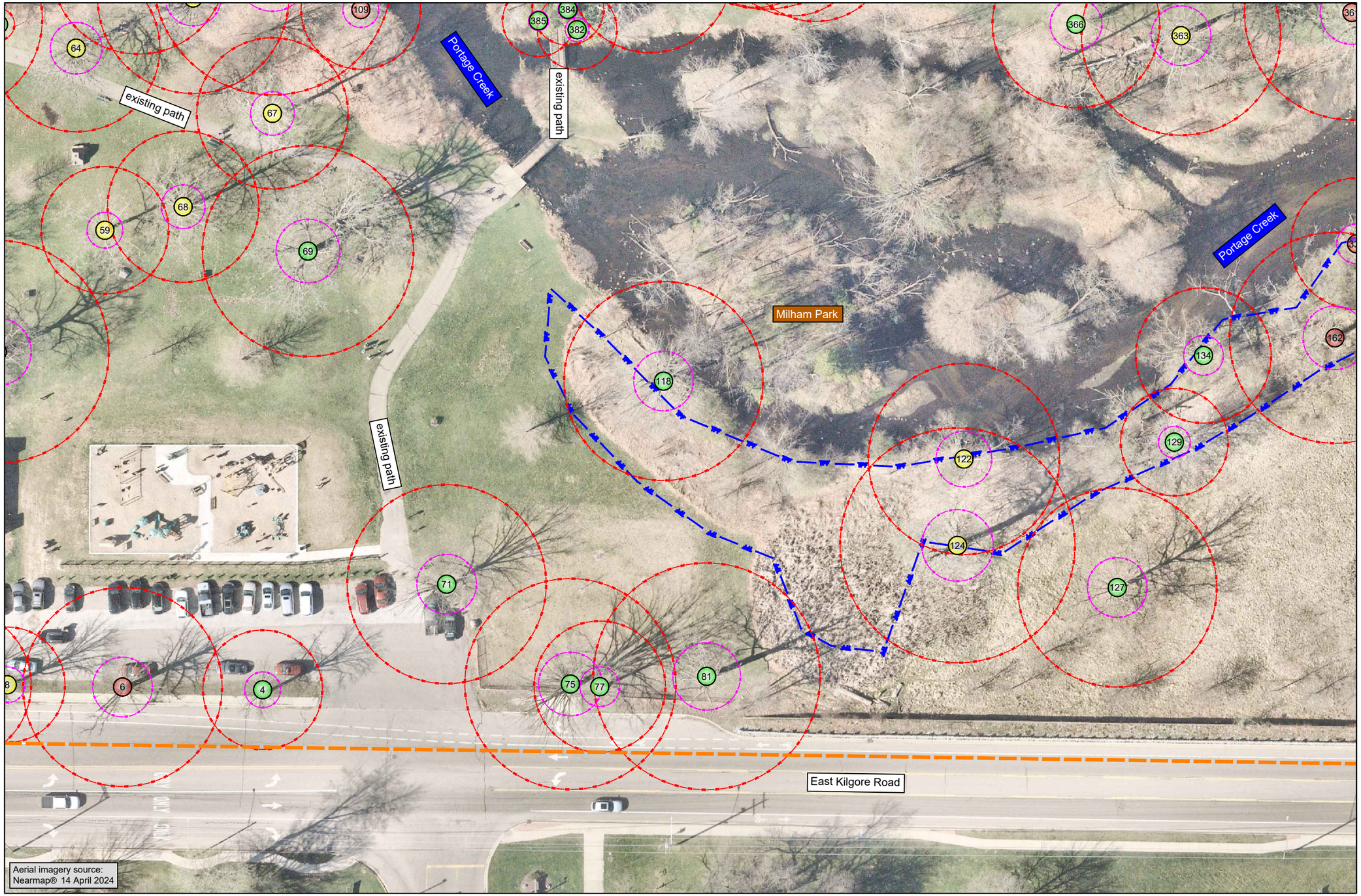

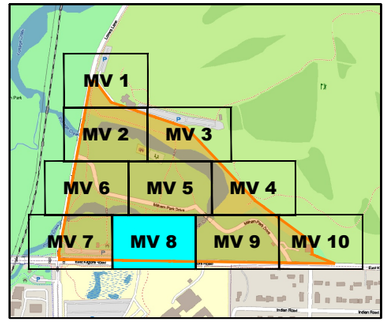

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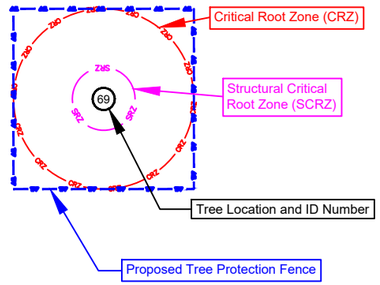

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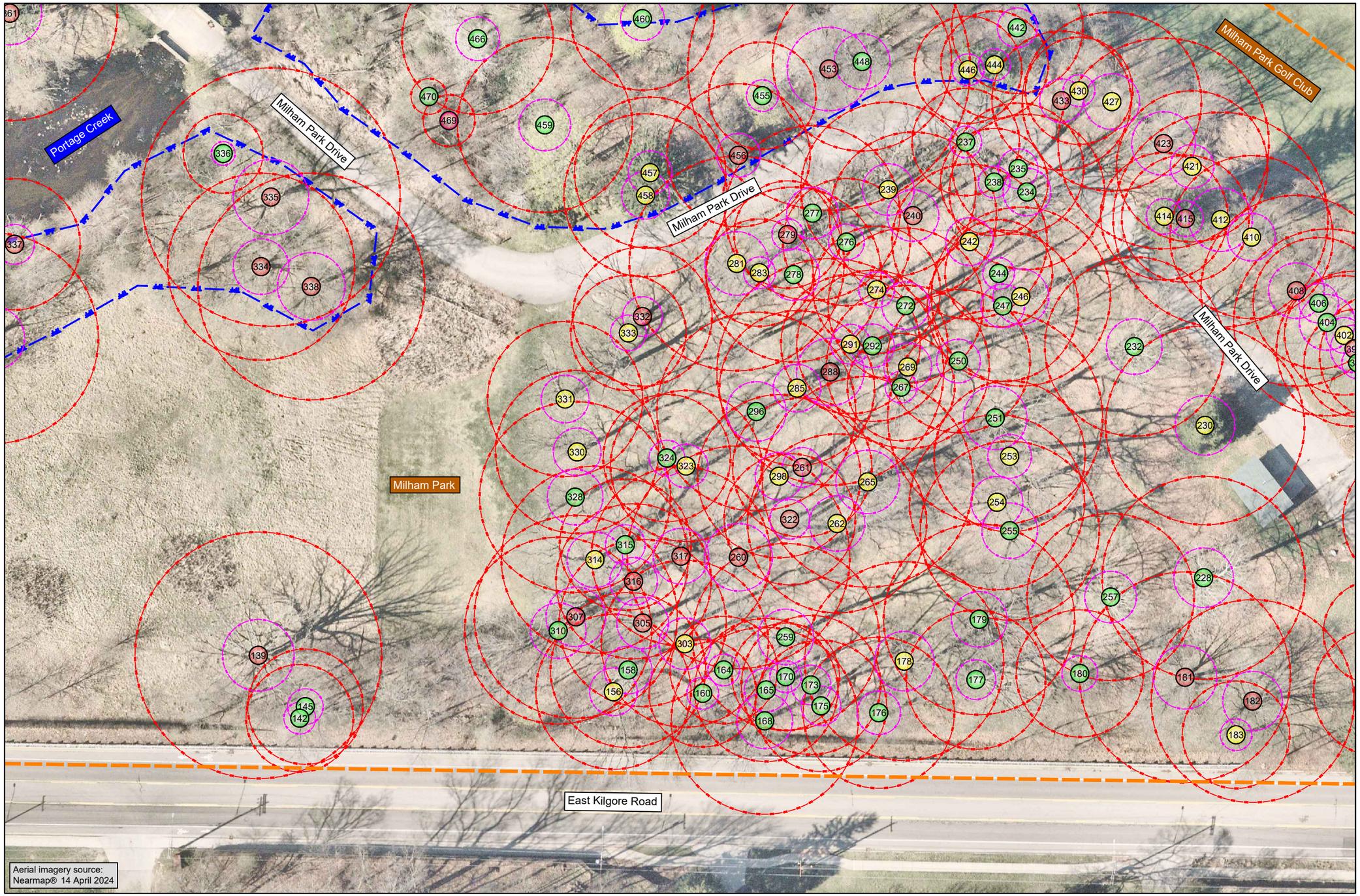

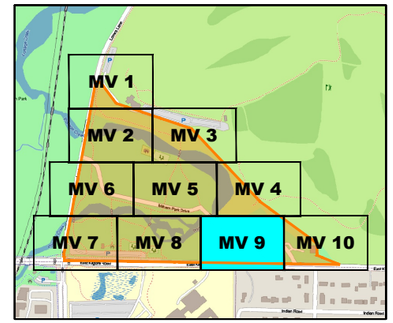

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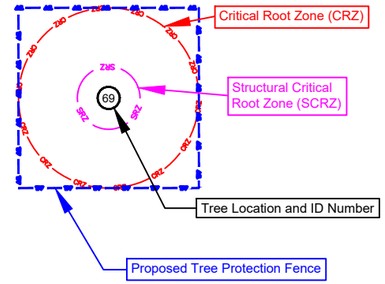

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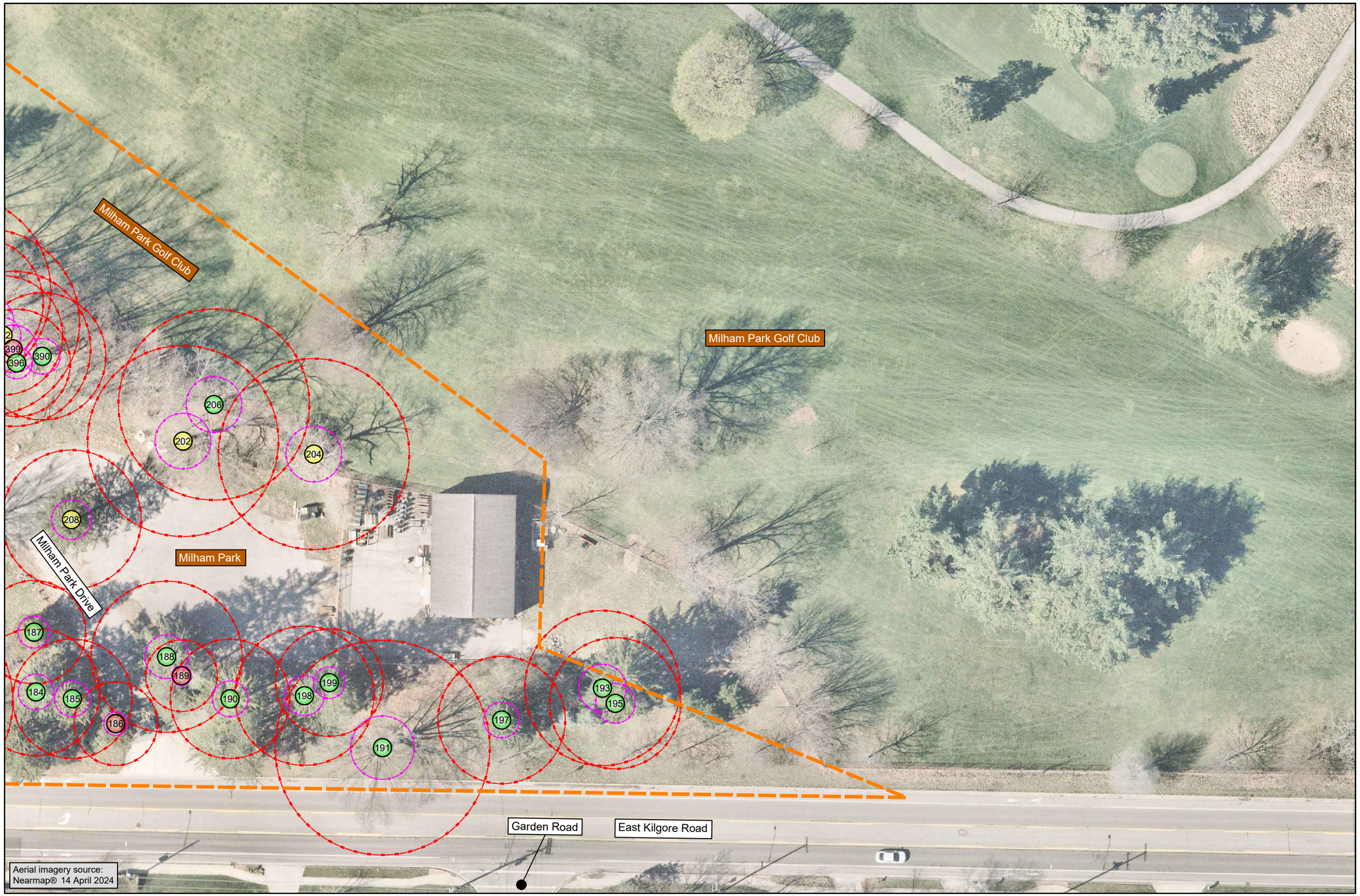

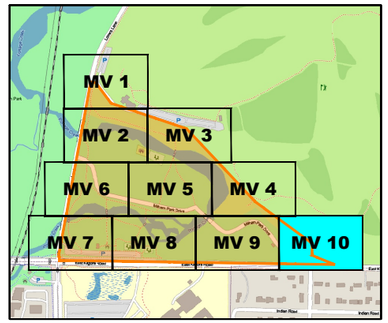

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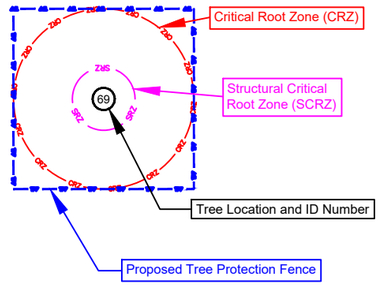

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GRAPHIC SCALE

0 50 100

(IN FEET)

= Approximate assessment area (~40 acres)

17 = P1: Located High Priority tree for preservation and tree number

2 = P2: Located Moderate Priority tree for preservation and tree number

1 = P3: Located Low Priority tree for preservation and tree number

6 = P4: Located tree in poor or critical condition and tree number (trees not typically recommended for preservation)

MAPPED BY:
DAVEY Resource Group

MAPPED FOR:
OCBA Landscape Architects
141 East Michigan Avenue
Suite 500
Kalamazoo, Michigan 49007

Tree Assessment
Milham Park
607 East Kilgore Road
Kalamazoo
Kalamazoo County, Michigan

Data collected 30 June - 3 July 2025 by:
Scott Clingerman, Jacob Lovett and James Rocke
ISA® Certified Arborists
(IN-3555A, IN-3808A and KY-9842A)

Tree assessment mapped by:
Shawn W. Bruzda
ISA® Certified Arborist (OH-1342A)

Sheet 10 of 10

Tree Number	Ownership	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	SCRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	Defects
1	Public	39	white oak	*Quercus alba*	1	18	59	3	Dead and/or dying branches
2	Public	34	northern red oak	*Quercus rubra*	1	15	51	2	Dead and/or dying branches
3	Public	13	paper birch	*Betula papyrifera*	1	6	20	3	Trunk condition
4	Public	20	bur oak	*Quercus macrocarpa*	1	9	30	2	Dead and/or dying branches
5	Public	44	white oak	*Quercus alba*	1	20	66	2	Branch attachment
6	Public	33	white oak	*Quercus alba*	1	15	50	4	Tree architecture
7	Public	28	white oak	*Quercus alba*	1	13	42	4	Decay or Cavity
8	Public	19	bur oak	*Quercus macrocarpa*	1	9	29	3	Dead and/or dying branches
9	Public	30	white oak	*Quercus alba*	1	14	45	4	Decay or Cavity
10	Public	25	chinkapin oak	*Quercus muehlenbergii*	1	11	38	2	N/A
11	Public	25	unknown tree	unknown tree	1	13	42	4	Trunk condition
12	Public	27	white oak	*Quercus alba*	1	12	41	3	Tree architecture
13	Public	28	white oak	*Quercus alba*	1	13	42	4	Tree architecture
14	Public	19	bur oak	*Quercus macrocarpa*	1	9	29	2	N/A
15	Public	19	white oak	*Quercus alba*	1	9	29	2	N/A
16	Public	26	white oak	*Quercus alba*	1	12	39	4	Tree architecture
17	Public	33	white oak	*Quercus alba*	1	15	50	1	N/A
18	Public	26	white oak	*Quercus alba*	1	12	39	2	N/A
19	Public	4, 3, 3	serviceberry sp.	*Amelanchier* sp.	3	3	9	2	N/A
20	Public	26	white oak	*Quercus alba*	1	12	39	2	N/A
21	Public	4, 4, 3, 3, 2, 2, 2	flowering dogwood	*Cornus florida*	7	4	12	2	N/A
22	Public	26	white oak	*Quercus alba*	1	12	39	4	Decay or Cavity
23	Public	20	white oak	*Quercus alba*	1	9	30	3	Tree architecture
24	Public	31	white oak	*Quercus alba*	1	14	47	2	N/A
25	Public	37	chinkapin oak	*Quercus muehlenbergii*	1	17	56	2	Dead and/or dying branches
26	Public	16	chinkapin oak	*Quercus muehlenbergii*	1	7	24	2	N/A
27	Public	22	white oak	*Quercus alba*	1	10	33	2	Dead and/or dying branches
28	Public	20	white oak	*Quercus alba*	1	9	30	2	N/A
29	Public	38	London planetree	*Platanus* x *acerifolia*	1	17	57	4	Decay or Cavity
30	Public	28	white oak	*Quercus alba*	1	13	42	2	N/A
31	Public	37	white oak	*Quercus alba*	1	17	56	2	N/A
32	Public	12	chinkapin oak	*Quercus muehlenbergii*	1	5	18	2	N/A
33	Public	30	white oak	*Quercus alba*	1	14	45	3	Decay or Cavity
34	Public	34	white oak	*Quercus alba*	1	15	51	4	Decay or Cavity
35	Public	12	chinkapin oak	*Quercus muehlenbergii*	1	5	18	2	N/A

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Critical Root Zone and Structural Critical Root Zone Notes:

1. Critical Root Zone (CRZ) represents the typical minimum rooting area required for tree health and survival. Minimal impact (25% or less) within this zone is typically acceptable for average to good condition trees with basic mitigation/stress reduction measures.
2. Structural Critical Root Zone (SCRZ or SRZ) is based on research by Dr. Kim Coder, Warnell School of Forestry, University of Georgia. SCRZ represents the minimum root plate radius required for a given tree to remain structurally stable under typical conditions. Development plans should ensure that no root damage/impact occurs within this zone. If root damage is expected in this zone, the tree should be removed.

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Tree Data 1 of 17

Tree Number	Ownership	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	SCRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	Defects
36	Public	36	bur oak	*Quercus macrocarpa*	1	16	54	3	Tree architecture
37	Public	28	white oak	*Quercus alba*	1	13	42	2	N/A
38	Public	36	silver maple	*Acer saccharinum*	1	16	54	3	Dead and/or dying branches
39	Public	30	white oak	*Quercus alba*	1	14	45	3	Tree architecture
40	Public	33	white oak	*Quercus alba*	1	15	50	2	Tree architecture
41	Public	12	eastern hophornbeam	*Ostrya virginiana*	1	5	18	2	Dead and/or dying branches
42	Public	16	eastern hophornbeam	*Ostrya virginiana*	1	7	24	3	Dead and/or dying branches
43	Public	33	chinkapin oak	*Quercus muehlenbergii*	1	15	50	2	Dead and/or dying branches
44	Public	31	bur oak	*Quercus macrocarpa*	1	14	47	2	Dead and/or dying branches
45	Public	13	eastern arborvitae	*Thuja occidentalis*	1	6	20	2	N/A
46	Public	26	white oak	*Quercus alba*	1	12	39	3	Dead and/or dying branches
47	Public	42	American elm	*Ulmus americana*	1	19	63	3	Branch attachment
48	Public	34	white oak	*Quercus alba*	1	15	51	2	N/A
49	Public	38	London planetree	*Platanus x acerifolia*	1	17	57	2	N/A
50	Public	34	white oak	*Quercus alba*	1	15	51	2	N/A
51	Public	30	white oak	*Quercus alba*	1	14	45	4	Decay or Cavity
52	Public	31	white oak	*Quercus alba*	1	14	47	2	N/A
53	Public	28	white oak	*Quercus alba*	1	13	42	2	N/A
54	Public	18	eastern white pine	*Pinus strobus*	1	8	27	4	Decay or Cavity
55	Public	31	bur oak	*Quercus macrocarpa*	1	14	47	3	Dead and/or dying branches
56	Public	23	white oak	*Quercus alba*	1	10	35	3	Dead and/or dying branches
57	Public	37	northern red oak	*Quercus rubra*	1	17	56	4	Decay or Cavity
58	Public	38	white oak	*Quercus alba*	1	17	57	3	Tree architecture
59	Public	21	American sycamore	*Platanus occidentalis*	1	9	32	3	Dead and/or dying branches
60	Public	30	white oak	*Quercus alba*	1	14	45	3	Dead and/or dying branches
61	Public	29	white oak	*Quercus alba*	1	13	44	4	Decay or Cavity
62	Public	25	white oak	*Quercus alba*	1	11	38	3	Dead and/or dying branches
63	Public	5	flowering dogwood	*Cornus florida*	1	2	8	2	N/A
64	Public	28	bur oak	*Quercus macrocarpa*	1	13	42	3	Dead and/or dying branches
65	Public	17	eastern hemlock	*Tsuga canadensis*	1	8	26	2	N/A
66	Public	20	eastern hemlock	*Tsuga canadensis*	1	9	30	2	N/A
67	Public	25	London planetree	*Platanus x acerifolia*	1	11	38	3	Dead and/or dying branches
68	Public	25	London planetree	*Platanus x acerifolia*	1	11	38	3	Dead and/or dying branches
69	Public	35	bur oak	*Quercus macrocarpa*	1	16	53	2	Dead and/or dying branches
70	Public	27	white oak	*Quercus alba*	1	12	41	2	N/A

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Critical Root Zone and Structural Critical Root Zone Notes:

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Tree Number	Ownership	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	SCRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	Defects
71	Public	33	chinkapin oak	*Quercus muehlenbergii*	1	15	50	2	Dead and/or dying branches
72	Public	31	white oak	*Quercus alba*	1	14	47	4	Decay or Cavity
73	Public	26	white oak	*Quercus alba*	1	12	39	4	Decay or Cavity
74	Public	28	white oak	*Quercus alba*	1	13	42	3	Dead and/or dying branches
75	Public	35	chinkapin oak	*Quercus muehlenbergii*	1	16	53	2	N/A
76	Public	32	white oak	*Quercus alba*	1	14	48	2	N/A
77	Public	22	northern red oak	*Quercus rubra*	1	10	33	2	N/A
78	Public	16	white oak	*Quercus alba*	1	7	24	3	Dead and/or dying branches
79	Public	26	white oak	*Quercus alba*	1	12	39	2	N/A
80	Public	34	black oak	*Quercus velutina*	1	15	51	4	Decay or Cavity
81	Public	38	chinkapin oak	*Quercus muehlenbergii*	1	17	57	2	N/A
82	Public	27	white oak	*Quercus alba*	1	12	41	3	Tree architecture
83	Public	24	white oak	*Quercus alba*	1	11	36	2	N/A
84	Public	29	white oak	*Quercus alba*	1	13	44	2	N/A
85	Public	20	white oak	*Quercus alba*	1	9	30	2	N/A
86	Public	27	white oak	*Quercus alba*	1	12	41	2	N/A
87	Public	31	white oak	*Quercus alba*	1	14	47	3	Dead and/or dying branches
88	Public	25	littleleaf linden	*Tilia cordata*	1	11	38	2	N/A
89	Public	22	white oak	*Quercus alba*	1	10	33	4	Decay or Cavity
90	Public	27	white oak	*Quercus alba*	1	12	41	3	Tree architecture
91	Public	25	white oak	*Quercus alba*	1	11	38	3	Dead and/or dying branches
92	Public	24	white oak	*Quercus alba*	1	11	36	2	N/A
93	Public	23	white oak	*Quercus alba*	1	10	35	2	N/A
94	Public	26	white oak	*Quercus alba*	1	12	39	3	Tree architecture
95	Public	32	white oak	*Quercus alba*	1	14	48	2	N/A
96	Public	27	black oak	*Quercus velutina*	1	12	41	2	N/A
97	Public	23	black oak	*Quercus velutina*	1	10	35	4	Trunk condition
98	Public	25	white oak	*Quercus alba*	1	11	38	2	N/A
99	Public	28	white oak	*Quercus alba*	1	13	42	3	Tree architecture
100	Public	23	white oak	*Quercus alba*	1	10	35	2	N/A
101	Public	10	eastern redbud	*Cercis canadensis*	1	5	15	3	Branch attachment
102	Public	28	white oak	*Quercus alba*	1	13	42	3	Tree architecture
103	Public	29	bur oak	*Quercus macrocarpa*	1	13	44	2	N/A
104	Public	32	bur oak	*Quercus macrocarpa*	1	14	48	3	Dead and/or dying branches
105	Public	28	white oak	*Quercus alba*	1	13	42	2	Dead and/or dying branches

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Tree Data 3 of 17

Tree Number	Ownership	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	SCRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	Defects
106	Public	19	white oak	*Quercus alba*	1	9	29	2	N/A
107	Public	40	common baldcypress	*Taxodium distichum*	1	18	60	2	N/A
108	Public	27	white oak	*Quercus alba*	1	12	41	2	N/A
109	Public	18, 5, 4, 4, 4	ash sp.	*Fraxinus* sp.	5	9	30	4	Trunk condition
110	Public	36	black oak	*Quercus velutina*	1	16	54	4	Decay or Cavity
111	Public	26	white oak	*Quercus alba*	1	12	39	2	N/A
112	Public	25	white oak	*Quercus alba*	1	11	38	2	N/A
113	Public	23	white oak	*Quercus alba*	1	10	35	3	Dead and/or dying branches
114	Public	26	white oak	*Quercus alba*	1	12	39	2	N/A
115	Public	28	white oak	*Quercus alba*	1	13	42	3	Tree architecture
116	Public	32	white oak	*Quercus alba*	1	14	48	3	Dead and/or dying branches
117	Public	26	white oak	*Quercus alba*	1	12	39	2	N/A
118	Public	33	silver maple	*Acer saccharinum*	1	15	50	2	Dead and/or dying branches
119	Public	31	white oak	*Quercus alba*	1	14	47	3	Tree architecture
120	Public	33	white oak	*Quercus alba*	1	15	50	4	Decay or Cavity
121	Public	14	paper birch	*Betula papyrifera*	1	6	21	3	Tree architecture
122	Public	32	American sycamore	*Platanus occidentalis*	1	14	48	3	Dead and/or dying branches
123	Public	30	white oak	*Quercus alba*	1	14	45	3	Tree architecture
124	Public	39	sugar maple	*Acer saccharum*	1	18	59	3	Tree architecture
125	Public	28	white oak	*Quercus alba*	1	13	42	4	Decay or Cavity
126	Public	23	white oak	*Quercus alba*	1	10	35	3	Tree architecture
127	Public	33	American sycamore	*Platanus occidentalis*	1	15	50	2	N/A
128	Public	27	white oak	*Quercus alba*	1	12	41	2	N/A
129	Public	18	sugar maple	*Acer saccharum*	1	8	27	2	N/A
130	Public	19	white oak	*Quercus alba*	1	9	29	3	Tree architecture
131	Public	28	white oak	*Quercus alba*	1	13	42	3	Tree architecture
132	Public	33	white oak	*Quercus alba*	1	15	50	2	Dead and/or dying branches
133	Public	27	white oak	*Quercus alba*	1	12	41	2	N/A
134	Public	29	black willow	*Salix nigra*	2	10	34	2	N/A
135	Public	21	white oak	*Quercus alba*	1	9	32	3	Tree architecture
136	Public	28	white oak	*Quercus alba*	1	13	42	2	N/A
137	Public	32	white oak	*Quercus alba*	1	14	48	2	N/A
138	Public	24	white oak	*Quercus alba*	1	11	36	2	N/A
139	Public	41	white oak	*Quercus alba*	1	18	62	4	Dead and/or dying branches
140	Public	23	white oak	*Quercus alba*	1	10	35	2	N/A

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141	Public	30	white oak	*Quercus alba*	1	14	45	2	N/A
142	Public	18	northern red oak	*Quercus rubra*	1	8	27	2	N/A
143	Public	34	white oak	*Quercus alba*	1	15	51	2	Dead and/or dying branches
144	Public	21	white oak	*Quercus alba*	1	9	32	2	N/A
145	Public	18, 5, 3, 2	American basswood	*Tilia americana*	4	9	29	2	N/A
146	Public	23	white oak	*Quercus alba*	1	10	35	3	Tree architecture
147	Public	26	white oak	*Quercus alba*	1	12	39	2	N/A
148	Public	24	white oak	*Quercus alba*	1	11	36	4	Trunk condition
149	Public	17	white oak	*Quercus alba*	1	8	26	2	N/A
150	Public	28	white oak	*Quercus alba*	1	13	42	3	Tree architecture
151	Public	24	white oak	*Quercus alba*	1	11	36	2	N/A
152	Public	28	white oak	*Quercus alba*	1	13	42	3	Tree architecture
153	Public	31	white oak	*Quercus alba*	1	14	47	4	Decay or Cavity
154	Public	25	white oak	*Quercus alba*	1	11	38	4	Decay or Cavity
155	Public	21	white oak	*Quercus alba*	1	9	32	2	N/A
156	Public	26	white oak	*Quercus alba*	1	12	39	3	Tree architecture
157	Public	26	white oak	*Quercus alba*	1	12	39	3	Dead and/or dying branches
158	Public	26	white oak	*Quercus alba*	1	12	39	2	N/A
159	Public	25	white oak	*Quercus alba*	1	11	38	2	N/A
160	Public	18	American elm	*Ulmus americana*	1	8	27	2	N/A
161	Public	25	white oak	*Quercus alba*	1	11	38	3	Dead and/or dying branches
162	Public	20	American sycamore	*Platanus occidentalis*	1	16	53	4	Dead and/or dying branches
163	Public	24	white oak	*Quercus alba*	1	11	36	2	N/A
164	Public	18	white oak	*Quercus alba*	1	8	27	2	N/A
165	Public	24	white oak	*Quercus alba*	1	11	36	2	N/A
166	Public	32	white oak	*Quercus alba*	1	14	48	2	N/A
167	Public	24	unknown tree	unknown tree	1	12	39	4	Decay or Cavity
168	Public	31	white oak	*Quercus alba*	1	14	47	2	N/A
169	Public	21	white oak	*Quercus alba*	1	9	32	2	N/A
170	Public	18	white oak	*Quercus alba*	1	8	27	2	N/A
171	Public	26	white oak	*Quercus alba*	1	12	39	2	N/A
172	Public	23	white oak	*Quercus alba*	1	10	35	2	Dead and/or dying branches
173	Public	23	northern red oak	*Quercus rubra*	1	10	35	2	N/A
174	Public	23	white oak	*Quercus alba*	1	10	35	3	Dead and/or dying branches
175	Public	22	white oak	*Quercus alba*	1	10	33	2	N/A

Priority Preservation is tree placement into categories based on the following criteria:

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Tree Data 5 of 17

Tree Number	Ownership	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	SCRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	Defects
176	Public	25	northern red oak	*Quercus rubra*	1	11	38	2	N/A
177	Public	23	white oak	*Quercus alba*	1	10	35	2	N/A
178	Public	33	white oak	*Quercus alba*	1	15	50	3	Dead and/or dying branches
179	Public	32	white oak	*Quercus alba*	1	14	48	2	N/A
180	Public	21	American basswood	*Tilia americana*	1	9	32	2	N/A
181	Public	31	American yellowwood	*Cladrastis kentukea*	1	16	53	4	Branch attachment
182	Public	33	American yellowwood	*Cladrastis kentukea*	1	15	51	4	Trunk condition
183	Public	18	American elm	*Ulmus americana*	1	8	27	3	Branch attachment
184	Public	21	spruce sp.	*Picea* sp.	1	9	32	2	N/A
185	Public	20	spruce sp.	*Picea* sp.	1	9	30	2	N/A
186	Public	14	eastern redcedar	*Juniperus virginiana*	1	6	21	4	Cracks
187	Public	17	eastern redcedar	*Juniperus virginiana*	1	8	26	2	N/A
188	Public	25	spruce sp.	*Picea* sp.	1	11	38	2	N/A
189	Public	12	eastern redcedar	*Juniperus virginiana*	1	5	18	4	Dead and/or dying branches
190	Public	20	Norway spruce	*Picea abies*	1	9	30	2	N/A
191	Public	36	northern red oak	*Quercus rubra*	1	16	54	2	N/A
192	Public	28	white oak	*Quercus alba*	1	13	42	2	N/A
193	Public	26	Norway spruce	*Picea abies*	1	12	39	2	N/A
194	Public	22	white oak	*Quercus alba*	1	10	33	3	Tree architecture
195	Public	22	Norway spruce	*Picea abies*	1	10	33	2	N/A
196	Public	27	white oak	*Quercus alba*	1	12	41	3	Tree architecture
197	Public	21	Norway spruce	*Picea abies*	1	9	32	2	N/A
198	Public	23	Norway spruce	*Picea abies*	1	10	35	2	N/A
199	Public	18	Norway spruce	*Picea abies*	1	8	27	2	N/A
200	Public	38	black oak	*Quercus velutina*	1	17	57	4	Decay or Cavity
201	Public	29	white oak	*Quercus alba*	1	13	44	3	Tree architecture
202	Public	32	red mulberry	*Morus rubra*	1	14	48	3	Dead and/or dying branches
203	Public	21	pignut hickory	*Carya glabra*	1	9	32	2	N/A
204	Public	32	silver maple	*Acer saccharinum*	1	14	48	3	Dead and/or dying branches
205	Public	26	white oak	*Quercus alba*	1	12	39	3	Tree architecture
206	Public	27	black walnut	*Juglans nigra*	1	14	48	2	N/A
207	Public	30	white oak	*Quercus alba*	1	14	45	2	N/A
208	Public	23	Norway spruce	*Picea abies*	1	10	35	3	Branch attachment
209	Public	26	white oak	*Quercus alba*	1	12	39	3	Dead and/or dying branches
210	Public	26	white oak	*Quercus alba*	1	12	39	3	Tree architecture

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Tree Number	Ownership	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	SCRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	Defects
211	Public	18	white oak	*Quercus alba*	1	8	27	2	N/A
212	Public	23	white oak	*Quercus alba*	1	10	35	3	Dead and/or dying branches
213	Public	29	white oak	*Quercus alba*	1	13	44	2	N/A
214	Public	24	black oak	*Quercus velutina*	1	11	36	3	Tree architecture
215	Public	24	white oak	*Quercus alba*	1	11	36	3	Tree architecture
216	Public	33	white oak	*Quercus alba*	1	15	50	3	Dead and/or dying branches
217	Public	29	white oak	*Quercus alba*	1	13	44	3	Tree architecture
218	Public	14	eastern hemlock	*Tsuga canadensis*	1	6	21	2	N/A
219	Public	26	white oak	*Quercus alba*	1	12	39	3	Dead and/or dying branches
220	Public	32	white oak	*Quercus alba*	1	14	48	3	Tree architecture
221	Public	24	white oak	*Quercus alba*	1	11	36	3	Tree architecture
222	Public	32	white oak	*Quercus alba*	1	14	48	3	Dead and/or dying branches
223	Public	27	white oak	*Quercus alba*	1	12	41	3	Tree architecture
224	Public	36	white oak	*Quercus alba*	1	16	54	3	Tree architecture
225	Public	27	white oak	*Quercus alba*	1	12	41	2	N/A
226	Public	27	white oak	*Quercus alba*	1	12	41	3	Dead and/or dying branches
227	Public	21	white oak	*Quercus alba*	1	9	32	2	N/A
228	Public	34	London planetree	*Platanus x acerifolia*	1	15	51	2	N/A
229	Public	29	white oak	*Quercus alba*	1	13	44	2	N/A
230	Public	33	eastern arborvitae	*Thuja occidentalis*	1	15	50	3	Branch attachment
231	Public	27	white oak	*Quercus alba*	1	12	41	3	Tree architecture
232	Public	30	London planetree	*Platanus x acerifolia*	1	14	45	2	N/A
233	Public	39	white oak	*Quercus alba*	1	18	59	3	Tree architecture
234	Public	26	white oak	*Quercus alba*	1	12	39	2	N/A
235	Public	22	white oak	*Quercus alba*	1	10	33	2	N/A
236	Public	26	white oak	*Quercus alba*	1	12	39	3	Tree architecture
237	Public	31	white oak	*Quercus alba*	1	14	47	2	N/A
238	Public	18	white oak	*Quercus alba*	1	8	27	2	N/A
239	Public	29	white oak	*Quercus alba*	1	13	44	3	Dead and/or dying branches
240	Public	28	northern red oak	*Quercus rubra*	1	13	42	4	Tree architecture
241	Public	24	white oak	*Quercus alba*	1	11	36	3	Dead and/or dying branches
242	Public	26	white oak	*Quercus alba*	1	12	39	3	Dead and/or dying branches
243	Public	32	white oak	*Quercus alba*	1	14	48	3	Tree architecture
244	Public	18	white oak	*Quercus alba*	1	8	27	2	N/A
245	Public	20	white oak	*Quercus alba*	1	9	30	2	N/A

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246	Public	30	white oak	*Quercus alba*	1	14	45	3	Tree architecture
247	Public	25	white oak	*Quercus alba*	1	11	38	2	N/A
248	Public	20	white oak	*Quercus alba*	1	9	30	4	Tree architecture
249	Public	21	white oak	*Quercus alba*	1	9	32	3	Tree architecture
250	Public	24	pignut hickory	*Carya glabra*	1	11	36	2	N/A
251	Public	36	white oak	*Quercus alba*	1	16	54	2	N/A
252	Public	31	white oak	*Quercus alba*	1	14	47	3	Tree architecture
253	Public	25	white oak	*Quercus alba*	1	11	38	3	Tree architecture
254	Public	29	white oak	*Quercus alba*	1	13	44	3	Dead and/or dying branches
255	Public	30	white oak	*Quercus alba*	1	14	45	2	N/A
256	Public	25	white oak	*Quercus alba*	1	11	38	4	Decay or Cavity
257	Public	28	London planetree	*Platanus x acerifolia*	1	13	42	2	N/A
258	Public	31	white oak	*Quercus alba*	1	14	47	2	Dead and/or dying branches
259	Public	31	white oak	*Quercus alba*	1	14	47	2	N/A
260	Public	37	northern red oak	*Quercus rubra*	1	17	56	4	Tree architecture
261	Public	23	northern red oak	*Quercus rubra*	1	10	35	4	Tree architecture
262	Public	30	northern red oak	*Quercus rubra*	1	14	45	3	Tree architecture
263	Public	19	Norway spruce	*Picea abies*	1	9	29	2	N/A
264	Public	37	white oak	*Quercus alba*	1	17	56	2	N/A
265	Public	35	northern red oak	*Quercus rubra*	1	16	53	3	Dead and/or dying branches
266	Public	29	white oak	*Quercus alba*	1	13	44	3	Tree architecture
267	Public	18	white oak	*Quercus alba*	1	8	27	2	N/A
268	Public	26	white oak	*Quercus alba*	1	12	39	2	Dead and/or dying branches
269	Public	27	white oak	*Quercus alba*	1	12	41	3	Dead and/or dying branches
270	Public	32	American sycamore	*Platanus occidentalis*	1	14	48	2	N/A
271	Public	36	American sycamore	*Platanus occidentalis*	1	16	54	2	N/A
272	Public	26	white oak	*Quercus alba*	1	12	39	2	N/A
273	Public	21	Norway spruce	*Picea abies*	1	9	32	2	N/A
274	Public	21	white oak	*Quercus alba*	1	9	32	3	Tree architecture
275	Public	24	white oak	*Quercus alba*	1	11	36	3	Tree architecture
276	Public	21	white oak	*Quercus alba*	1	9	32	2	N/A
277	Public	29	white oak	*Quercus alba*	1	13	44	2	N/A
278	Public	29	white oak	*Quercus alba*	1	13	44	2	N/A
279	Public	18	black cherry	*Prunus serotina*	1	8	27	4	Tree architecture
280	Public	25	white oak	*Quercus alba*	1	11	38	3	Tree architecture

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281	Public	36	white oak	*Quercus alba*	1	16	54	3	Dead and/or dying branches
282	Public	31	American beech	*Fagus grandifolia*	1	14	47	4	Root problem
283	Public	18	white oak	*Quercus alba*	1	8	27	3	Tree architecture
284	Public	26	white oak	*Quercus alba*	1	12	39	3	Dead and/or dying branches
285	Public	26	white oak	*Quercus alba*	1	12	39	3	Trunk condition
286	Public	32	white oak	*Quercus alba*	1	14	48	3	Tree architecture
287	Public	18	northern red oak	*Quercus rubra*	1	8	27	2	Dead and/or dying branches
288	Public	38	northern red oak	*Quercus rubra*	1	17	57	4	Dead and/or dying branches
289	Public	19	northern red oak	*Quercus rubra*	1	9	29	4	Root problem
290	Public	21	eastern hemlock	*Tsuga canadensis*	1	9	32	4	Root problem
291	Public	23	white oak	*Quercus alba*	1	10	35	3	Dead and/or dying branches
292	Public	25	white oak	*Quercus alba*	1	11	38	2	N/A
293	Public	21	red maple	*Acer rubrum*	1	9	32	2	Dead and/or dying branches
294	Public	21	Norway spruce	*Picea abies*	1	9	32	2	N/A
295	Public	18	eastern arborvitae	*Thuja occidentalis*	1	8	27	2	N/A
296	Public	33	white oak	*Quercus alba*	1	15	50	2	N/A
297	Public	18	Norway spruce	*Picea abies*	1	8	27	3	Dead and/or dying branches
298	Public	27	northern red oak	*Quercus rubra*	1	12	41	3	Dead and/or dying branches
299	Public	23	unknown tree	unknown tree	1	10	33	2	N/A
300	Public	27	Norway spruce	*Picea abies*	1	12	41	3	Tree architecture
301	Public	28	American sycamore	*Platanus occidentalis*	1	13	42	2	N/A
302	Public	21	American sycamore	*Platanus occidentalis*	1	10	33	4	Decay or Cavity
303	Public	28	northern red oak	*Quercus rubra*	1	13	42	3	Dead and/or dying branches
304	Public	22	American sycamore	*Platanus occidentalis*	1	10	33	3	Tree architecture
305	Public	28	northern red oak	*Quercus rubra*	1	13	42	4	Tree architecture
306	Public	21	American sycamore	*Platanus occidentalis*	1	9	32	2	N/A
307	Public	34	northern red oak	*Quercus rubra*	1	15	51	4	Decay or Cavity
308	Public	36	American sycamore	*Platanus occidentalis*	1	16	54	2	N/A
309	Public	24	American sycamore	*Platanus occidentalis*	1	11	36	2	N/A
310	Public	31	white oak	*Quercus alba*	1	14	47	2	N/A
311	Public	36	American sycamore	*Platanus occidentalis*	1	16	54	3	Tree architecture
312	Public	26	American sycamore	*Platanus occidentalis*	1	12	39	2	N/A
313	Public	17	northern red oak	*Quercus rubra*	1	8	26	3	Trunk condition
314	Public	31	northern red oak	*Quercus rubra*	1	14	47	3	Dead and/or dying branches
315	Public	22	northern red oak	*Quercus rubra*	1	10	33	2	N/A

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316	Public	26	northern red oak	*Quercus rubra*	1	12	39	4	Tree architecture
317	Public	30	northern red oak	*Quercus rubra*	1	14	45	4	Dead and/or dying branches
318	Public	28	chinkapin oak	*Quercus muehlenbergii*	1	13	42	3	Dead and/or dying branches
319	Public	28	northern red oak	*Quercus rubra*	1	13	42	2	Dead and/or dying branches
320	Public	25	common baldcypress	*Taxodium distichum*	1	11	38	2	N/A
321	Public	31	northern red oak	*Quercus rubra*	1	14	47	3	Dead and/or dying branches
322	Public	22	northern red oak	*Quercus rubra*	1	10	33	4	Tree architecture
323	Public	25	white oak	*Quercus alba*	1	11	38	3	Dead and/or dying branches
324	Public	21	white oak	*Quercus alba*	1	9	32	2	N/A
325	Public	8	eastern redcedar	*Juniperus virginiana*	1	4	12	2	N/A
326	Public	19	northern red oak	*Quercus rubra*	1	9	29	3	Dead and/or dying branches
327	Public	28	northern red oak	*Quercus rubra*	1	13	42	4	Dead and/or dying branches
328	Public	32	northern red oak	*Quercus rubra*	1	14	48	2	N/A
329	Public	28	sugar maple	*Acer saccharum*	1	13	42	3	Dead and/or dying branches
330	Public	27	white oak	*Quercus alba*	1	12	41	3	Tree architecture
331	Public	26	white oak	*Quercus alba*	1	12	39	3	Tree architecture
332	Public	23	white oak	*Quercus alba*	1	10	35	4	Tree architecture
333	Public	19	white oak	*Quercus alba*	1	9	29	3	Tree architecture
334	Public	32	American yellowwood	*Cladrastis kentukea*	1	14	47	4	Cracks
335	Public	31, 30	American elm	*Ulmus americana*	2	19	65	4	Decay or Cavity
336	Public	13	blackgum	*Nyssa sylvatica*	1	6	20	2	N/A
337	Public	22	American elm	*Ulmus americana*	1	10	33	4	Decay or Cavity
338	Public	38	northern pin oak	*Quercus ellipsoidalis*	1	17	57	4	Dead and/or dying branches
339	Public	31	white oak	*Quercus alba*	1	14	47	3	Dead and/or dying branches
340	Public	24	white oak	*Quercus alba*	1	11	36	3	Dead and/or dying branches
341	Public	35	white oak	*Quercus alba*	1	16	53	3	Dead and/or dying branches
342	Public	27	Scots pine	*Pinus sylvestris*	1	12	41	3	Dead and/or dying branches
343	Public	26	Scots pine	*Pinus sylvestris*	1	12	39	4	Dead and/or dying branches
344	Public	26	horsechestnut	*Aesculus hippocastanum*	1	12	39	3	Tree architecture
345	Public	35	white oak	*Quercus alba*	1	16	53	2	N/A
346	Public	31	white oak	*Quercus alba*	1	14	47	3	Dead and/or dying branches
347	Public	30, 33	black oak	*Quercus velutina*	2	20	67	4	Tree architecture
348	Public	17	northern red oak	*Quercus rubra*	1	8	26	3	Dead and/or dying branches
349	Public	33	white oak	*Quercus alba*	1	15	50	3	Dead and/or dying branches
350	Public	17	eastern redcedar	*Juniperus virginiana*	1	8	26	2	N/A

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Tree Number	Ownership	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	SCRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	Defects
351	Public	24	silver maple	*Acer saccharinum*	1	11	36	4	Decay or Cavity
352	Public	30	American sycamore	*Platanus occidentalis*	1	14	45	2	N/A
353	Public	29	black oak	*Quercus velutina*	1	13	44	4	Decay or Cavity
354	Public	31	white oak	*Quercus alba*	1	14	47	3	Dead and/or dying branches
355	Public	31	American sycamore	*Platanus occidentalis*	1	14	47	2	Dead and/or dying branches
356	Public	35	white oak	*Quercus alba*	1	16	53	3	Dead and/or dying branches
357	Public	27	northern red oak	*Quercus rubra*	1	12	41	3	Dead and/or dying branches
358	Public	32	northern red oak	*Quercus rubra*	1	14	48	3	Dead and/or dying branches
359	Public	36	northern red oak	*Quercus rubra*	1	16	54	4	Decay or Cavity
360	Public	25	northern red oak	*Quercus rubra*	1	11	38	4	Tree architecture
361	Public	36	bur oak	*Quercus macrocarpa*	1	16	54	4	Decay or Cavity
362	Public	22	northern red oak	*Quercus rubra*	1	10	33	3	Dead and/or dying branches
363	Public	33	white oak	*Quercus alba*	1	15	50	3	Dead and/or dying branches
364	Public	19	northern red oak	*Quercus rubra*	1	9	29	4	Trunk condition
365	Public	22	northern red oak	*Quercus rubra*	1	10	33	4	Dead and/or dying branches
366	Public	28	common baldcypress	*Taxodium distichum*	1	13	42	2	Dead and/or dying branches
367	Public	28	northern red oak	*Quercus rubra*	1	13	42	3	Dead and/or dying branches
368	Public	31	white oak	*Quercus alba*	1	14	47	3	Dead and/or dying branches
369	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
370	Public	25	white oak	*Quercus alba*	1	11	38	3	Dead and/or dying branches
371	Public	23	pignut hickory	*Carya glabra*	1	10	35	3	Dead and/or dying branches
372	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
373	Public	21	white oak	*Quercus alba*	1	9	32	3	Tree architecture
374	Public	8	eastern redcedar	*Juniperus virginiana*	1	4	12	2	N/A
375	Public	37	white oak	*Quercus alba*	1	17	56	3	Dead and/or dying branches
376	Public	26	unknown tree	unknown tree	1	12	41	4	Trunk condition
377	Public	23	northern red oak	*Quercus rubra*	1	10	35	2	N/A
378	Public	18	black cherry	*Prunus serotina*	1	8	27	3	Tree architecture
379	Public	27	white oak	*Quercus alba*	1	12	41	3	Dead and/or dying branches
380	Public	21	white oak	*Quercus alba*	1	9	32	3	Dead and/or dying branches
381	Public	19	American sycamore	*Platanus occidentalis*	1	9	29	3	Tree architecture
382	Public	13	eastern arborvitae	*Thuja occidentalis*	1	6	20	2	N/A
383	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
384	Public	12	eastern arborvitae	*Thuja occidentalis*	1	5	18	2	N/A
385	Public	12	eastern arborvitae	*Thuja occidentalis*	1	5	18	2	N/A

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Tree Number	Ownership	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	SCRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	Defects
386	Public	25	northern red oak	*Quercus rubra*	1	11	38	4	Decay or Cavity
387	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
388	Public	23	white oak	*Quercus alba*	1	10	35	3	Dead and/or dying branches
389	Public	31	northern red oak	*Quercus rubra*	1	14	47	3	Dead and/or dying branches
390	Public	21	black cherry	*Prunus serotina*	1	9	32	2	N/A
391	Public	32	northern red oak	*Quercus rubra*	1	14	48	3	Dead and/or dying branches
392	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
393	Public	32	white oak	*Quercus alba*	1	14	48	4	Decay or Cavity
394	Public	19	pignut hickory	*Carya glabra*	1	9	29	2	N/A
395	Public	27	white oak	*Quercus alba*	1	12	41	3	Dead and/or dying branches
396	Public	18	black cherry	*Prunus serotina*	1	8	27	2	N/A
397	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
398	Public	22	northern red oak	*Quercus rubra*	1	10	33	4	Decay or Cavity
399	Public	26	black cherry	*Prunus serotina*	1	12	39	4	Decay or Cavity
400	Public	6	eastern hophornbeam	*Ostrya virginiana*	1	3	9	2	N/A
401	Public	18	pignut hickory	*Carya glabra*	1	8	27	4	Dead and/or dying branches
402	Public	20	black cherry	*Prunus serotina*	1	9	30	3	Dead and/or dying branches
403	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
404	Public	31	northern red oak	*Quercus rubra*	1	14	47	2	N/A
405	Public	7	eastern hophornbeam	*Ostrya virginiana*	1	3	11	2	N/A
406	Public	22	black cherry	*Prunus serotina*	1	10	33	2	N/A
407	Public	12	pignut hickory	*Carya glabra*	1	5	18	2	N/A
408	Public	32	black cherry	*Prunus serotina*	1	14	48	4	Trunk condition
409	Public	10	eastern hophornbeam	*Ostrya virginiana*	1	5	15	3	Dead and/or dying branches
410	Public	18, 18, 10	black cherry	*Prunus serotina*	3	12	41	3	Tree architecture
411	Public	26	northern red oak	*Quercus rubra*	1	12	39	3	Dead and/or dying branches
412	Public	36	black cherry	*Prunus serotina*	1	16	54	3	Dead and/or dying branches
413	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
414	Public	21	Norway spruce	*Picea abies*	1	9	32	3	Tree architecture
415	Public	21	Norway spruce	*Picea abies*	1	9	32	4	Decay or Cavity
416	Public	4, 4	eastern hophornbeam	*Ostrya virginiana*	2	3	8	3	Tree architecture
417	Public	24	white oak	*Quercus alba*	1	11	36	3	Dead and/or dying branches
418	Public	4, 4	eastern hophornbeam	*Ostrya virginiana*	2	3	8	3	Tree architecture
419	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
420	Public	26	northern red oak	*Quercus rubra*	1	12	39	4	Decay or Cavity

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421	Public	25	black cherry	*Prunus serotina*	1	11	38	3	Tree architecture
422	Public	29	northern red oak	*Quercus rubra*	1	13	44	4	Trunk condition
423	Public	33, 12	black cherry	*Prunus serotina*	2	16	53	4	Decay or Cavity
424	Public	7	eastern hophornbeam	*Ostrya virginiana*	1	3	11	2	N/A
425	Public	29	white oak	*Quercus alba*	1	13	44	3	Dead and/or dying branches
426	Public	6	eastern hophornbeam	*Ostrya virginiana*	1	3	9	4	Trunk condition
427	Public	30	black cherry	*Prunus serotina*	1	14	45	3	Dead and/or dying branches
428	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
429	Public	28	white oak	*Quercus alba*	1	13	42	3	Dead and/or dying branches
430	Public	18	black cherry	*Prunus serotina*	1	8	27	3	Dead and/or dying branches
431	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	4	Dead and/or dying branches
432	Public	25	white oak	*Quercus alba*	1	11	38	4	Trunk condition
433	Public	18, 15	black cherry	*Prunus serotina*	2	11	35	4	Trunk condition
434	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	3	Dead and/or dying branches
435	Public	22	white oak	*Quercus alba*	1	10	33	4	Trunk condition
436	Public	13	eastern hophornbeam	*Ostrya virginiana*	1	6	20	3	Dead and/or dying branches
437	Public	4, 1, 1	eastern hophornbeam	*Ostrya virginiana*	3	2	6	2	N/A
438	Public	35	white oak	*Quercus alba*	1	16	53	3	Dead and/or dying branches
439	Public	19	northern red oak	*Quercus rubra*	1	9	29	4	Trunk condition
440	Public	26	white oak	*Quercus alba*	1	12	39	4	Tree architecture
441	Public	19	eastern white pine	*Pinus strobus*	1	9	29	2	N/A
442	Public	22	black cherry	*Prunus serotina*	1	10	33	2	N/A
443	Public	30	northern red oak	*Quercus rubra*	1	14	45	3	Decay or Cavity
444	Public	18	Norway spruce	*Picea abies*	1	8	27	3	Tree architecture
445	Public	18	American elm	*Ulmus americana*	1	8	27	3	Dead and/or dying branches
446	Public	18	Norway spruce	*Picea abies*	1	8	27	3	Tree architecture
447	Public	13	shagbark hickory	*Carya ovata*	1	6	20	2	Dead and/or dying branches
448	Public	30	American elm	*Ulmus americana*	1	14	45	2	N/A
449	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
450	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	4	Tree architecture
451	Public	30	white oak	*Quercus alba*	1	14	45	3	Dead and/or dying branches
452	Public	27	white oak	*Quercus alba*	1	12	41	3	Dead and/or dying branches
453	Public	32, 28, 18, 9	American elm	*Ulmus americana*	4	21	71	4	Trunk condition
454	Public	26	northern red oak	*Quercus rubra*	1	12	39	4	Dead and/or dying branches
455	Public	18	sugar maple	*Acer saccharum*	1	8	27	2	N/A

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456	Public	24	black cherry	*Prunus serotina*	1	11	36	4	Decay or Cavity
457	Public	25	Norway spruce	*Picea abies*	1	11	38	3	Tree architecture
458	Public	27	Norway spruce	*Picea abies*	1	12	41	3	Tree architecture
459	Public	28, 8, 5	Norway maple	*Acer platanoides*	3	13	44	2	N/A
460	Public	24	American elm	*Ulmus americana*	1	11	36	2	N/A
461	Public	14	pignut hickory	*Carya glabra*	1	6	21	4	Decay or Cavity
462	Public	14	American elm	*Ulmus americana*	1	6	21	4	Decay or Cavity
463	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
464	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
465	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
466	Public	25	eastern cottonwood	*Populus deltoides*	1	11	38	2	N/A
467	Public	16	white oak	*Quercus alba*	1	7	24	3	Tree architecture
468	Public	26	American sycamore	*Platanus occidentalis*	1	12	39	2	N/A
469	Public	7, 5	eastern redbud	*Cercis canadensis*	2	4	13	4	Trunk condition
470	Public	6	eastern redbud	*Cercis canadensis*	1	3	9	2	N/A
471	Public	44	American sycamore	*Platanus occidentalis*	1	20	66	2	N/A
472	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
473	Public	26	northern red oak	*Quercus rubra*	1	12	39	4	Decay or Cavity
474	Public	29	American sycamore	*Platanus occidentalis*	1	13	44	2	N/A
475	Public	30	black willow	*Salix nigra*	1	7	23	4	Decay or Cavity
476	Public	22	American sycamore	*Platanus occidentalis*	1	10	35	4	Tree architecture
477	Public	28	black walnut	*Juglans nigra*	1	10	35	2	N/A
478	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	4	Tree architecture
479	Public	18	white oak	*Quercus alba*	1	8	27	2	N/A
480	Public	19	Colorado spruce	*Picea pungens*	1	9	29	3	Dead and/or dying branches
481	Public	22	northern red oak	*Quercus rubra*	1	10	33	3	Dead and/or dying branches
482	Public	23	northern red oak	*Quercus rubra*	1	10	35	4	Trunk condition
483	Public	28	Norway maple	*Acer platanoides*	1	13	42	2	N/A
484	Public	8, 4	eastern hophornbeam	*Ostrya virginiana*	2	4	13	3	Dead and/or dying branches
485	Public	18	northern red oak	*Quercus rubra*	1	8	27	4	Decay or Cavity
486	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
487	Public	22	white oak	*Quercus alba*	1	10	33	3	Dead and/or dying branches
488	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	3	Trunk condition
489	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
490	Public	26	northern red oak	*Quercus rubra*	1	12	39	3	Tree architecture

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Tree assessment mapped by:
Shawn W. Bruzda
ISA® Certified Arborist (OH-1342A)

Tree Data 14 of 17

Tree Number	Ownership	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	SCRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	Defects
491	Public	20	Norway spruce	*Picea abies*	1	9	30	2	N/A
492	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	4	Dead and/or dying branches
493	Public	20	northern red oak	*Quercus rubra*	1	9	30	4	Tree architecture
494	Public	8	eastern hophornbeam	*Ostrya virginiana*	1	4	12	2	N/A
495	Public	27	white oak	*Quercus alba*	1	12	41	4	Tree architecture
496	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
497	Public	18	Colorado spruce	*Picea pungens*	1	8	27	4	Trunk condition
498	Public	21	white oak	*Quercus alba*	1	9	32	3	Dead and/or dying branches
499	Public	27	red mulberry	*Morus rubra*	1	12	41	4	Trunk condition
500	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	4	Tree architecture
501	Public	20	pignut hickory	*Carya glabra*	1	9	30	4	Root problem
502	Public	22	American elm	*Ulmus americana*	1	10	33	4	Trunk condition
503	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
504	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
505	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	3	Dead and/or dying branches
506	Public	18	American elm	*Ulmus americana*	1	8	27	4	Tree architecture
507	Public	27	northern red oak	*Quercus rubra*	1	12	41	4	Decay or Cavity
508	Public	35	white oak	*Quercus alba*	1	16	53	3	Dead and/or dying branches
509	Public	25	northern red oak	*Quercus rubra*	1	11	38	4	Tree architecture
510	Public	20	northern red oak	*Quercus rubra*	1	9	30	3	Tree architecture
511	Public	20	northern red oak	*Quercus rubra*	1	9	30	3	Tree architecture
512	Public	21	white oak	*Quercus alba*	1	9	32	3	Dead and/or dying branches
513	Public	32	oak sp.	*Quercus* sp.	1	14	48	4	Tree architecture
514	Public	27	white oak	*Quercus alba*	1	12	41	3	Dead and/or dying branches
515	Public	14	eastern hemlock	*Tsuga canadensis*	1	6	21	2	N/A
516	Public	23	black oak	*Quercus velutina*	1	10	35	3	Dead and/or dying branches
517	Public	18	white oak	*Quercus alba*	1	8	27	3	Tree architecture
518	Public	26	northern red oak	*Quercus rubra*	1	12	39	2	N/A
519	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
520	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
521	Public	20	white ash	*Fraxinus americana*	1	9	30	2	N/A
522	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
523	Public	21	white ash	*Fraxinus americana*	1	9	32	4	Trunk condition
524	Public	13	eastern hemlock	*Tsuga canadensis*	1	6	20	2	N/A
525	Public	25	white oak	*Quercus alba*	1	11	38	2	N/A

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Tree assessment mapped by:
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Tree Number	Ownership	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	SCRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	Defects
526	Public	32	white oak	*Quercus alba*	1	14	48	2	N/A
527	Public	23	pignut hickory	*Carya glabra*	1	10	35	3	Dead and/or dying branches
528	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
529	Public	28	sugar maple	*Acer saccharum*	1	13	42	2	N/A
530	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	3	Tree architecture
531	Public	23	northern red oak	*Quercus rubra*	1	10	35	3	Tree architecture
532	Public	22	white oak	*Quercus alba*	1	10	33	2	N/A
533	Public	12	shagbark hickory	*Carya ovata*	1	5	18	3	Tree architecture
534	Public	23	northern red oak	*Quercus rubra*	1	10	35	3	Tree architecture
535	Public	27	oak sp.	*Quercus* sp.	1	12	41	4	Trunk condition
536	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
537	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
538	Public	29	northern red oak	*Quercus rubra*	1	13	44	3	Tree architecture
539	Public	6	eastern hophornbeam	*Ostrya virginiana*	1	3	9	3	Tree architecture
540	Public	28	oak sp.	*Quercus* sp.	1	13	42	4	Trunk condition
541	Public	16	pignut hickory	*Carya glabra*	1	7	24	2	N/A
542	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
543	Public	40	northern red oak	*Quercus rubra*	1	18	60	4	Tree architecture
544	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
545	Public	31	northern red oak	*Quercus rubra*	1	14	47	4	Decay or Cavity
546	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
547	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
548	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
549	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
550	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
551	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
552	Public	9	eastern hophornbeam	*Ostrya virginiana*	1	4	14	2	N/A
553	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
554	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
555	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
556	Public	5	eastern hophornbeam	*Ostrya virginiana*	1	2	8	2	N/A
557	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
558	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
559	Public	18	pignut hickory	*Carya glabra*	1	8	27	3	Dead and/or dying branches
560	Public	25	northern red oak	*Quercus rubra*	1	11	38	4	Decay or Cavity

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Tree Number	Ownership	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	SCRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	Defects
561	Public	16	pignut hickory	*Carya glabra*	1	7	24	3	Dead and/or dying branches
562	Public	4	eastern hophornbeam	*Ostrya virginiana*	1	2	6	2	N/A
563	Public	6	eastern hophornbeam	*Ostrya virginiana*	1	3	9	2	N/A
564	Public	18	pignut hickory	*Carya glabra*	1	8	27	4	Tree architecture
565	Public	6	eastern hophornbeam	*Ostrya virginiana*	1	3	9	2	N/A
566	Public	6	flowering dogwood	*Cornus florida*	1	3	9	3	Trunk condition

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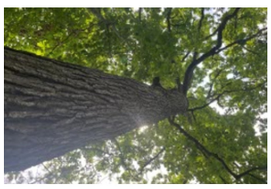
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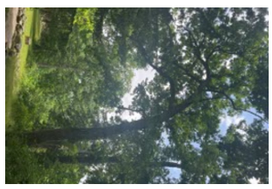
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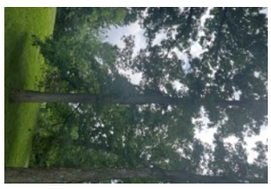
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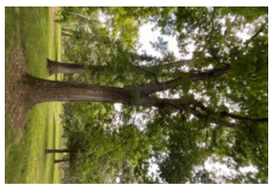
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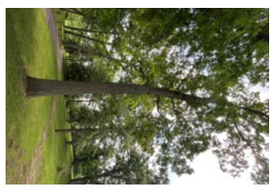
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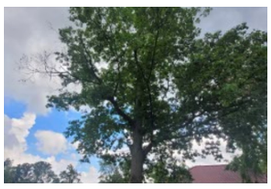
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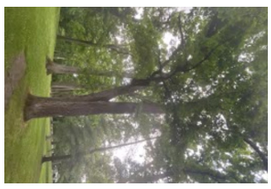
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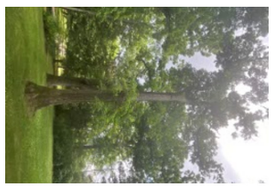
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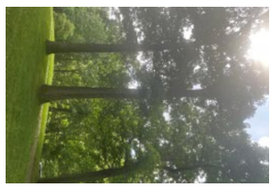
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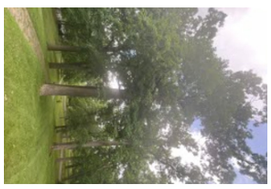
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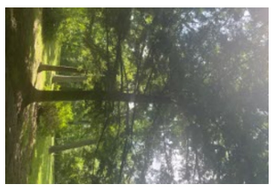
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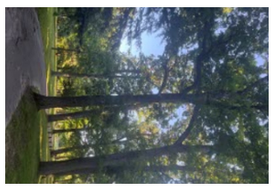
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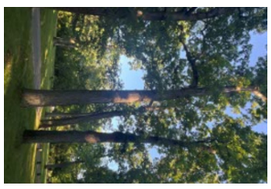
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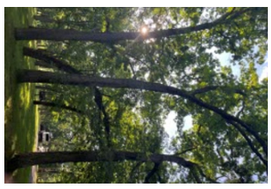
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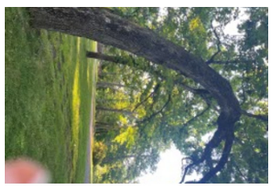
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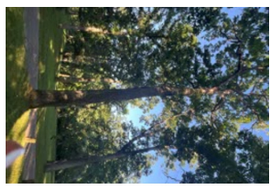
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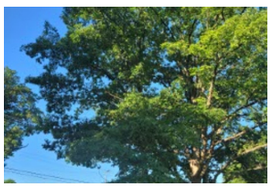
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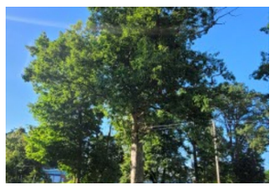
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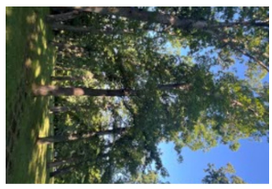
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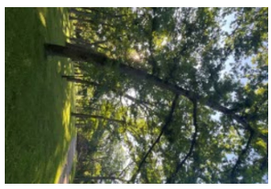
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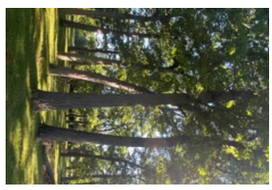
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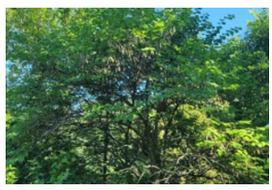
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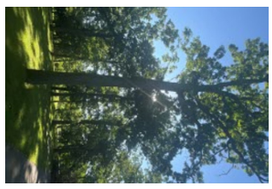
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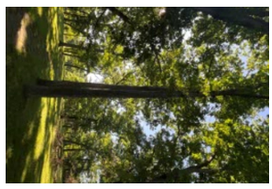
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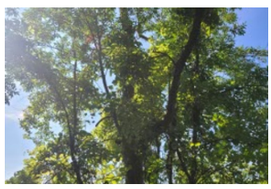
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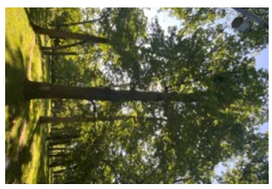
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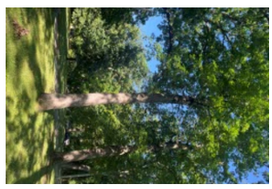
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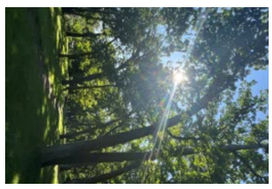
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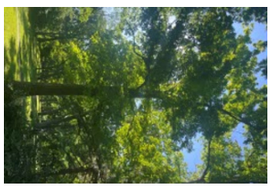
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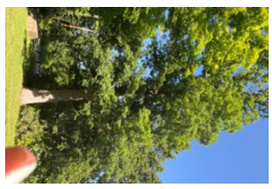
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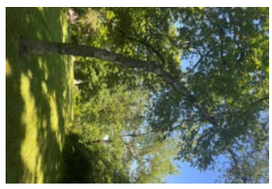
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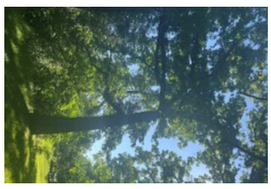
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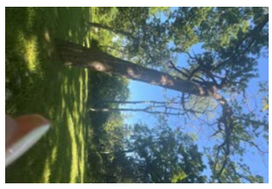
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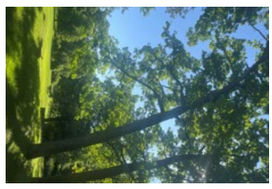
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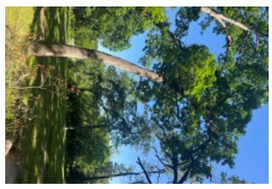
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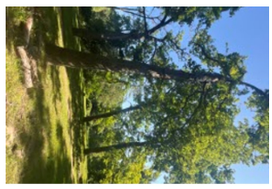
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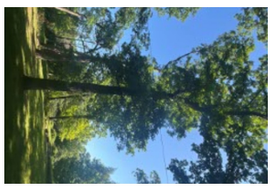
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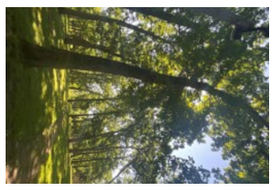
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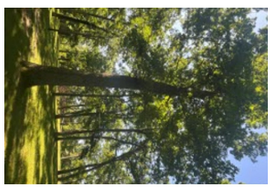
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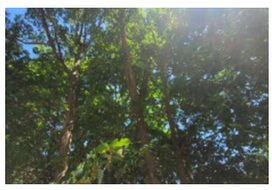
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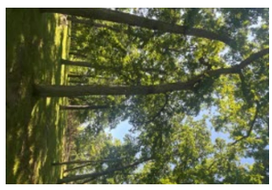
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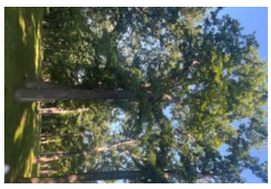
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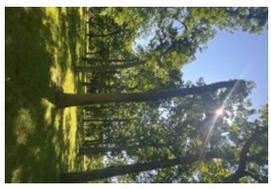
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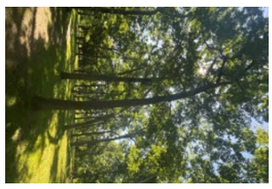
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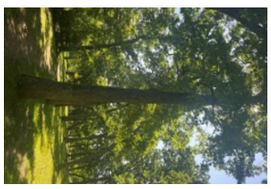
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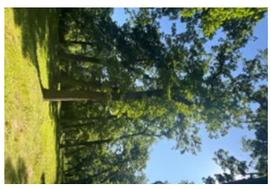
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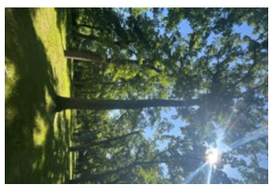
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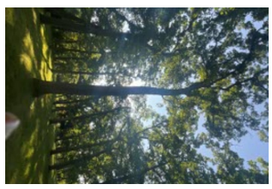
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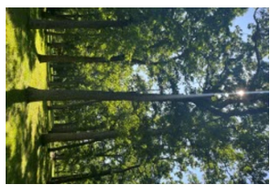
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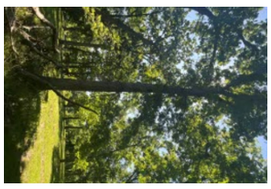
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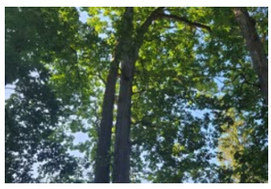
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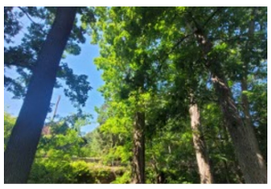
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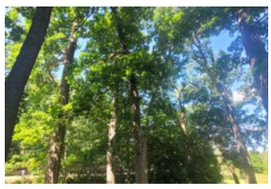
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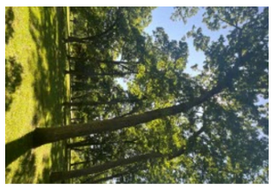
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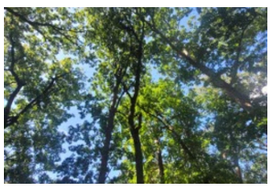
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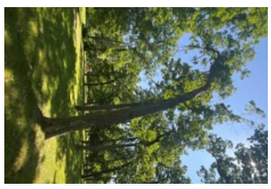
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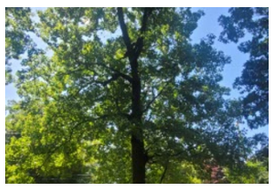
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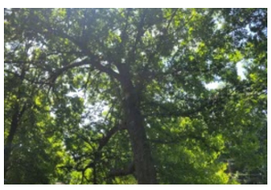
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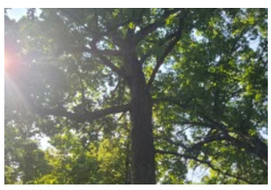
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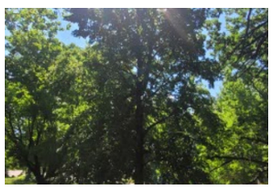
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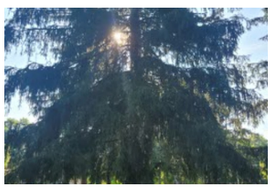
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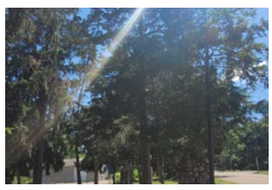
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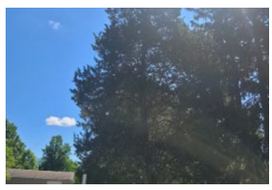
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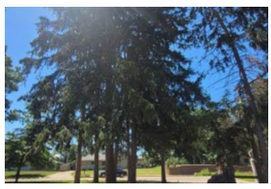
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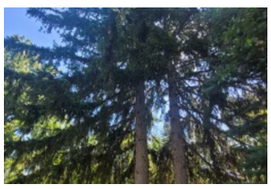
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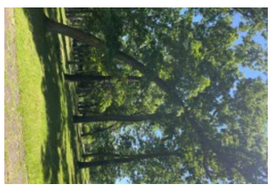
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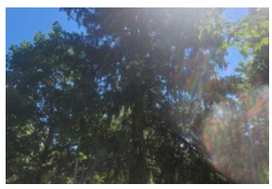
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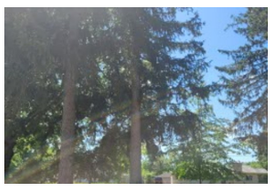
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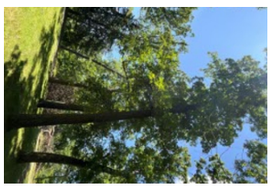
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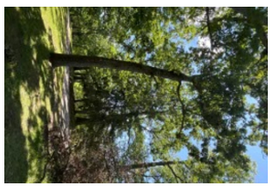
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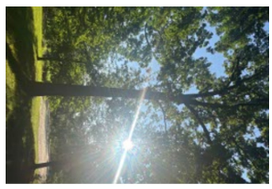
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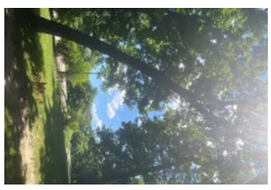
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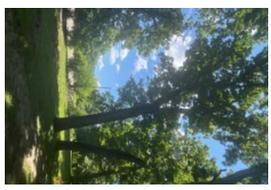
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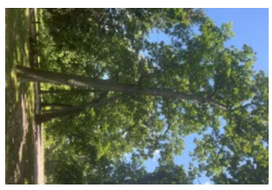
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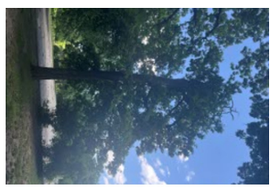
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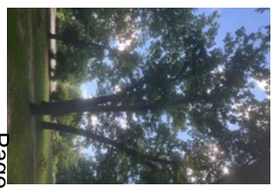
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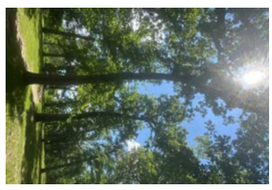
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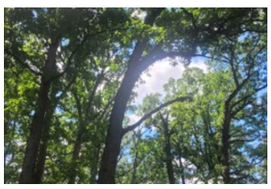
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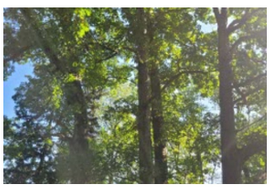
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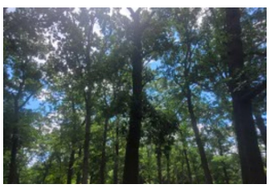
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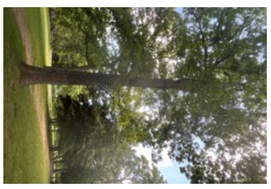
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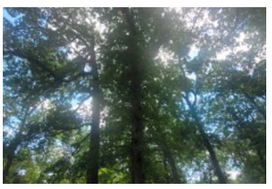
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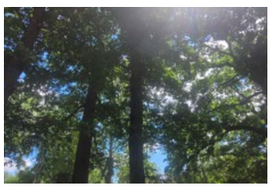
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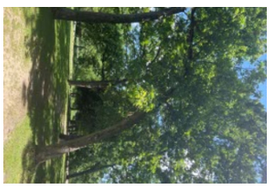
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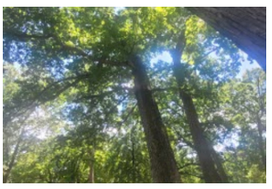
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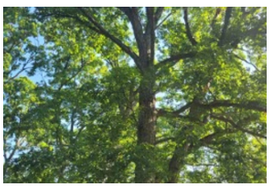
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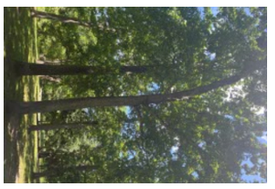
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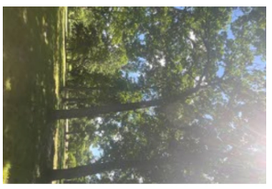
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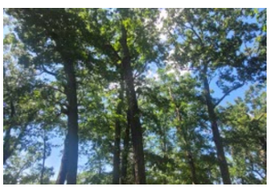
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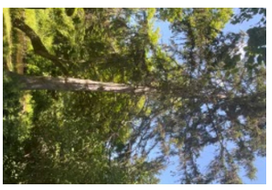
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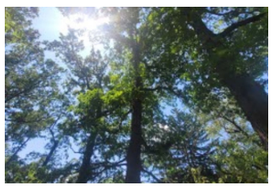
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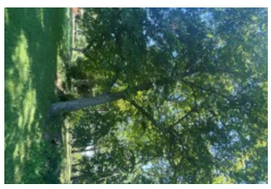
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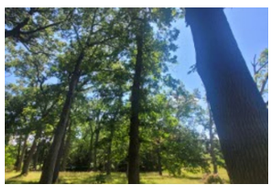
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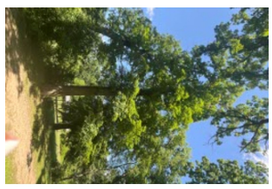
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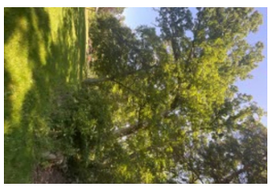
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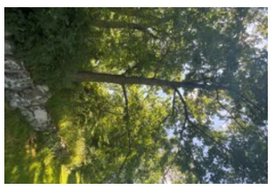
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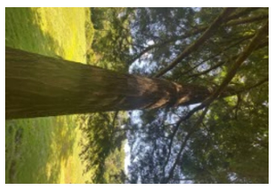
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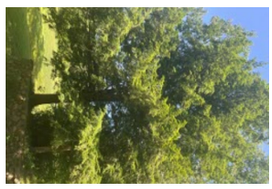
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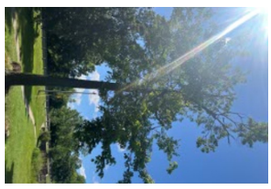
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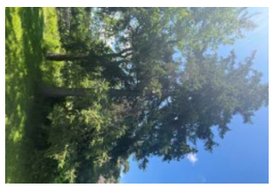
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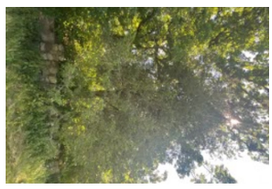
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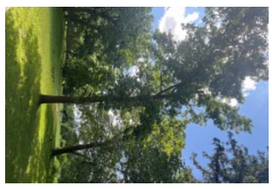
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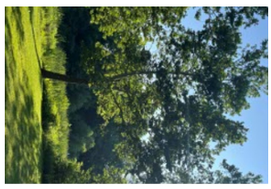
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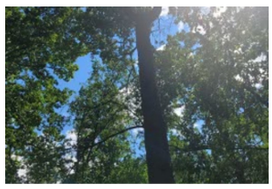
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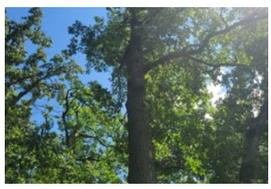
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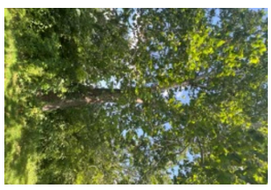
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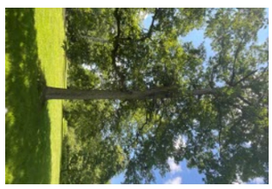
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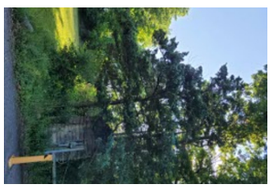
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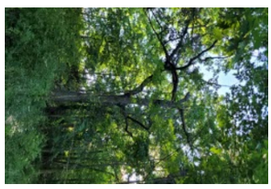
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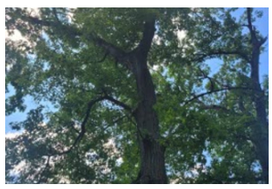
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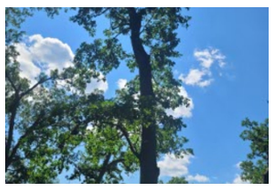
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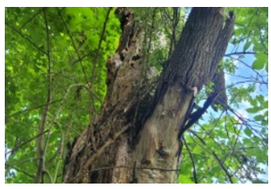
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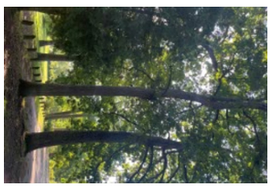
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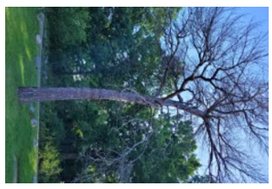
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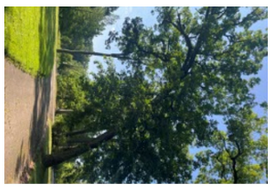
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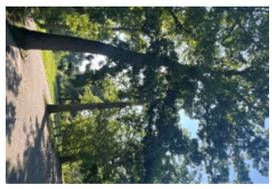
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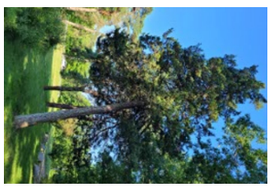
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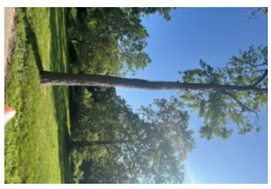
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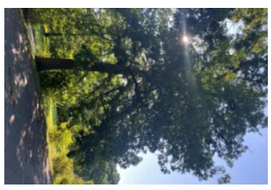
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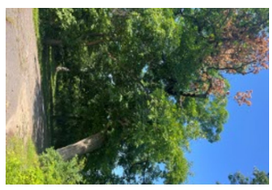
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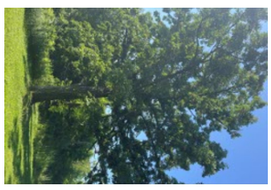
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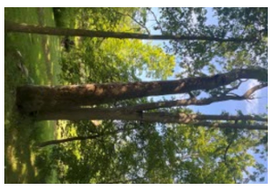
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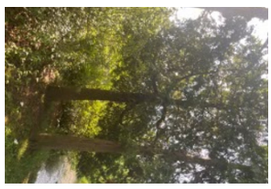
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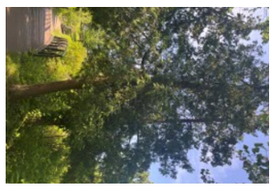
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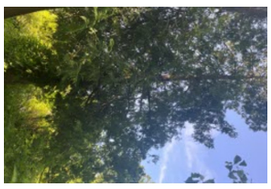
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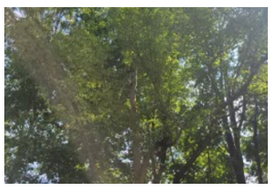
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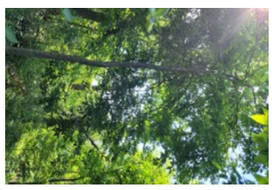
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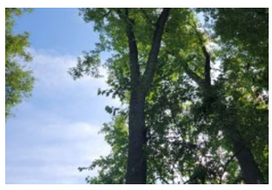
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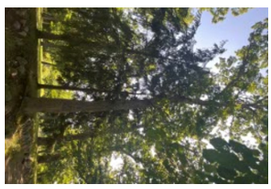
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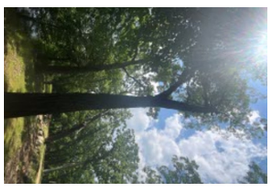
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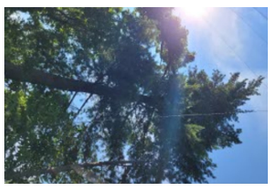
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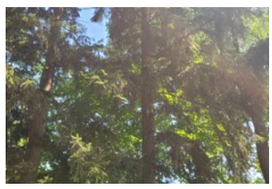
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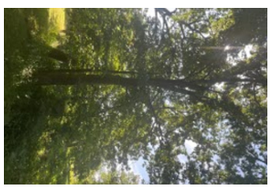
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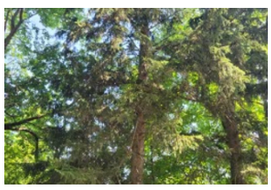
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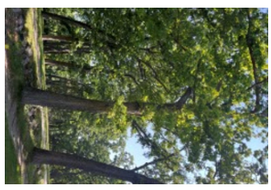
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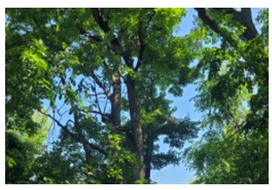
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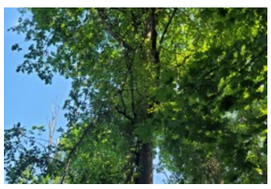
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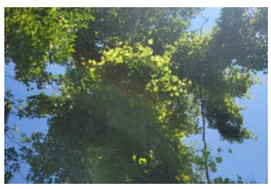
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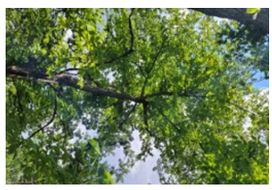
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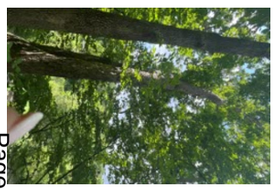
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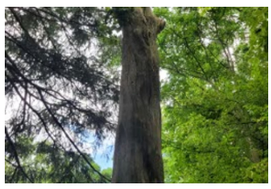
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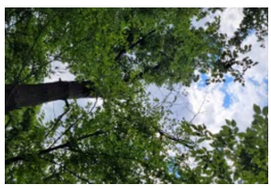
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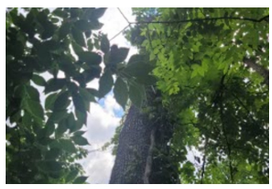
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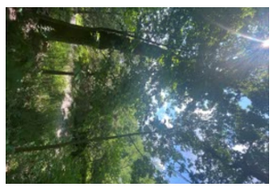
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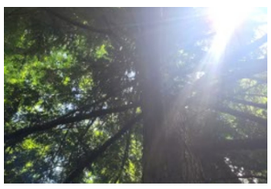
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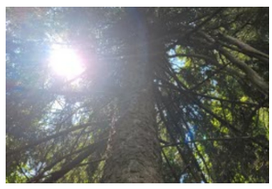
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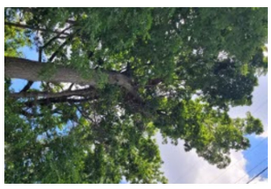
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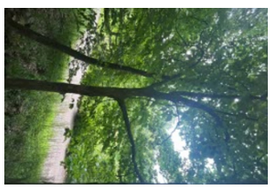
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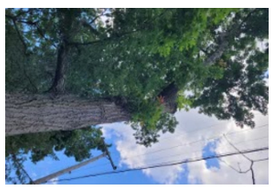
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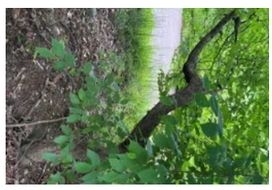
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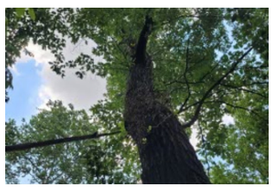
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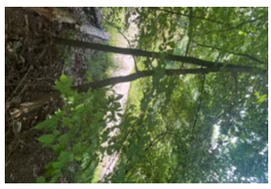
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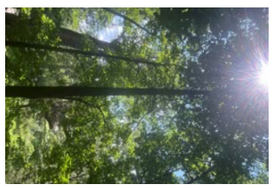
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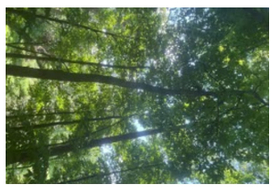
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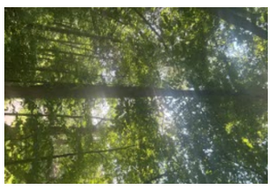
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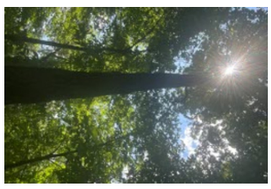
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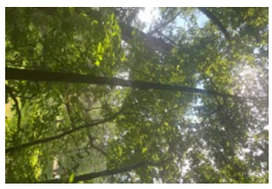
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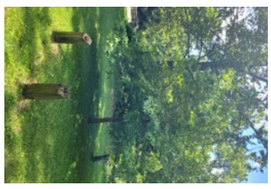
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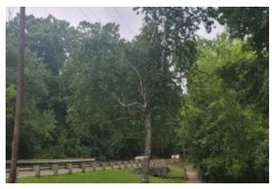
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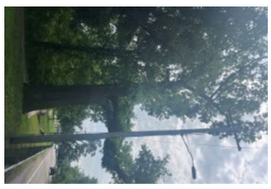
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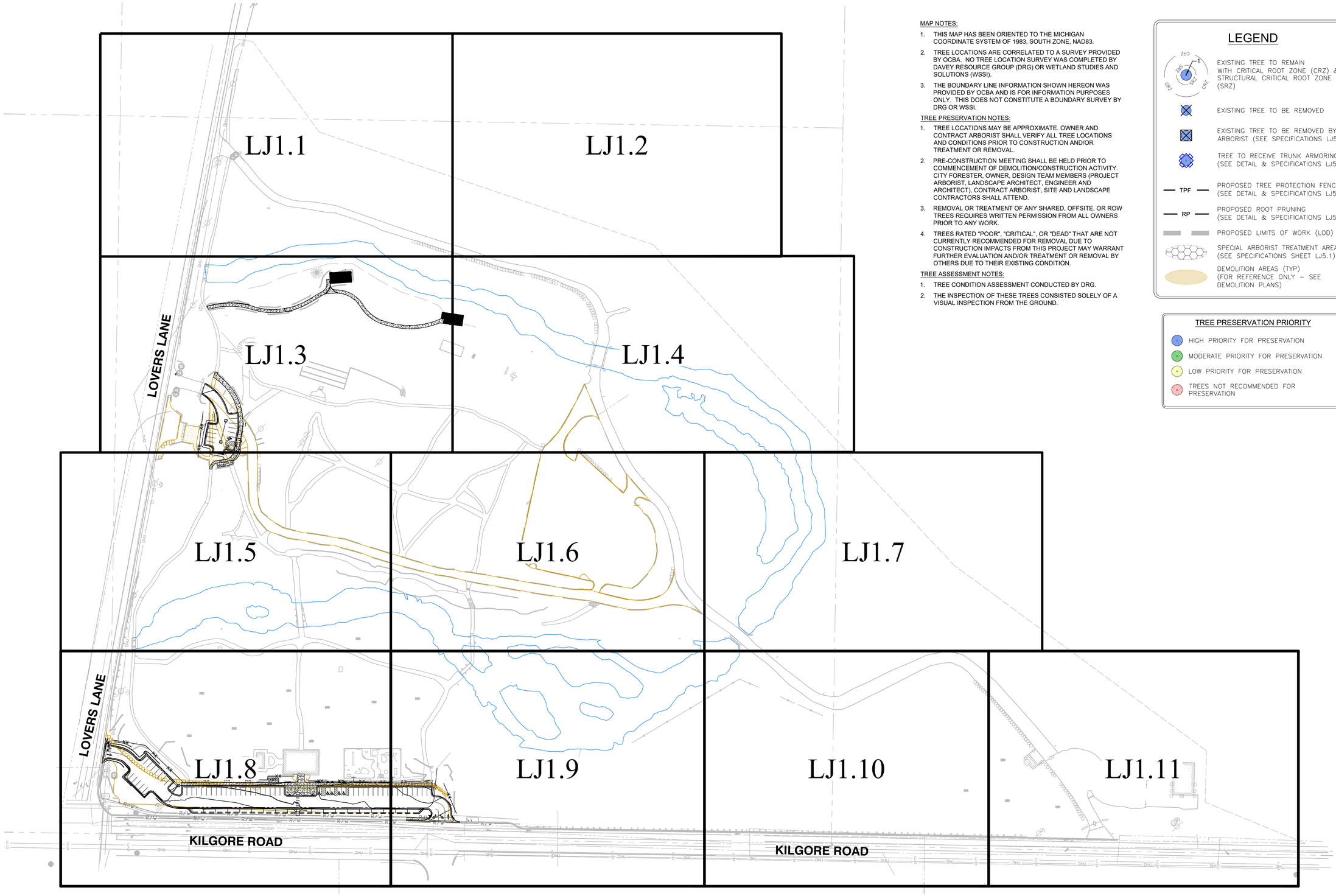

MAP NOTES:

1. THIS MAP HAS BEEN ORIENTED TO THE MICHIGAN COORDINATE SYSTEM OF 1983, SOUTH ZONE, NAD83.
2. TREE LOCATIONS ARE CORRELATED TO A SURVEY PROVIDED BY OCBA. NO TREE LOCATION SURVEY WAS COMPLETED BY DAVEY RESOURCE GROUP (DRG) OR WETLAND STUDIES AND SOLUTIONS (WSSI).
3. THE BOUNDARY LINE INFORMATION SHOWN HEREON WAS PROVIDED BY OCBA AND IS FOR INFORMATION PURPOSES ONLY. THIS DOES NOT CONSTITUTE A BOUNDARY SURVEY BY DRG OR WSSI.

TREE PRESERVATION NOTES:

1. TREE LOCATIONS MAY BE APPROXIMATE. OWNER AND CONTRACT ARBORIST SHALL VERIFY ALL TREE LOCATIONS AND CONDITIONS PRIOR TO CONSTRUCTION AND/OR TREATMENT OR REMOVAL.
2. PRE-CONSTRUCTION MEETING SHALL BE HELD PRIOR TO COMMENCEMENT OF DEMOLITION/CONSTRUCTION ACTIVITY. CITY FORESTER, OWNER, DESIGN TEAM MEMBERS (PROJECT ARBORIST, LANDSCAPE ARCHITECT, ENGINEER AND ARCHITECT), CONTRACT ARBORIST, SITE AND LANDSCAPE CONTRACTORS SHALL ATTEND.
3. REMOVAL OR TREATMENT OF ANY SHARED, OFFSITE, OR ROW TREES REQUIRES WRITTEN PERMISSION FROM ALL OWNERS PRIOR TO ANY WORK.
4. TREES RATED "POOR", "CRITICAL", OR "DEAD" THAT ARE NOT CURRENTLY RECOMMENDED FOR REMOVAL DUE TO CONSTRUCTION IMPACTS FROM THIS PROJECT MAY WARRANT FURTHER EVALUATION AND/OR TREATMENT OR REMOVAL BY OTHERS DUE TO THEIR EXISTING CONDITION.

TREE ASSESSMENT NOTES:

1. TREE CONDITION ASSESSMENT CONDUCTED BY DRG.
2. THE INSPECTION OF THESE TREES CONSISTED SOLELY OF A VISUAL INSPECTION FROM THE GROUND.

LEGEND

- EXISTING TREE TO REMAIN WITH CRITICAL ROOT ZONE (CRZ) & STRUCTURAL CRITICAL ROOT ZONE (SRZ)
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED BY ARBORIST (SEE SPECIFICATIONS LJ5.1)
- TREE TO RECEIVE TRUNK ARMORING (SEE DETAIL & SPECIFICATIONS LJ5.1)
- TPF — PROPOSED TREE PROTECTION FENCE (SEE DETAIL & SPECIFICATIONS LJ5.1)
- RP — PROPOSED ROOT PRUNING (SEE DETAIL & SPECIFICATIONS LJ5.1)
- PROPOSED LIMITS OF WORK (LOD)
- SPECIAL ARBORIST TREATMENT AREAS (SEE SPECIFICATIONS SHEET LJ5.1)
- DEMOLITION AREAS (TYP) (FOR REFERENCE ONLY – SEE DEMOLITION PLANS)

TREE PRESERVATION PRIORITY

- HIGH PRIORITY FOR PRESERVATION
- MODERATE PRIORITY FOR PRESERVATION
- LOW PRIORITY FOR PRESERVATION
- TREES NOT RECOMMENDED FOR PRESERVATION

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

DAVEY Resource Group

TREE PRESERVATION - OVERVIEW

MILHAM PARK PHASE 1 IMPROVEMENTS

MILHAM PARK
Kalamazoo, MI

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INTERNATIONAL SOCIETY OF ARBORICULTURE
CARY PULSE
ISA# PD-1080A
CERTIFIED ARBORIST

REVISIONS				
No.	Date	Description	Rev. By	App. By

SCALE: 1" = 80' C.I.: 1'

DATE: JUNE 9, 2026

Horizontal Datum: MI83-SIF

Vertical Datum:

Boundary and Topo Source:
OCBA
AR ENGINEERING

Design	Draft	Approved
NE	NE	CH

Sheet #
LJ1.0

WSSI Project Number:
37079.01

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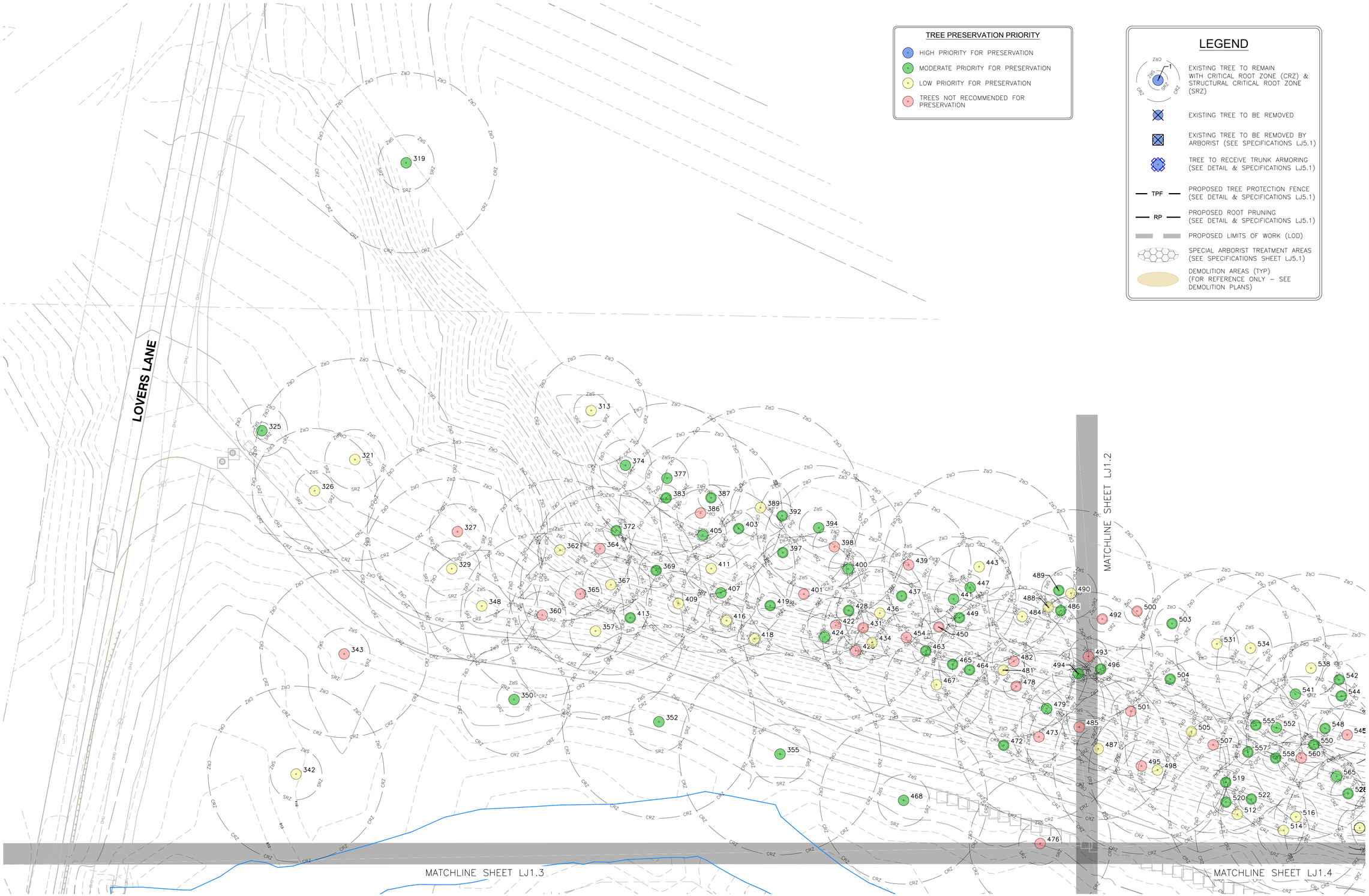

TREE PRESERVATION PRIORITY

- HIGH PRIORITY FOR PRESERVATION
- MODERATE PRIORITY FOR PRESERVATION
- LOW PRIORITY FOR PRESERVATION
- TREES NOT RECOMMENDED FOR PRESERVATION

LEGEND

- EXISTING TREE TO REMAIN WITH CRITICAL ROOT ZONE (CRZ) & STRUCTURAL CRITICAL ROOT ZONE (SRZ)
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED BY ARBORIST (SEE SPECIFICATIONS LJ5.1)
- TREE TO RECEIVE TRUNK ARMORING (SEE DETAIL & SPECIFICATIONS LJ5.1)
- TPF — PROPOSED TREE PROTECTION FENCE (SEE DETAIL & SPECIFICATIONS LJ5.1)
- RP — PROPOSED ROOT PRUNING (SEE DETAIL & SPECIFICATIONS LJ5.1)
- PROPOSED LIMITS OF WORK (LOD)
- SPECIAL ARBORIST TREATMENT AREAS (SEE SPECIFICATIONS SHEET LJ5.1)
- DEMOLITION AREAS (TYP) (FOR REFERENCE ONLY – SEE DEMOLITION PLANS)

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TREE PRESERVATION PLAN

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SCALE: 1" = 20' C.I.: 1'

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Sheet #
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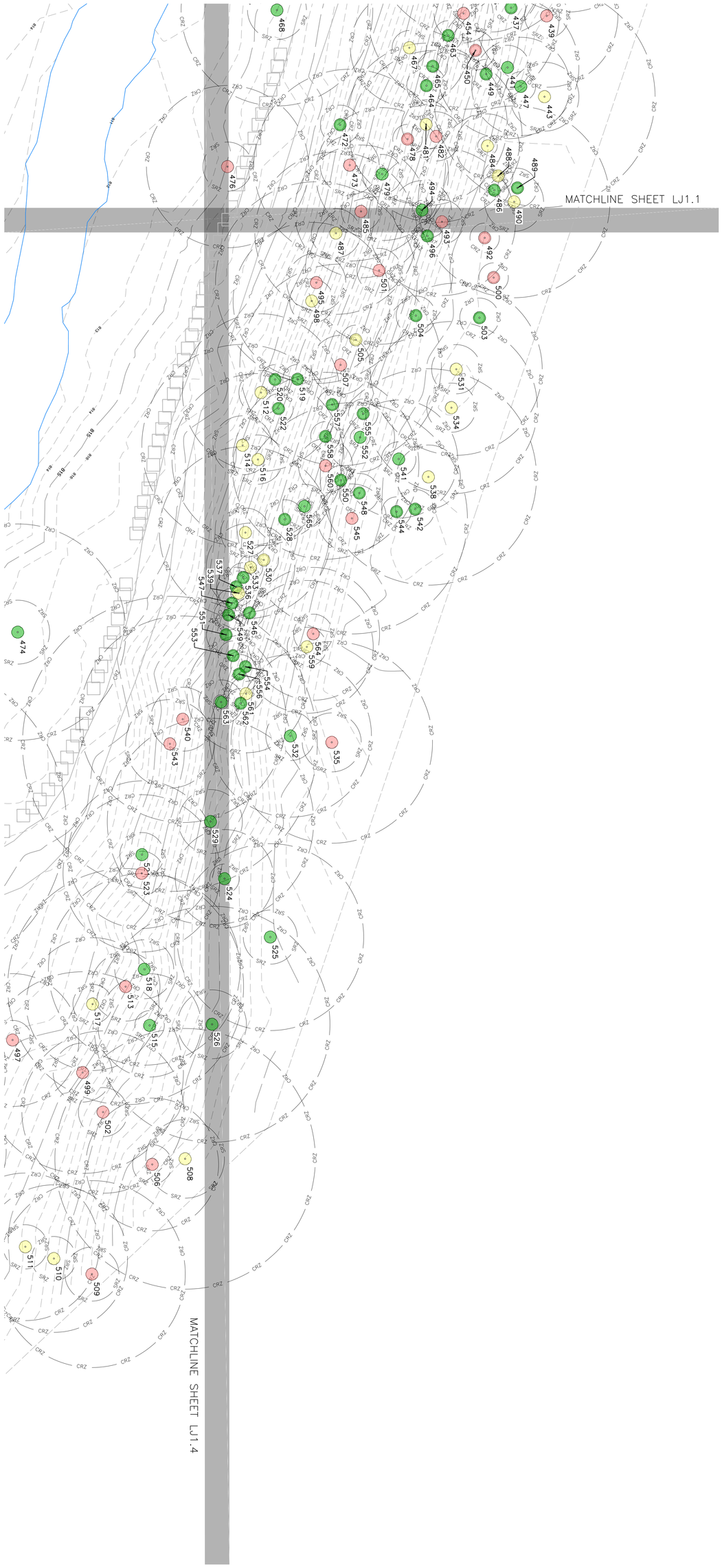

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

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Sheet # LJ1.2

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Approved	CH

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DATE: JUNE 9, 2026 SCALE: 1" = 20' C.I.: 1'

ISA# PD-10004A

TREE PRESERVATION PLAN

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Kalamazoo, MI

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MATCHLINE SHEET LJ1.1

MATCHLINE SHEET LJ1.4

MATCHLINE SHEET LJ1.5

MATCHLINE SHEET LJ1.6

LOVERS LANE

EX. PAVEMENT/HARDSCAPE TO BE REMOVED UNDER ARBORIST SUPERVISION. SPECIAL ARBORIST TREATMENT REQUIRED (TYP).

WORK SHALL BE SEQUENCED TO ENSURE THAT ALL EQUIPMENT SHALL REMAIN ON EXISTING HARDSCAPE. NO EQUIPMENT MAY ACCESS AREAS AFTER HARDSCAPE IS REMOVED.

REFER TO SPECIFICATIONS ON SHEET LJ5.1

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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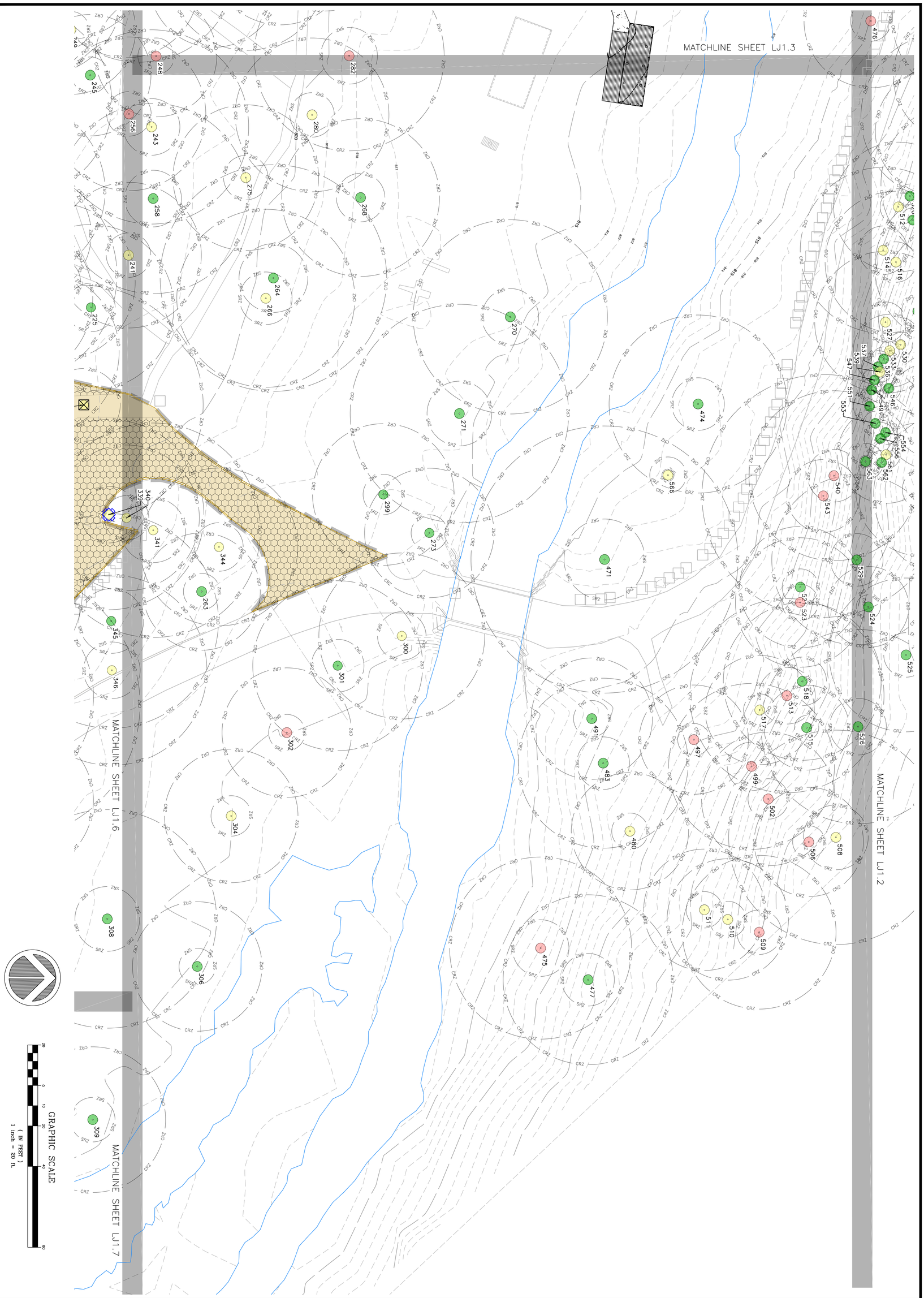

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Draft	NE
Approved	CH
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DATE: JUNE 9, 2026 SCALE: 1" = 20' C.I.: 1'

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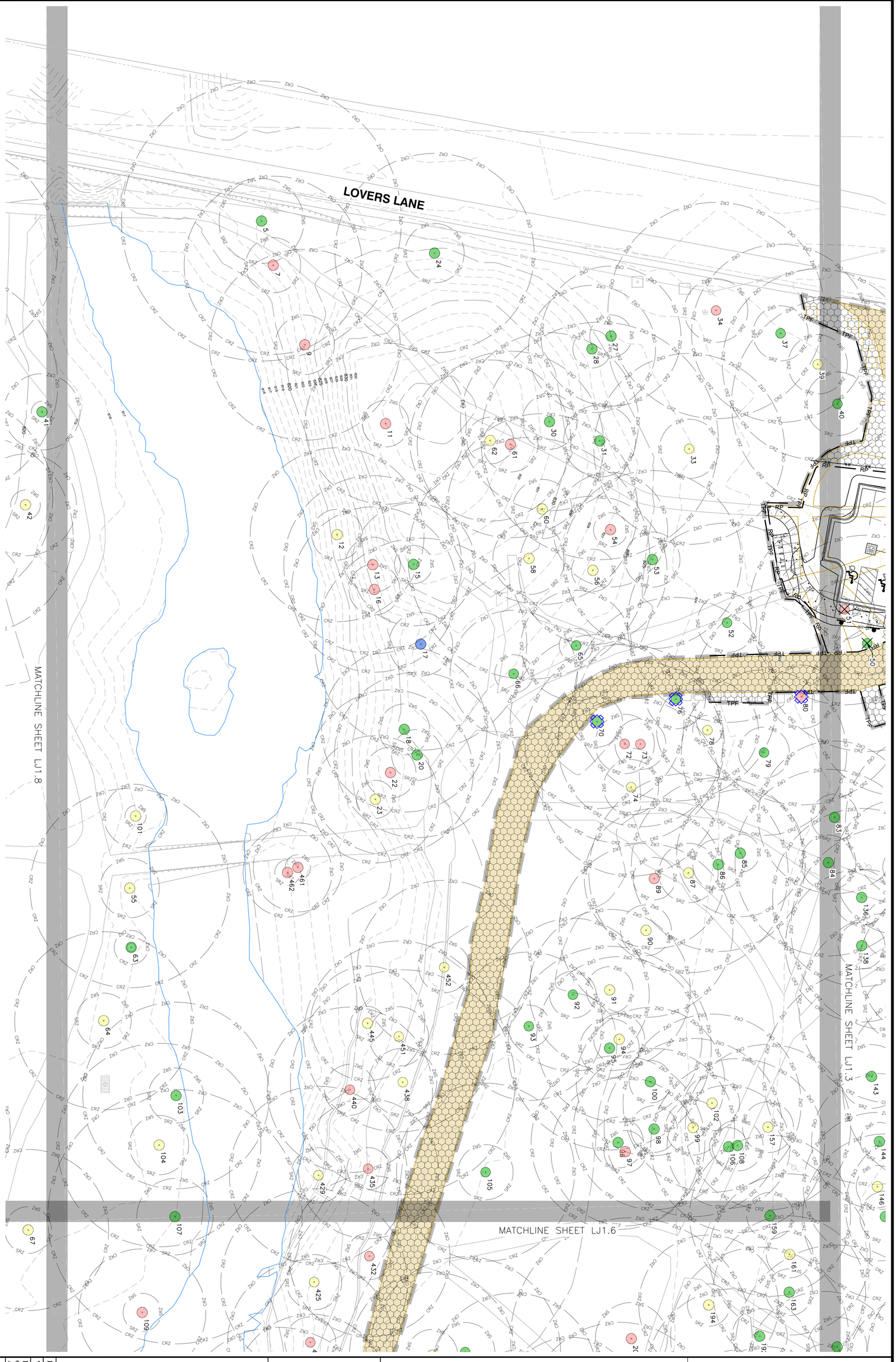

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MATCHLINE SHEET LJ1.3

MATCHLINE SHEET LJ1.4

MATCHLINE SHEET LJ1.5

MATCHLINE SHEET LJ1.7

MATCHLINE SHEET LJ1.9

EX. PAVEMENT/HARDSCAPE TO BE REMOVED UNDER ARBORIST SUPERVISION. SPECIAL ARBORIST TREATMENT REQUIRED (TYP).

WORK SHALL BE SEQUENCED TO ENSURE THAT ALL EQUIPMENT SHALL REMAIN ON EXISTING HARDSCAPE. NO EQUIPMENT MAY ACCESS AREAS AFTER HARDSCAPE IS REMOVED.

REFER TO SPECIFICATIONS ON SHEET LJ5.1

EX. CURB WITHIN TREE SRZ MAY BE SAWCUT AND ABANDONED WHERE PERMITTED (TYP). REFER TO LANDSCAPE PLAN

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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TREE PRESERVATION PLAN

MILHAM PARK PHASE 1 IMPROVEMENTS

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Sheet #
LJ1.6

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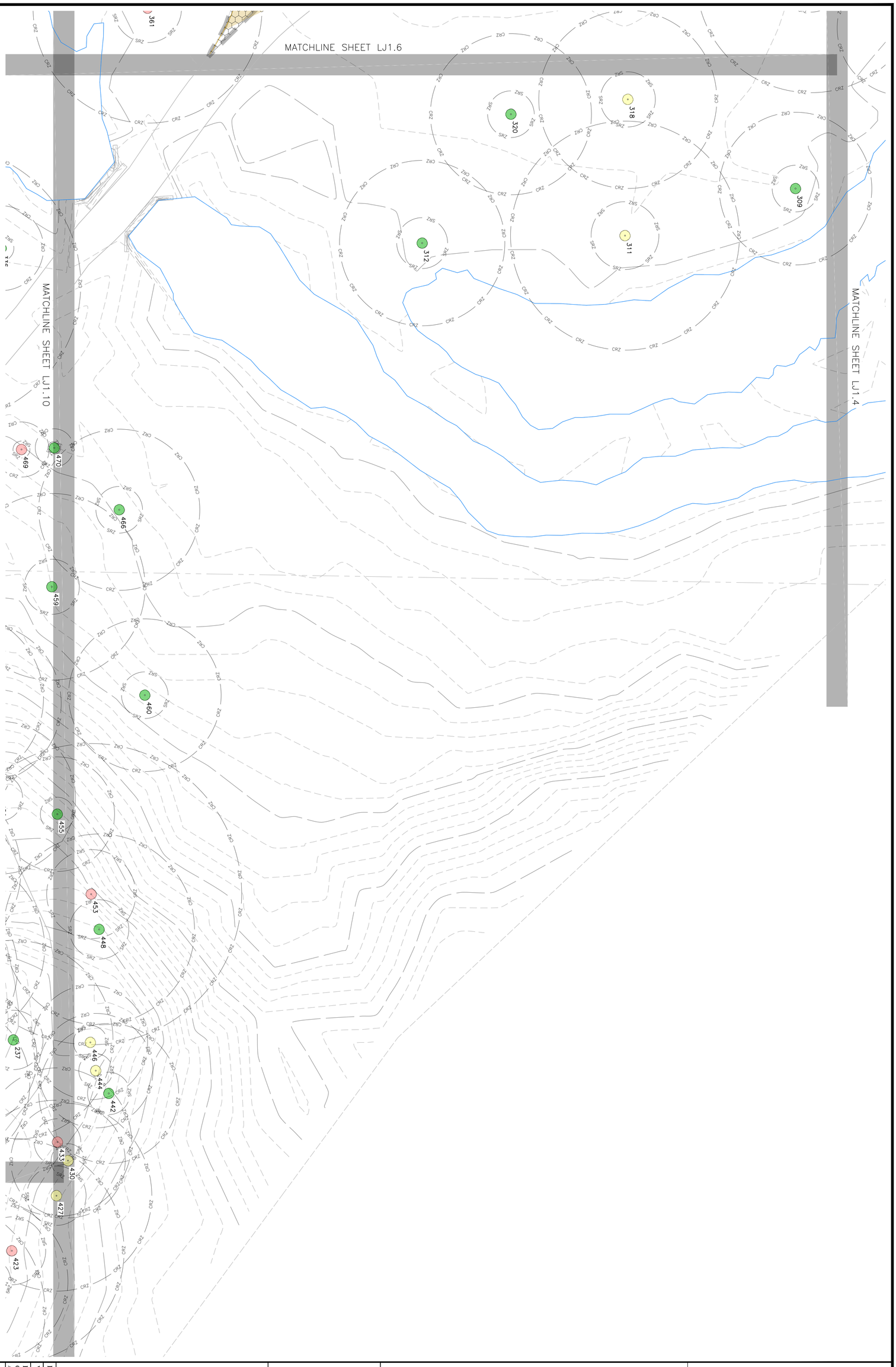

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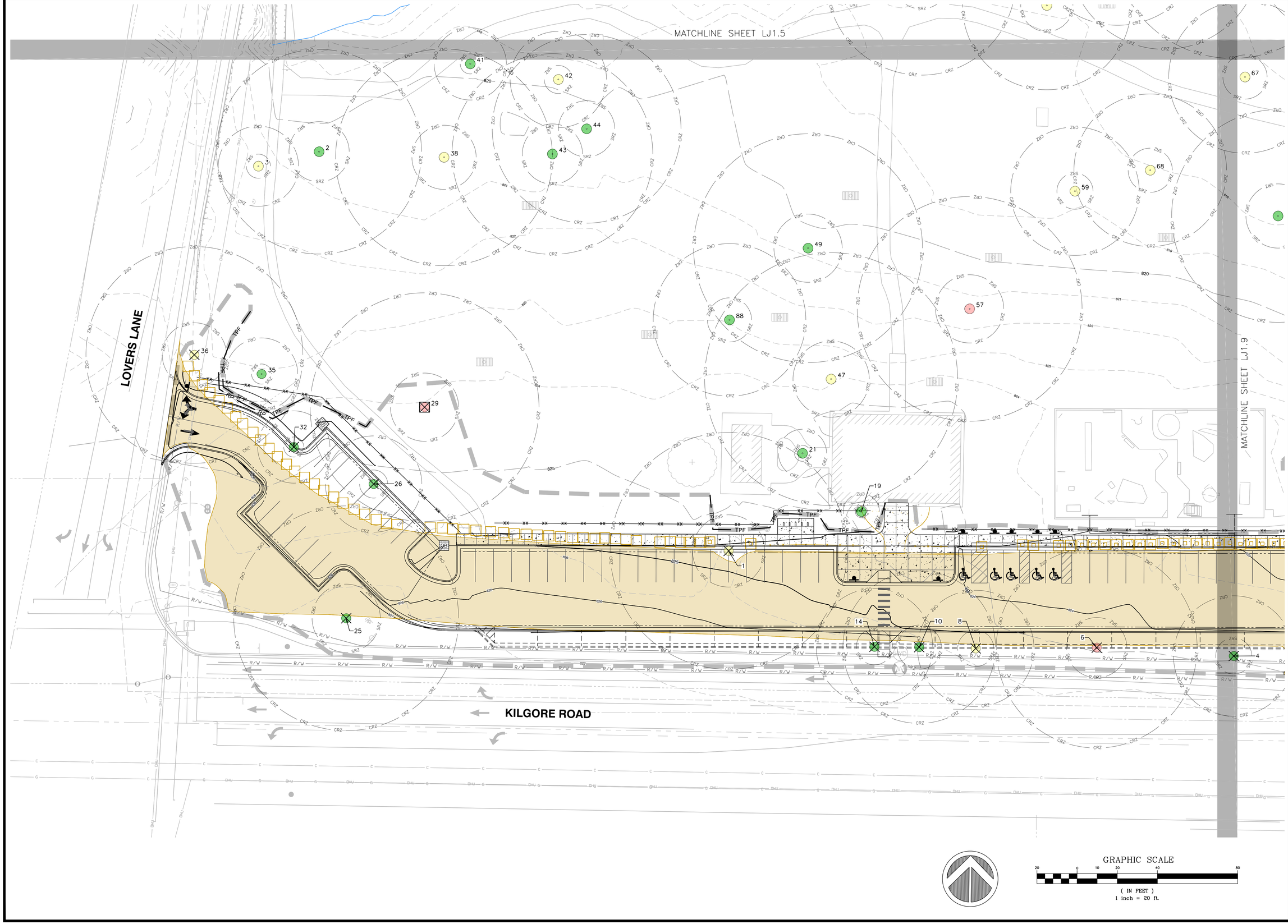

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SCALE: 1" = 20'
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MATCHLINE SHEET LJ1.6

MATCHLINE SHEET LJ1.8

MATCHLINE SHEET LJ1.10

KILGORE ROAD

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

TREE PRESERVATION PLAN

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MATCHLINE SHEET LJ1.7

MATCHLINE SHEET LJ1.9

MATCHLINE SHEET LJ1.11

KILGORE ROAD

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

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TREE PRESERVATION PLAN

MILHAM PARK PHASE 1 IMPROVEMENTS

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SCALE: 1" = 20'

C.I.: 1'

DATE: JUNE 9, 2026

Horizontal Datum: MI83-SIF

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MATCHLINE SHEET LJ1.7

MATCHLINE SHEET LJ1.10

KILGORE ROAD

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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TREE PRESERVATION PLAN

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SCALE: 1" = 20' C.I.: 1'

DATE: JUNE 9, 2026

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Sheet #
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WSSI Project Number:
37079.01

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Date: 6/9/2026

Tree Preservation Schedule

Project: 37079.01

Tree #	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	Calculated DBH	SRZ: Structural Critical Root Zone (radius) in Feet	CRZ: Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	TREE TO REMAIN NO IMPACT	Removal (TBR)	Removal By Arborist	Preservation Measures: Root Prune	Tree Protection Fence	Trunk Protection Wrap	SPECIAL ARBORIST TREATMENT AREAS	Construction Oversight/Monitoring	Defects
1	39	oak, white	Quercus alba	1	39	18	59	3		X							Dead and/or dying branches
2	34	oak, northern red	Quercus rubra	1	34	15	51	2	X								Dead and/or dying branches
3	13	birch, paper	Betula papyrifera	1	13	6	20	3	X								Trunk condition
4	20	oak, bur	Quercus macrocarpa	1	20	9	30	2		X							Dead and/or dying branches
5	44	oak, white	Quercus alba	1	44	20	66	2	X								Branch attachment
6	33	oak, white	Quercus alba	1	33	15	50	4		X							Tree architecture
7	28	oak, white	Quercus alba	1	28	13	42	4	X								Decay or Cavity
8	19	oak, bur	Quercus macrocarpa	1	19	9	29	3		X							Dead and/or dying branches
9	30	oak, white	Quercus alba	1	30	14	45	4	X								Decay or Cavity
10	25	oak, chinkapin	Quercus muehlenbergii	1	25	11	38	2		X							N/A
11	28	unknown tree	unknown tree	1	28	13	42	4	X								Trunk condition
12	27	oak, white	Quercus alba	1	27	12	41	3	X								Tree architecture
13	28	oak, white	Quercus alba	1	28	13	42	4	X								Tree architecture
14	19	oak, bur	Quercus macrocarpa	1	19	9	29	2		X							N/A
15	19	oak, white	Quercus alba	1	19	9	29	2	X								N/A
16	26	oak, white	Quercus alba	1	26	12	39	4	X								Tree architecture
17	33	oak, white	Quercus alba	1	33	15	50	1	X								N/A
18	26	oak, white	Quercus alba	1	26	12	39	2	X								N/A
19	4, 3, 3	serviceberry, sp.	Amelanchier sp.	3	6	3	9	2					X				N/A
20	26	oak, white	Quercus alba	1	26	12	39	2	X								N/A
21	4, 4, 3, 3, 2, 2, 2	dogwood, flowering	Cornus florida	7	8	4	12	2					X				N/A
22	26	oak, white	Quercus alba	1	26	12	39	4	X								Decay or Cavity
23	20	oak, white	Quercus alba	1	20	9	30	3	X								Tree architecture
24	31	oak, white	Quercus alba	1	31	14	47	2	X								N/A
25	37	oak, chinkapin	Quercus muehlenbergii	1	37	17	56	2		X							Dead and/or dying branches
26	16	oak, chinkapin	Quercus muehlenbergii	1	16	7	24	2		X							N/A
27	22	oak, white	Quercus alba	1	22	10	33	2	X								Dead and/or dying branches
28	20	oak, white	Quercus alba	1	20	9	30	2	X								N/A
29	38	planetree, London	Platanus x acerifolia	1	38	17	57	4			X						Decay or Cavity
30	28	oak, white	Quercus alba	1	28	13	42	2	X								N/A
31	37	oak, white	Quercus alba	1	37	17	56	2	X								N/A
32	12	oak, chinkapin	Quercus muehlenbergii	1	12	5	18	2		X							N/A
33	30	oak, white	Quercus alba	1	30	14	45	3				X	X			X	Decay or Cavity
34	34	oak, white	Quercus alba	1	34	15	51	4							X	X	Decay or Cavity
35	12	oak, chinkapin	Quercus muehlenbergii	1	12	5	18	2				X	X			X	N/A
36	36	oak, bur	Quercus macrocarpa	1	36	16	54	3		X							Tree architecture
37	28	oak, white	Quercus alba	1	28	13	42	2							X	X	N/A
38	36	maple, silver	Acer saccharinum	1	36	16	54	3	X								Dead and/or dying branches
39	30	oak, white	Quercus alba	1	30	14	45	3							X	X	Tree architecture
40	33	oak, white	Quercus alba	1	33	15	50	2							X	X	Tree architecture
41	12	hophornbeam, eastern	Ostrya virginiana	1	12	5	18	2	X								Dead and/or dying branches
42	16	hophornbeam, eastern	Ostrya virginiana	1	16	7	24	3	X								Dead and/or dying branches
43	33	oak, chinkapin	Quercus muehlenbergii	1	33	15	50	2	X								Dead and/or dying branches
44	31	oak, bur	Quercus macrocarpa	1	31	14	47	2	X								Dead and/or dying branches
45	13	arborvitae, eastern	Thuja occidentalis	1	13	6	20	2		X							N/A
46	26	oak, white	Quercus alba	1	26	12	39	3				X	X		X	X	Dead and/or dying branches
47	42	elm, American	Ulmus americana	1	42	19	63	3	X								Branch attachment
48	34	oak, white	Quercus alba	1	34	15	51	2		X							N/A
49	38	planetree, London	Platanus x acerifolia	1	38	17	57	2	X								N/A
50	34	oak, white	Quercus alba	1	34	15	51	2		X							N/A
51	30	oak, white	Quercus alba	1	30	14	45	4		X							Decay or Cavity
52	31	oak, white	Quercus alba	1	31	14	47	2							X	X	N/A
53	28	oak, white	Quercus alba	1	28	13	42	2	X								N/A
54	18	pine, eastern white	Pinus strobus	1	18	8	27	4	X								Decay or Cavity
55	31	oak, bur	Quercus macrocarpa	1	31	14	47	3	X								Dead and/or dying branches
56	23	oak, white	Quercus alba	1	23	10	35	3	X								Dead and/or dying branches
57	37	oak, northern red	Quercus rubra	1	37	17	56	4	X								Decay or Cavity
58	38	oak, white	Quercus alba	1	38	17	57	3	X								Tree architecture
59	21	sycamore, American	Platanus occidentalis	1	21	9	32	3	X								Dead and/or dying branches
60	30	oak, white	Quercus alba	1	30	14	45	3	X								Dead and/or dying branches
61	29	oak, white	Quercus alba	1	29	13	44	4	X								Decay or Cavity
62	25	oak, white	Quercus alba	1	25	11	38	3	X								Dead and/or dying branches
63	5	dogwood, flowering	Cornus florida	1	5	2	8	2	X								N/A
64	28	oak, bur	Quercus macrocarpa	1	28	13	42	3	X								Dead and/or dying branches
65	17	hemlock, eastern	Tsuga canadensis	1	17	8	26	2							X	X	N/A
66	20	hemlock, eastern	Tsuga canadensis	1	20	9	30	2							X	X	N/A
67	25	planetree, London	Platanus x acerifolia	1	25	11	38	3	X								Dead and/or dying branches
68	25	planetree, London	Platanus x acerifolia	1	25	11	38	3	X								Dead and/or dying branches
69	35	oak, bur	Quercus macrocarpa	1	35	16	53	2	X								Dead and/or dying branches
70	27	oak, white	Quercus alba	1	27	12	41	2						X	X	X	N/A
71	33	oak, chinkapin	Quercus muehlenbergii	1	33	15	50	2		X							Dead and/or dying branches
72	31	oak, white	Quercus alba	1	31	14	47	4							X	X	Decay or Cavity
73	26	oak, white	Quercus alba	1	26	12	39	4							X	X	Decay or Cavity
74	28	oak, white	Quercus alba	1	28	13	42	3							X	X	Dead and/or dying branches
75	35	oak, chinkapin	Quercus muehlenbergii	1	35	16	53	2				X	X			X	N/A
76	32	oak, white	Quercus alba	1	32	14	48	2						X	X	X	N/A
77	22	oak, northern red	Quercus rubra	1	22	10	33	2	X								N/A
78	16	oak, white	Quercus alba	1	16	7	24	3							X	X	Dead and/or dying branches
79	26	oak, white	Quercus alba	1	26	12	39	2							X	X	N/A
80	34	oak, black	Quercus velutina	1	34	15	51	4					X	X	X	X	Decay or Cavity
81	38	oak, chinkapin	Quercus muehlenbergii	1	38	17	57	2	X								N/A
82	27	oak, white	Quercus alba	1	27	12	41	3				X	X		X	X	Tree architecture
83	24	oak, white	Quercus alba	1	24	11	36	2	X								N/A
84	29	oak, white	Quercus alba	1	29	13	44	2	X								N/A
85	20	oak, white	Quercus alba	1	20	9	30	2	X								N/A
86	27	oak, white	Quercus alba	1	27	12	41	2	X								N/A
87	31	oak, white	Quercus alba	1	31	14	47	3	X								Dead and/or dying branches
88	25	linden, littleleaf	Tilia cordata	1	25	11	38	2	X								N/A
89	22	oak, white	Quercus alba	1	22	10	33	4	X								Decay or Cavity
90	27	oak, white	Quercus alba	1	27	12	41	3	X								Tree architecture
91	25	oak, white	Quercus alba	1	25	11	38	3	X								Dead and/or dying branches
92	24	oak, white	Quercus alba	1	24	11	36	2							X	X	N/A
93	23	oak, white	Quercus alba	1	23	10	35	2							X	X	N/A
94	26	oak, white	Quercus alba	1	26	12	39	3	X								Tree architecture
95	32	oak, white	Quercus alba	1	32	14	48	2	X								N/A
96	27	oak, black	Quercus velutina	1	27	12	41	2	X								N/A
97	23	oak, black	Quercus velutina	1	23	10	35	4	X								Trunk condition
98	25	oak, white	Quercus alba	1	25	11	38	2	X								N/A
99	28	oak, white	Quercus alba	1	28	13	42	3	X								Tree architecture
100	23	oak, white	Quercus alba	1	23	10	35	2	X								N/A
101	10	redbud, eastern	Cercis canadensis	1	10	5	15	3	X								Branch attachment
102	28	oak, white	Quercus alba	1	28	13	42	3	X								Tree architecture

Date: 6/9/2026

Tree Preservation Schedule

Project: 37079.01

Tree #	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	Calculated DBH	SRZ: Structural Critical Root Zone (radius) in Feet	CRZ: Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	TREE TO REMAIN NO IMPACT	Removal (TBR)	Removal By Arborist	Preservation Measures: Root Prune	Tree Protection Fence	Trunk Protection Wrap	SPECIAL ARBORIST TREATMENT AREAS	Construction Oversight/Monitoring	Defects
103	29	oak, bur	Quercus macrocarpa	1	29	13	44	2	X								N/A
104	32	oak, bur	Quercus macrocarpa	1	32	14	48	3	X								Dead and/or dying branches
105	28	oak, white	Quercus alba	1	28	13	42	2								X	X	Dead and/or dying branches
106	19	oak, white	Quercus alba	1	19	9	29	2	X								N/A
107	40	baldcypress, common	Taxodium distichum	1	40	18	60	2	X								N/A
108	27	oak, white	Quercus alba	1	27	12	41	2	X								N/A
109	18, 5, 4, 4, 4	ash, sp.	Fraxinus sp.	5	20	9	30	4	X								Trunk condition
110	36	oak, black	Quercus velutina	1	36	16	54	4			X						Decay or Cavity
111	26	oak, white	Quercus alba	1	26	12	39	2				X	X			X	N/A
112	25	oak, white	Quercus alba	1	25	11	38	2				X	X			X	N/A
113	23	oak, white	Quercus alba	1	23	10	35	3				X	X			X	Dead and/or dying branches
114	26	oak, white	Quercus alba	1	26	12	39	2				X	X			X	N/A
115	28	oak, white	Quercus alba	1	28	13	42	3				X	X			X	Tree architecture
116	32	oak, white	Quercus alba	1	32	14	48	3			X						Dead and/or dying branches
117	26	oak, white	Quercus alba	1	26	12	39	2				X	X			X	N/A
118	33	maple, silver	Acer saccharinum	1	33	15	50	2	X								Dead and/or dying branches
119	31	oak, white	Quercus alba	1	31	14	47	3				X	X			X	Tree architecture
120	33	oak, white	Quercus alba	1	33	15	50	4				X	X			X	Decay or Cavity
121	14	birch, paper	Betula papyrifera	1	14	6	21	3	X								Tree architecture
122	32	sycamore, American	Platanus occidentalis	1	32	14	48	3	X								Dead and/or dying branches
123	30	oak, white	Quercus alba	1	30	14	45	3	X								Tree architecture
124	39	maple, sugar	Acer saccharum	1	39	18	59	3	X								Tree architecture
125	28	oak, white	Quercus alba	1	28	13	42	4	X								Decay or Cavity
126	23	oak, white	Quercus alba	1	23	10	35	3	X								Tree architecture
127	33	sycamore, American	Platanus occidentalis	1	33	15	50	2	X								N/A
128	27	oak, white	Quercus alba	1	27	12	41	2	X								N/A
129	18	maple, sugar	Acer saccharum	1	18	8	27	2	X								N/A
130	19	oak, white	Quercus alba	1	19	9	29	3				X	X			X	Tree architecture
131	28	oak, white	Quercus alba	1	28	13	42	3	X								Tree architecture
132	33	oak, white	Quercus alba	1	33	15	50	2				X	X			X	Dead and/or dying branches
133	27	oak, white	Quercus alba	1	27	12	41	2	X								N/A
134	20, 10	willow, black	Salix nigra	2	23	10	34	2	X								N/A
135	21	oak, white	Quercus alba	1	21	9	32	3	X								Tree architecture
136	28	oak, white	Quercus alba	1	28	13	42	2	X								N/A
137	32	oak, white	Quercus alba	1	32	14	48	2	X								N/A
138	24	oak, white	Quercus alba	1	24	11	36	2	X								N/A
139	41	oak, white	Quercus alba	1	41	18	62	4	X								Dead and/or dying branches
140	23	oak, white	Quercus alba	1	23	10	35	2	X								N/A
141	30	oak, white	Quercus alba	1	30	14	45	2	X								N/A
142	18	oak, northern red	Quercus rubra	1	18	8	27	2	X								N/A
143	34	oak, white	Quercus alba	1	34	15	51	2	X								Dead and/or dying branches
144	21	oak, white	Quercus alba	1	21	9	32	2	X								N/A
145	18, 5, 3, 2	linden, American	Tilia americana	4	20	9	29	2	X								N/A
146	23	oak, white	Quercus alba	1	23	10	35	3	X								Tree architecture
147	26	oak, white	Quercus alba	1	26	12	39	2	X								N/A
148	24	oak, white	Quercus alba	1	24	11	36	4	X								Trunk condition
149	17	oak, white	Quercus alba	1	17	8	26	2	X								N/A
150	28	oak, white	Quercus alba	1	28	13	42	3	X								Tree architecture
151	24	oak, white	Quercus alba	1	24	11	36	2	X								N/A
152	28	oak, white	Quercus alba	1	28	13	42	3	X								Tree architecture
153	31	oak, white	Quercus alba	1	31	14	47	4	X								Decay or Cavity
154	25	oak, white	Quercus alba	1	25	11	38	4	X								Decay or Cavity
155	21	oak, white	Quercus alba	1	21	9	32	2	X								N/A
156	26	oak, white	Quercus alba	1	26	12	39	3	X								Tree architecture
157	26	oak, white	Quercus alba	1	26	12	39	3	X								Dead and/or dying branches
158	26	oak, white	Quercus alba	1	26	12	39	2	X								N/A
159	25	oak, white	Quercus alba	1	25	11	38	2	X								N/A
160	18	elm, American	Ulmus americana	1	18	8	27	2	X								N/A
161	25	oak, white	Quercus alba	1	25	11	38	3	X								Dead and/or dying branches
162	35	sycamore, American	Platanus occidentalis	1	35	16	53	4	X								Dead and/or dying branches
163	24	oak, white	Quercus alba	1	24	11	36	2	X								N/A
164	18	oak, white	Quercus alba	1	18	8	27	2	X								N/A
165	24	oak, white	Quercus alba	1	24	11	36	2	X								N/A
166	32	oak, white	Quercus alba	1	32	14	48	2	X								N/A
167	26	unknown tree	unknown tree	1	26	12	39	4	X								Decay or Cavity
168	31	oak, white	Quercus alba	1	31	14	47	2	X								N/A
169	21	oak, white	Quercus alba	1	21	9	32	2	X								N/A
170	18	oak, white	Quercus alba	1	18	8	27	2	X								N/A
171	26	oak, white	Quercus alba	1	26	12	39	2	X								N/A
172	23	oak, white	Quercus alba	1	23	10	35	2	X								Dead and/or dying branches
173	23	oak, northern red	Quercus rubra	1	23	10	35	2	X								N/A
174	23	oak, white	Quercus alba	1	23	10	35	3	X								Dead and/or dying branches
175	22	oak, white	Quercus alba	1	22	10	33	2	X								N/A
176	25	oak, northern red	Quercus rubra	1	25	11	38	2	X								N/A
177	23	oak, white	Quercus alba	1	23	10	35	2	X								N/A
178	33	oak, white	Quercus alba	1	33	15	50	3	X								Dead and/or dying branches
179	32	oak, white	Quercus alba	1	32	14	48	2	X								N/A
180	21	linden, American	Tilia americana	1	21	9	32	2	X								N/A
181	35	yellowwood, American	Cladrastis kentukea	1	35	16	53	4	X								Branch attachment
182	34	yellowwood, American	Cladrastis kentukea	1	34	15	51	4	X								Trunk condition
183	18	elm, American	Ulmus americana	1	18	8	27	3	X								Branch attachment
184	21	spruce, sp.	Picea sp.	1	21	9	32	2	X								N/A
185	20	spruce, sp.	Picea sp.	1	20	9	30	2	X								N/A
186	14	redcedar, eastern	Juniperus virginiana	1	14	6	21	4	X								Cracks
187	17	redcedar, eastern	Juniperus virginiana	1	17	8	26	2	X								N/A
188	25	spruce, sp.	Picea sp.	1	25	11	38	2	X								N/A
189	12	redcedar, eastern	Juniperus virginiana	1	12	5	18	4	X								Dead and/or dying branches
190	20	spruce, Norway	Picea abies	1	20	9	30	2	X								N/A
191	36	oak, northern red	Quercus rubra	1	36	16	54	2	X								N/A
192	28	oak, white	Quercus alba	1	28	13	42	2	X								N/A
193	26	spruce, Norway	Picea abies	1	26	12	39	2	X								N/A
194	22	oak, white	Quercus alba	1	22	10	33	3	X								Tree architecture
195	22	spruce, Norway	Picea abies	1	22	10	33	2	X								N/A
196	27	oak, white	Quercus alba	1	27	12	41	3	X								Tree architecture
197	21	spruce, Norway	Picea abies	1	21	9	32	2	X								N/A
198	23	spruce, Norway	Picea abies	1	23	10	35	2	X								N/A
199	18	spruce, Norway	Picea abies	1	18	8	27	2	X								N/A
200	38	oak, black	Quercus velutina	1	38	17	57	4	X								Decay or Cavity
201	29	oak, white	Quercus alba	1	29	13	44	3	X								Tree architecture
202	32	mulberry, red	Morus rubra	1	32	14	48	3	X								Dead and/or dying branches
203	21	hickory, pignut	Carya glabra	1	21	9	32	2	X								N/A
204	32	maple, silver	Acer saccharinum	1	32	14	48	3	X								Dead and/or dying branches

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DAVEY Resource Group

TREE PRESERVATION SCHEDULE

MILHAM PARK PHASE 1 IMPROVEMENTS

MILHAM PARK
Kalamazoo, MI

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INTERNATIONAL SOCIETY OF ARBORICULTURE
CARY HULSE
ISA# PD-1080A
CERTIFIED ARBORIST

REVISIONS

No.	Date	Description	Rev. By	App. By

SCALE: 1" = 20' C.I.: 1'

DATE: JUNE 9, 2026

Horizontal Datum: MI83-SIF

Vertical Datum:

Boundary and Topo Source:
OCBA
AR ENGINEERING

Design	Draft	Approved
NE	NE	CH

Sheet #

LJ2.1

WSSI Project Number:
37079.01

Date: 6/9/2026

Tree Preservation Schedule

Project: 37079.01

Tree #	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	Calculated DBH	SRZ: Structural Critical Root Zone (radius) in Feet	CRZ: Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	TREE TO REMAIN NO IMPACT	Removal (TBR)	Removal By Arborist	Preservation Measures: Root Prune	Tree Protection Fence	Trunk Protection Wrap	SPECIAL ARBORIST TREATMENT AREAS	Construction Oversight/Monitoring	Defects
205	26	oak, white	Quercus alba	1	26	12	39	3	X								Tree architecture
206	32	walnut, black	Juglans nigra	1	32	14	48	2	X								N/A
207	30	oak, white	Quercus alba	1	30	14	45	2							X	X	N/A
208	23	spruce, Norway	Picea abies	1	23	10	35	3	X								Branch attachment
209	26	oak, white	Quercus alba	1	26	12	39	3							X	X	Dead and/or dying branches
210	26	oak, white	Quercus alba	1	26	12	39	3	X								Tree architecture
211	18	oak, white	Quercus alba	1	18	8	27	2	X								N/A
212	23	oak, white	Quercus alba	1	23	10	35	3	X								Dead and/or dying branches
213	29	oak, white	Quercus alba	1	29	13	44	2	X								N/A
214	24	oak, black	Quercus velutina	1	24	11	36	3	X								Tree architecture
215	24	oak, white	Quercus alba	1	24	11	36	3	X								Tree architecture
216	33	oak, white	Quercus alba	1	33	15	50	3							X	X	Dead and/or dying branches
217	29	oak, white	Quercus alba	1	29	13	44	3							X	X	Tree architecture
218	14	hemlock, eastern	Tsuga canadensis	1	14	6	21	2							X	X	N/A
219	26	oak, white	Quercus alba	1	26	12	39	3							X	X	Dead and/or dying branches
220	32	oak, white	Quercus alba	1	32	14	48	3						X	X	X	Tree architecture
221	24	oak, white	Quercus alba	1	24	11	36	3						X	X	X	Tree architecture
222	32	oak, white	Quercus alba	1	32	14	48	3							X	X	Dead and/or dying branches
223	27	oak, white	Quercus alba	1	27	12	41	3							X	X	Tree architecture
224	36	oak, white	Quercus alba	1	36	16	54	3							X	X	Tree architecture
225	27	oak, white	Quercus alba	1	27	12	41	2							X	X	N/A
226	27	oak, white	Quercus alba	1	27	12	41	3							X	X	Dead and/or dying branches
227	21	oak, white	Quercus alba	1	21	9	32	2	X								N/A
228	34	planetree, London	Platanus x acerifolia	1	34	15	51	2	X								N/A
229	29	oak, white	Quercus alba	1	29	13	44	2	X								N/A
230	33	arborvitae, eastern	Thuja occidentalis	1	33	15	50	3	X								Branch attachment
231	27	oak, white	Quercus alba	1	27	12	41	3	X								Tree architecture
232	30	planetree, London	Platanus x acerifolia	1	30	14	45	2	X								N/A
233	39	oak, white	Quercus alba	1	39	18	59	3			X						Tree architecture
234	26	oak, white	Quercus alba	1	26	12	39	2	X								N/A
235	22	oak, white	Quercus alba	1	22	10	33	2	X								N/A
236	26	oak, white	Quercus alba	1	26	12	39	3	X								Tree architecture
237	31	oak, white	Quercus alba	1	31	14	47	2	X								N/A
238	18	oak, white	Quercus alba	1	18	8	27	2	X								N/A
239	29	oak, white	Quercus alba	1	29	13	44	3	X								Dead and/or dying branches
240	28	oak, northern red	Quercus rubra	1	28	13	42	4	X								Tree architecture
241	24	oak, white	Quercus alba	1	24	11	36	3	X								Dead and/or dying branches
242	26	oak, white	Quercus alba	1	26	12	39	3	X								Dead and/or dying branches
243	32	oak, white	Quercus alba	1	32	14	48	3	X								Tree architecture
244	18	oak, white	Quercus alba	1	18	8	27	2	X								N/A
245	20	oak, white	Quercus alba	1	20	9	30	2	X								N/A
246	30	oak, white	Quercus alba	1	30	14	45	3	X								Tree architecture
247	25	oak, white	Quercus alba	1	25	11	38	2	X								N/A
248	20	oak, white	Quercus alba	1	20	9	30	4	X								Tree architecture
249	21	oak, white	Quercus alba	1	21	9	32	3	X								Tree architecture
250	24	hickory, pignut	Carya glabra	1	24	11	36	2	X								N/A
251	36	oak, white	Quercus alba	1	36	16	54	2	X								N/A
252	31	oak, white	Quercus alba	1	31	14	47	3	X								Tree architecture
253	25	oak, white	Quercus alba	1	25	11	38	3	X								Tree architecture
254	29	oak, white	Quercus alba	1	29	13	44	3	X								Dead and/or dying branches
255	30	oak, white	Quercus alba	1	30	14	45	2	X								N/A
256	25	oak, white	Quercus alba	1	25	11	38	4	X								Decay or Cavity
257	28	planetree, London	Platanus x acerifolia	1	28	13	42	2	X								N/A
258	31	oak, white	Quercus alba	1	31	14	47	2	X								Dead and/or dying branches
259	31	oak, white	Quercus alba	1	31	14	47	2	X								N/A
260	37	oak, northern red	Quercus rubra	1	37	17	56	4	X								Tree architecture
261	23	oak, northern red	Quercus rubra	1	23	10	35	4	X								Tree architecture
262	30	oak, northern red	Quercus rubra	1	30	14	45	3	X								Tree architecture
263	19	spruce, Norway	Picea abies	1	19	9	29	2	X								N/A
264	37	oak, white	Quercus alba	1	37	17	56	2	X								N/A
265	35	oak, northern red	Quercus rubra	1	35	16	53	3	X								Dead and/or dying branches
266	29	oak, white	Quercus alba	1	29	13	44	3	X								Tree architecture
267	18	oak, white	Quercus alba	1	18	8	27	2	X								N/A
268	26	oak, white	Quercus alba	1	26	12	39	2	X								Dead and/or dying branches
269	27	oak, white	Quercus alba	1	27	12	41	3	X								Dead and/or dying branches
270	32	sycamore, American	Platanus occidentalis	1	32	14	48	2	X								N/A
271	36	sycamore, American	Platanus occidentalis	1	36	16	54	2	X								N/A
272	26	oak, white	Quercus alba	1	26	12	39	2	X								N/A
273	21	spruce, Norway	Picea abies	1	21	9	32	2							X	X	N/A
274	21	oak, white	Quercus alba	1	21	9	32	3	X								Tree architecture
275	24	oak, white	Quercus alba	1	24	11	36	3	X								Tree architecture
276	21	oak, white	Quercus alba	1	21	9	32	2	X								N/A
277	29	oak, white	Quercus alba	1	29	13	44	2	X								N/A
278	29	oak, white	Quercus alba	1	29	13	44	2	X								N/A
279	18	cherry, black	Prunus serotina	1	18	8	27	4	X								Tree architecture
280	25	oak, white	Quercus alba	1	25	11	38	3	X								Tree architecture
281	36	oak, white	Quercus alba	1	36	16	54	3	X								Dead and/or dying branches
282	31	beech, American	Fagus grandifolia	1	31	14	47	4	X								Root problem
283	18	oak, white	Quercus alba	1	18	8	27	3	X								Tree architecture
284	26	oak, white	Quercus alba	1	26	12	39	3	X								Dead and/or dying branches
285	26	oak, white	Quercus alba	1	26	12	39	3	X								Trunk condition
286	32	oak, white	Quercus alba	1	32	14	48	3	X								Tree architecture
287	18	oak, northern red	Quercus rubra	1	18	8	27	2	X								Dead and/or dying branches
288	38	oak, northern red	Quercus rubra	1	38	17	57	4	X								Dead and/or dying branches
289	19	oak, northern red	Quercus rubra	1	19	9	29	4	X								Root problem
290	21	hemlock, eastern	Tsuga canadensis	1	21	9	32	4	X								Root problem
291	23	oak, white	Quercus alba	1	23	10	35	3	X								Dead and/or dying branches
292	25	oak, white	Quercus alba	1	25	11	38	2	X								N/A
293	21	maple, red	Acer rubrum	1	21	9	32	2						X			Dead and/or dying branches
294	21	spruce, Norway	Picea abies	1	21	9	32	2						X			N/A
295	18	arborvitae, eastern	Thuja occidentalis	1	18	8	27	2	X								N/A
296	33	oak, white	Quercus alba	1	33	15	50	2	X								N/A
297	18	spruce, Norway	Picea abies	1	18	8	27	3	X								Dead and/or dying branches
298	27	oak, northern red	Quercus rubra	1	27	12	41	3	X								Dead and/or dying branches
299	22	tuliptree	Liriodendron tulipifera	1	22	10	33	2							X	X	N/A
300	27	spruce, Norway	Picea abies	1	27	12	41	3							X	X	Tree architecture
301	28	sycamore, American	Platanus occidentalis	1	28	13	42	2							X	X	N/A
302	22	sycamore, American	Platanus occidentalis	1	22	10	33	4	X								Decay or Cavity
303	28	oak, northern red	Quercus rubra	1	28	13	42	3	X								Dead and/or dying branches
304	22	sycamore, American	Platanus occidentalis	1	22	10	33	3	X								Tree architecture
305	28	oak, northern red	Quercus rubra	1	28	13	42	4	X								Tree architecture
306	21	sycamore, American	Platanus occidentalis	1	21	9	32	2	X								N/A

Date: 6/9/2026

Tree Preservation Schedule

Project: 37079.01

Tree #	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	Calculated DBH	SRZ: Structural Critical Root Zone (radius) in Feet	CRZ: Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	TREE TO REMAIN NO IMPACT	Removal (TBR)	Removal By Arborist	Preservation Measures: Root Prune	Tree Protection Fence	Trunk Protection Wrap	SPECIAL ARBORIST TREATMENT AREAS	Construction Oversight/Monitoring	Defects
307	34	oak, northern red	Quercus rubra	1	34	15	51	4	X								Decay or Cavity
308	36	sycamore, American	Platanus occidentalis	1	36	16	54	2	X								N/A
309	24	sycamore, American	Platanus occidentalis	1	24	11	36	2	X								N/A
310	31	oak, white	Quercus alba	1	31	14	47	2	X								N/A
311	36	sycamore, American	Platanus occidentalis	1	36	16	54	3	X								Tree architecture
312	26	sycamore, American	Platanus occidentalis	1	26	12	39	2	X								N/A
313	17	oak, northern red	Quercus rubra	1	17	8	26	3	X								Trunk condition
314	31	oak, northern red	Quercus rubra	1	31	14	47	3	X								Dead and/or dying branches
315	22	oak, northern red	Quercus rubra	1	22	10	33	2	X								N/A
316	26	oak, northern red	Quercus rubra	1	26	12	39	4	X								Tree architecture
317	30	oak, northern red	Quercus rubra	1	30	14	45	4	X								Dead and/or dying branches
318	28	oak, chinkapin	Quercus muehlenbergii	1	28	13	42	3	X								Dead and/or dying branches
319	28	oak, northern red	Quercus rubra	1	28	13	42	2	X								Dead and/or dying branches
320	25	baldcypress, common	Taxodium distichum	1	25	11	38	2	X								N/A
321	31	oak, northern red	Quercus rubra	1	31	14	47	3	X								Dead and/or dying branches
322	22	oak, northern red	Quercus rubra	1	22	10	33	4	X								Tree architecture
323	25	oak, white	Quercus alba	1	25	11	38	3	X								Dead and/or dying branches
324	21	oak, white	Quercus alba	1	21	9	32	2	X								N/A
325	8	redcedar, eastern	Juniperus virginiana	1	8	4	12	2	X								N/A
326	19	oak, northern red	Quercus rubra	1	19	9	29	3	X								Dead and/or dying branches
327	28	oak, northern red	Quercus rubra	1	28	13	42	4	X								Dead and/or dying branches
328	32	oak, northern red	Quercus rubra	1	32	14	48	2	X								N/A
329	28	maple, sugar	Acer saccharum	1	28	13	42	3	X								Dead and/or dying branches
330	27	oak, white	Quercus alba	1	27	12	41	3	X								Tree architecture
331	26	oak, white	Quercus alba	1	26	12	39	3	X								Tree architecture
332	23	oak, white	Quercus alba	1	23	10	35	4	X								Tree architecture
333	19	oak, white	Quercus alba	1	19	9	29	3	X								Tree architecture
334	31	yellowwood, American	Cladrastis kentukea	1	31	14	47	4	X								Cracks
335	31, 30	elm, American	Ulmus americana	2	44	19	65	4	X								Decay or Cavity
336	13	blackgum	Nyssa sylvatica	1	13	6	20	2	X								N/A
337	22	elm, American	Ulmus americana	1	22	10	33	4	X								Decay or Cavity
338	38	oak, northern pin	Quercus ellipsoidalis	1	38	17	57	4	X								Dead and/or dying branches
339	31	oak, white	Quercus alba	1	31	14	47	3							X	X	Dead and/or dying branches
340	24	oak, white	Quercus alba	1	24	11	36	3								X	Dead and/or dying branches
341	35	oak, white	Quercus alba	1	35	16	53	3								X	Dead and/or dying branches
342	27	pine, Scots	Pinus sylvestris	1	27	12	41	3	X								Dead and/or dying branches
343	26	pine, Scots	Pinus sylvestris	1	26	12	39	4	X								Dead and/or dying branches
344	26	horsechestnut	Aesculus hippocastanum	1	26	12	39	3								X	Tree architecture
345	35	oak, white	Quercus alba	1	35	16	53	2								X	N/A
346	31	oak, white	Quercus alba	1	31	14	47	3								X	Dead and/or dying branches
347	30, 33	oak, black	Quercus velutina	2	45	20	67	4							X	X	Tree architecture
348	17	oak, northern red	Quercus rubra	1	17	8	26	3	X								Dead and/or dying branches
349	33	oak, white	Quercus alba	1	33	15	50	3							X	X	Dead and/or dying branches
350	17	redcedar, eastern	Juniperus virginiana	1	17	8	26	2	X								N/A
351	24	maple, silver	Acer saccharinum	1	24	11	36	4								X	Decay or Cavity
352	30	sycamore, American	Platanus occidentalis	1	30	14	45	2	X								N/A
353	29	oak, black	Quercus velutina	1	29	13	44	4							X	X	Decay or Cavity
354	31	oak, white	Quercus alba	1	31	14	47	3							X	X	Dead and/or dying branches
355	31	sycamore, American	Platanus occidentalis	1	31	14	47	2	X								Dead and/or dying branches
356	35	oak, white	Quercus alba	1	35	16	53	3								X	Dead and/or dying branches
357	27	oak, northern red	Quercus rubra	1	27	12	41	3	X								Dead and/or dying branches
358	32	oak, northern red	Quercus rubra	1	32	14	48	3								X	Dead and/or dying branches
359	36	oak, northern red	Quercus rubra	1	36	16	54	4							X	X	Decay or Cavity
360	25	oak, northern red	Quercus rubra	1	25	11	38	4	X								Tree architecture
361	36	oak, bur	Quercus macrocarpa	1	36	16	54	4								X	Decay or Cavity
362	22	oak, northern red	Quercus rubra	1	22	10	33	3	X								Dead and/or dying branches
363	33	oak, white	Quercus alba	1	33	15	50	3								X	Dead and/or dying branches
364	19	oak, northern red	Quercus rubra	1	19	9	29	4	X								Trunk condition
365	22	oak, northern red	Quercus rubra	1	22	10	33	4	X								Dead and/or dying branches
366	28	baldcypress, common	Taxodium distichum	1	28	13	42	2	X								Dead and/or dying branches
367	28	oak, northern red	Quercus rubra	1	28	13	42	3	X								Dead and/or dying branches
368	31	oak, white	Quercus alba	1	31	14	47	3								X	Dead and/or dying branches
369	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
370	25	oak, white	Quercus alba	1	25	11	38	3								X	Dead and/or dying branches
371	23	hickory, pignut	Carya glabra	1	23	10	35	3								X	Dead and/or dying branches
372	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
373	21	oak, white	Quercus alba	1	21	9	32	3								X	Tree architecture
374	8	redcedar, eastern	Juniperus virginiana	1	8	4	12	2	X								N/A
375	37	oak, white	Quercus alba	1	37	17	56	3								X	Dead and/or dying branches
376	27	unknown tree	unknown tree	1	27	12	41	4	X								Trunk condition
377	23	oak, northern red	Quercus rubra	1	23	10	35	2	X								N/A
378	18	cherry, black	Prunus serotina	1	18	8	27	3	X								Tree architecture
379	27	oak, white	Quercus alba	1	27	12	41	3								X	Dead and/or dying branches
380	21	oak, white	Quercus alba	1	21	9	32	3								X	Dead and/or dying branches
381	19	sycamore, American	Platanus occidentalis	1	19	9	29	3	X								Tree architecture
382	13	arborvitae, eastern	Thuja occidentalis	1	13	6	20	2	X								N/A
383	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
384	12	arborvitae, eastern	Thuja occidentalis	1	12	5	18	2	X								N/A
385	12	arborvitae, eastern	Thuja occidentalis	1	12	5	18	2	X								N/A
386	25	oak, northern red	Quercus rubra	1	25	11	38	4	X								Decay or Cavity
387	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
388	23	oak, white	Quercus alba	1	23	10	35	3	X								Dead and/or dying branches
389	31	oak, northern red	Quercus rubra	1	31	14	47	3	X								Dead and/or dying branches
390	21	cherry, black	Prunus serotina	1	21	9	32	2	X								N/A
391	32	oak, northern red	Quercus rubra	1	32	14	48	3								X	Dead and/or dying branches
392	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
393	32	oak, white	Quercus alba	1	32	14	48	4								X	Decay or Cavity
394	19	hickory, pignut	Carya glabra	1	19	9	29	2	X								N/A
395	27	oak, white	Quercus alba	1	27	12	41	3								X	Dead and/or dying branches
396	18	cherry, black	Prunus serotina	1	18	8	27	2	X								N/A
397	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
398	22	oak, northern red	Quercus rubra	1	22	10	33	4	X								Decay or Cavity
399	26	cherry, black	Prunus serotina	1	26	12	39	4	X								Decay or Cavity
400	6	hophornbeam, eastern	Ostrya virginiana	1	6	3	9	2	X								N/A
401	18	hickory, pignut	Carya glabra	1	18	8	27	4	X								Dead and/or dying branches
402	20	cherry, black	Prunus serotina	1	20	9	30	3	X								Dead and/or dying branches
403	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
404	31	oak, northern red	Quercus rubra	1	31	14	47	2	X								N/A
405	7	hophornbeam, eastern	Ostrya virginiana	1	7	3	11	2	X								N/A
406	22	cherry, black	Prunus serotina	1	22	10	33	2	X								N/A
407	12	hickory, pignut	Carya glabra	1	12	5	18	2	X								N/A
408	32	cherry, black	Prunus serotina	1	32	14	48	4	X								Trunk condition

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DAVEY Resource Group

TREE PRESERVATION SCHEDULE

MILHAM PARK PHASE 1 IMPROVEMENTS

MILHAM PARK
Kalamazoo, MI

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INTERNATIONAL SOCIETY OF ARBORICULTURE
CARY HULSE
ISA# PD-1080A
CERTIFIED ARBORIST

REVISIONS

No.	Date	Description	Rev. By	App. By

SCALE: 1" = 20' C.I.: 1'

DATE: JUNE 9, 2026

Horizontal Datum: MI83-SIF

Vertical Datum:

Boundary and Topo Source:
OCBA
AR ENGINEERING

Design	Draft	Approved
NE	NE	CH

Sheet #
LJ2.2

WSSI Project Number:
37079.01

Date: 6/9/2026

Tree Preservation Schedule

Project: 37079.01

Tree #	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	Calculated DBH	SRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	TREE TO REMAIN NO IMPACT	Removal (TBR)	Removal By Arborist	Preservation Measures: Root Prune	Tree Protection Fence	Trunk Protection Wrap	SPECIAL ARBORIST TREATMENT AREAS	Construction Oversight/Monitoring	Defects
409	10	hophornbeam, eastern	Ostrya virginiana	1	10	5	15	3	X								Dead and/or dying branches
410	18, 18, 10	cherry, black	Prunus serotina	3	28	12	41	3	X								Tree architecture
411	26	oak, northern red	Quercus rubra	1	26	12	39	3	X								Dead and/or dying branches
412	36	cherry, black	Prunus serotina	1	36	16	54	3	X								Dead and/or dying branches
413	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
414	21	spruce, Norway	Picea abies	1	21	9	32	3	X								Tree architecture
415	21	spruce, Norway	Picea abies	1	21	9	32	4	X								Decay or Cavity
416	4, 4	hophornbeam, eastern	Ostrya virginiana	2	6	3	8	3	X								Tree architecture
417	24	oak, white	Quercus alba	1	24	11	36	3							X	X	Dead and/or dying branches
418	4, 4	hophornbeam, eastern	Ostrya virginiana	2	6	3	8	3	X								Tree architecture
419	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
420	26	oak, northern red	Quercus rubra	1	26	12	39	4							X	X	Decay or Cavity
421	25	cherry, black	Prunus serotina	1	25	11	38	3	X								Tree architecture
422	29	oak, northern red	Quercus rubra	1	29	13	44	4	X								Trunk condition
423	33, 12	cherry, black	Prunus serotina	2	36	16	53	4	X								Decay or Cavity
424	7	hophornbeam, eastern	Ostrya virginiana	1	7	3	11	2	X								N/A
425	29	oak, white	Quercus alba	1	29	13	44	3							X	X	Dead and/or dying branches
426	6	hophornbeam, eastern	Ostrya virginiana	1	6	3	9	4	X								Trunk condition
427	30	cherry, black	Prunus serotina	1	30	14	45	3	X								Dead and/or dying branches
428	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
429	28	oak, white	Quercus alba	1	28	13	42	3							X	X	Dead and/or dying branches
430	18	cherry, black	Prunus serotina	1	18	8	27	3	X								Dead and/or dying branches
431	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	4	X								Dead and/or dying branches
432	25	oak, white	Quercus alba	1	25	11	38	4							X	X	Trunk condition
433	18, 15	cherry, black	Prunus serotina	2	24	11	35	4	X								Trunk condition
434	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	3	X								Dead and/or dying branches
435	22	oak, white	Quercus alba	1	22	10	33	4							X	X	Trunk condition
436	13	hophornbeam, eastern	Ostrya virginiana	1	13	6	20	3	X								Dead and/or dying branches
437	4, 1, 1	hophornbeam, eastern	Ostrya virginiana	3	5	2	6	2	X								N/A
438	35	oak, white	Quercus alba	1	35	16	53	3							X	X	Dead and/or dying branches
439	19	oak, northern red	Quercus rubra	1	19	9	29	4	X								Trunk condition
440	26	oak, white	Quercus alba	1	26	12	39	4							X	X	Tree architecture
441	19	pine, eastern white	Pinus strobus	1	19	9	29	2	X								N/A
442	22	cherry, black	Prunus serotina	1	22	10	33	2	X								N/A
443	30	oak, northern red	Quercus rubra	1	30	14	45	3	X								Decay or Cavity
444	18	spruce, Norway	Picea abies	1	18	8	27	3	X								Tree architecture
445	18	elm, American	Ulmus americana	1	18	8	27	3	X								Dead and/or dying branches
446	18	spruce, Norway	Picea abies	1	18	8	27	3	X								Tree architecture
447	13	hickory, shagbark	Carya ovata	1	13	6	20	2	X								Dead and/or dying branches
448	30	elm, American	Ulmus americana	1	30	14	45	2	X								N/A
449	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
450	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	4	X								Tree architecture
451	30	oak, white	Quercus alba	1	30	14	45	3							X	X	Dead and/or dying branches
452	27	oak, white	Quercus alba	1	27	12	41	3							X	X	Dead and/or dying branches
453	32, 28, 18, 9	elm, American	Ulmus americana	4	48	21	71	4	X								Trunk condition
454	26	oak, northern red	Quercus rubra	1	26	12	39	4	X								Dead and/or dying branches
455	18	maple, sugar	Acer saccharum	1	18	8	27	2	X								N/A
456	24	cherry, black	Prunus serotina	1	24	11	36	4	X								Decay or Cavity
457	25	spruce, Norway	Picea abies	1	25	11	38	3	X								Tree architecture
458	27	spruce, Norway	Picea abies	1	27	12	41	3	X								Tree architecture
459	28, 8, 5	maple, Norway	Acer platanoides	3	30	13	44	2	X								N/A
460	24	elm, American	Ulmus americana	1	24	11	36	2	X								N/A
461	14	hickory, pignut	Carya glabra	1	14	6	21	4	X								Decay or Cavity
462	14	elm, American	Ulmus americana	1	14	6	21	4	X								Decay or Cavity
463	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
464	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
465	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
466	25	cottonwood, eastern	Populus deltoides	1	25	11	38	2	X								N/A
467	16	oak, white	Quercus alba	1	16	7	24	3	X								Tree architecture
468	26	sycamore, American	Platanus occidentalis	1	26	12	39	2	X								N/A
469	7, 5	redbud, eastern	Cercis canadensis	2	9	4	13	4	X								Trunk condition
470	6	redbud, eastern	Cercis canadensis	1	6	3	9	2	X								N/A
471	44	sycamore, American	Platanus occidentalis	1	44	20	66	2	X								N/A
472	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
473	26	oak, northern red	Quercus rubra	1	26	12	39	4	X								Decay or Cavity
474	29	sycamore, American	Platanus occidentalis	1	29	13	44	2	X								N/A
475	15	willow, black	Salix nigra	1	15	7	23	4	X								Decay or Cavity
476	23	sycamore, American	Platanus occidentalis	1	23	10	35	4	X								Tree architecture
477	23	walnut, black	Juglans nigra	1	23	10	35	2	X								N/A
478	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	4	X								Tree architecture
479	18	oak, white	Quercus alba	1	18	8	27	2	X								N/A
480	19	spruce, Colorado	Picea pungens	1	19	9	29	3	X								Dead and/or dying branches
481	22	oak, northern red	Quercus rubra	1	22	10	33	3	X								Dead and/or dying branches
482	23	oak, northern red	Quercus rubra	1	23	10	35	4	X								Trunk condition
483	28	maple, Norway	Acer platanoides	1	28	13	42	2	X								N/A
484	8, 4	hophornbeam, eastern	Ostrya virginiana	2	9	4	13	3	X								Dead and/or dying branches
485	18	oak, northern red	Quercus rubra	1	18	8	27	4	X								Decay or Cavity
486	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
487	22	oak, white	Quercus alba	1	22	10	33	3	X								Dead and/or dying branches
488	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	3	X								Trunk condition
489	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
490	26	oak, northern red	Quercus rubra	1	26	12	39	3	X								Tree architecture
491	20	spruce, Norway	Picea abies	1	20	9	30	2	X								N/A
492	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	4	X								Dead and/or dying branches
493	20	oak, northern red	Quercus rubra	1	20	9	30	4	X								Tree architecture
494	8	hophornbeam, eastern	Ostrya virginiana	1	8	4	12	2	X								N/A
495	27	oak, white	Quercus alba	1	27	12	41	4	X								Tree architecture
496	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
497	18	spruce, Colorado	Picea pungens	1	18	8	27	4	X								Trunk condition
498	21	oak, white	Quercus alba	1	21	9	32	3	X								Dead and/or dying branches
499	27	mulberry, red	Morus rubra	1	27	12	41	4	X								Trunk condition
500	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	4	X								Tree architecture
501	20	hickory, pignut	Carya glabra	1	20	9	30	4	X								Root problem
502	22	elm, American	Ulmus americana	1	22	10	33	4	X								Trunk condition
503	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
504	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
505	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	3	X								Dead and/or dying branches
506	18	elm, American	Ulmus americana	1	18	8	27	4	X								Tree architecture
507	27	oak, northern red	Quercus rubra	1	27	12	41	4	X								Decay or Cavity
508	35	oak, white	Quercus alba	1	35	16	53	3	X								Dead and/or dying branches
509	25	oak, northern red	Quercus rubra	1	25	11	38	4	X								Tree architecture
510	20	oak, northern red	Quercus rubra	1	20	9	30	3	X								Tree architecture

Date: 6/9/2026

Tree Preservation Schedule

Project: 37079.01

Tree #	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Number of Stems	Calculated DBH	SRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Priority (1-4)	TREE TO REMAIN NO IMPACT	Removal (TBR)	Removal By Arborist	Preservation Measures: Root Prune	Tree Protection Fence	Trunk Protection Wrap	SPECIAL ARBORIST TREATMENT AREAS	Construction Oversight/Monitoring	Defects
511	20	oak, northern red	Quercus rubra	1	20	9	30	3	X								Tree architecture
512	21	oak, white	Quercus alba	1	21	9	32	3	X								Dead and/or dying branches
513	32	oak, sp.	Quercus sp.	1	32	14	48	4	X								Tree architecture
514	27	oak, white	Quercus alba	1	27	12	41	3	X								Dead and/or dying branches
515	14	hemlock, eastern	Tsuga canadensis	1	14	6	21	2	X								N/A
516	23	oak, black	Quercus velutina	1	23	10	35	3	X								Dead and/or dying branches
517	18	oak, white	Quercus alba	1	18	8	27	3	X								Tree architecture
518	26	oak, northern red	Quercus rubra	1	26	12	39	2	X								N/A
519	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
520	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
521	20	ash, white	Fraxinus americana	1	20	9	30	2	X								N/A
522	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
523	21	ash, white	Fraxinus americana	1	21	9	32	4	X								Trunk condition
524	13	hemlock, eastern	Tsuga canadensis	1	13	6	20	2	X								N/A
525	25	oak, white	Quercus alba	1	25	11	38	2	X								N/A
526	32	oak, white	Quercus alba	1	32	14	48	2	X								N/A
527	23	hickory, pignut	Carya glabra	1	23	10	35	3	X								Dead and/or dying branches
528	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
529	28	maple, sugar	Acer saccharum	1	28	13	42	2	X								N/A
530	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	3	X								Tree architecture
531	23	oak, northern red	Quercus rubra	1	23	10	35	3	X								Tree architecture
532	22	oak, white	Quercus alba	1	22	10	33	2	X								N/A
533	12	hickory, shagbark	Carya ovata	1	12	5	18	3	X								Tree architecture
534	23	oak, northern red	Quercus rubra	1	23	10	35	3	X								Tree architecture
535	27	oak, sp.	Quercus sp.	1	27	12	41	4	X								Trunk condition
536	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
537	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
538	29	oak, northern red	Quercus rubra	1	29	13	44	3	X								Tree architecture
539	6	hophornbeam, eastern	Ostrya virginiana	1	6	3	9	3	X								Tree architecture
540	28	oak, sp.	Quercus sp.	1	28	13	42	4	X								Trunk condition
541	16	hickory, pignut	Carya glabra	1	16	7	24	2	X								N/A
542	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
543	40	oak, northern red	Quercus rubra	1	40	18	60	4	X								Tree architecture
544	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
545	31	oak, northern red	Quercus rubra	1	31	14	47	4	X								Decay or Cavity
546	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
547	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
548	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
549	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
550	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
551	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
552	9	hophornbeam, eastern	Ostrya virginiana	1	9	4	14	2	X								N/A
553	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
554	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
555	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
556	5	hophornbeam, eastern	Ostrya virginiana	1	5	2	8	2	X								N/A
557	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
558	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
559	18	hickory, pignut	Carya glabra	1	18	8	27	3	X								Dead and/or dying branches
560	25	oak, northern red	Quercus rubra	1	25	11	38	4	X								Decay or Cavity
561	16	hickory, pignut	Carya glabra	1	16	7	24	3	X								Dead and/or dying branches
562	4	hophornbeam, eastern	Ostrya virginiana	1	4	2	6	2	X								N/A
563	6	hophornbeam, eastern	Ostrya virginiana	1	6	3	9	2	X								N/A
564	18	hickory, pignut	Carya glabra	1	18	8	27	4	X								Tree architecture
565	6	hophornbeam, eastern	Ostrya virginiana	1	6	3	9	2	X								N/A
566	6	dogwood, flowering	Cornus florida	1	6	3	9	3	X								Trunk condition

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TREE PRESERVATION SCHEDULE

MILHAM PARK PHASE 1 IMPROVEMENTS

MILHAM PARK
Kalamazoo, MI

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INTERNATIONAL SOCIETY OF ARBORICULTURE
CARY HULSE
ISA# PD-1080A
CERTIFIED ARBORIST

REVISIONS

No.	Date	Description	Rev. By	App. By

DATE: JUNE 9, 2026

SCALE: 1" = 20'

C.I.: 1'

Horizontal Datum: MI83-SIF

Vertical Datum:

Boundary and Topo Source:
OCBA
AR ENGINEERING

Design	Draft	Approved
NE	NE	CH

Sheet #
LJ2.3

WSSI Project Number:
37079.01

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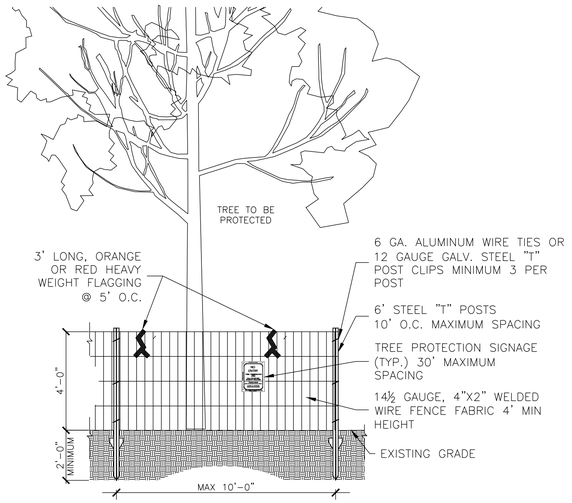
TREE PRESERVATION SPECIFICATIONS AND NARRATIVE

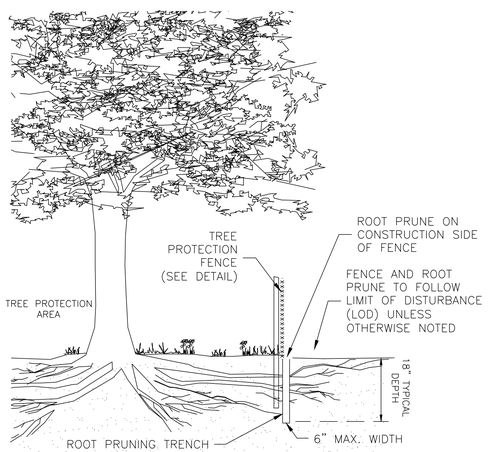
1. GENERAL
   - 1.1. REFER TO THE TREE PROTECTION ACTION KEY (TPAK) FOR SPECIFIC TREATMENTS/MEASURES FOR EACH TREE.
   - 1.2. PRIOR TO ANY DEMOLITION OR CONSTRUCTION WORK WITHIN OR ADJACENT TO TREE PROTECTION AREAS (TPA), A PRE-CONSTRUCTION SITE WALK SHALL BE HELD TO INCLUDE THE CONTRACT ARBORIST AND PROJECT ARBORIST WITH THE CONTRACTOR, LANDSCAPE ARCHITECT, *CITY FORESTER*, AND OWNER.
   - 1.3. SUBSTITUTIONS OR ALTERNATIVE METHODS OR MATERIALS SHALL BE REVIEWED AND APPROVED BY *CITY FORESTER*.
   - 1.4. ALL TREE PROTECTION MEASURES MUST BE IN PLACE PRIOR TO COMMENCEMENT OF DEMOLITION, SITE CLEARING OR CONSTRUCTION AND MAINTAINED THROUGHOUT CONSTRUCTION. TREE PROTECTION MEASURES MAY ONLY BE REMOVED WITH *CITY FORESTER* APPROVAL.
   - 1.5. ALL MEASURES WILL BE REVIEWED AFTER INSTALLATION AND APPROVED BY OWNER AND *CITY FORESTER*.
2. REMOVAL BY ARBORIST/BY-HAND TREE REMOVAL
   - 2.1. TREES DESIGNATED FOR REMOVAL THAT ARE OUTSIDE THE PROJECT LOD OR WITHIN FENCED TREE PROTECTION AREAS SHALL BE REMOVED "BY HAND" BY A QUALIFIED ARBORIST OR UNDER DIRECT ARBORIST SUPERVISION. ALL WORK SHALL BE DONE IN A MANNER TO MINIMIZE POTENTIAL FOR DAMAGE TO REMAINING TREES AND ROOTS.
   - 2.2. CREWS SHALL BE DIRECTLY SUPERVISED BY A CERTIFIED ARBORIST.
   - 2.3. TRUCKS AND MECHANIZED EQUIPMENT SHALL NOT ENTER THE FENCED TREE PROTECTION AREAS, EXCEPT WHERE EXPLICITLY APPROVED BY THE PROJECT ARBORIST AND UTILIZING APPROVED ROOT PROTECTION DEVICE.
   - 2.4. STUMPS SHALL BE LEFT IN PLACE OR GROUND OUT AT THE OWNERS DISCRETION. STUMPS IN TURF/LANDSCAPE AREAS OR WITHIN ROOT AERATION MATTING AREAS SHALL BE GROUND.
   - 2.5. STUMP GRINDING SHALL BE DONE WITH SMALL MACHINES SPECIFICALLY DESIGNED FOR THAT PURPOSE. NO STUMPS SHALL BE EXCAVATED EXCEPT AS DESCRIBED HEREIN. STUMPS SHALL BE GROUND NOT MORE THAN 8" BELOW GRADE AND CARE MUST BE TAKEN TO MINIMIZE DAMAGE TO ROOTS OF RETAINED TREES.
3. TREE PROTECTION FENCE
   - 3.1. INSTALL AND MAINTAIN TEMPORARY TREE PROTECTION FENCE FOR EACH TREE PROTECTION AREA AS SHOWN ON THE PLAN. INSTALLATION IS TYPICALLY AFTER ROOT PRUNING AND PRIOR TO CLEARING & GRADING.
   - 3.2. FENCE SHALL BE ONE OF THE FOLLOWING: (SEE DETAIL)
     - 3.2.2. 4' HIGH, ORANGE HDPE FENCE MOUNTED ON 6' STEEL "T" POSTS SPACED NOT MORE THAN 8' APART. FENCE SHALL BE ATTACHED TO POSTS USING PLASTIC TIES, MINIMUM 3 TIES PER POST.
     - 3.2.3. 4' HIGH, 14 GAUGE WELDED WIRE FENCE MOUNTED ON 6' STEEL "T" POSTS SPACED NOT MORE THAN 10' APART. FENCE SHALL BE ATTACHED TO POSTS USING GALVANIZED STEEL CLIPS OR ALUMINUM TIES.
     - 3.2.4. 6' HIGH CHAIN LINK FENCE FABRIC MOUNTED ON 8', 1.5"ø GALVANIZED STEEL PIPE LINE POSTS. CORNER POSTS SHALL BE 2"ø. FENCE SHALL BE ATTACHED TO POSTS USING ALUMINUM TIES.
     - 3.2.5. "SUPER SILT FENCE" (SILT FENCE WITH AN INCORPORATED CHAIN LINK FENCE FABRIC) INSTALLED AS SPECIFIED BY APPROPRIATE STATE OR LOCAL EROSION AND SEDIMENT CONTROL REQUIREMENTS. SUPER SILT FENCE MAY ONLY BE USED WHERE ROOT PRUNING IS COINCIDENT.
   - 3.3. SILT FENCE SHALL BE COORDINATED FOR INSTALLATION TO ENHANCE PROTECTION AND AVOID UNNECESSARY ROOT CUTS BY SILT FENCE INSTALLATION.
   - 3.4. FENCE SHALL REMAIN FOR THE DURATION OF CONSTRUCTION. FENCE MAY BE REMOVED ONLY AFTER ALL CONSTRUCTION AND FINAL LANDSCAPING IS COMPLETE AND WITH *CITY FORESTER* APPROVAL.
4. TREE PROTECTION AREA SIGNS
   - 4.1. TREE PROTECTION AREA SIGNS SHALL BE AFFIXED TO ALL TREE PROTECTION FENCE AT 30' SPACING AVERAGE.
   - 4.2. SIGNS SHALL BE BILINGUAL (ENGLISH AND SPANISH).
   - 4.3. SIGNS SHALL NOT BE AFFIXED DIRECTLY TO TREES. SEE DETAIL.
   - 4.4. SIGN MATERIAL SHALL BE WATERPROOF, HEAVY VINYL OR SIMILAR.
   - 4.5. SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
5. ROOT PRUNE
   - 5.1. THE EXACT LOCATION AND DEPTH WILL BE DETERMINED DURING THE PRE-CONSTRUCTION MEETING. SPECIFIC EQUIPMENT & METHODS WILL BE DETERMINED BY PROJECT ARBORIST AND *CITY FORESTER* BASED UPON DEPTH & TREE IMPACT. (SEE DETAIL)
   - 5.2. HAND PRUNE ROOTS OVER 1" DIAMETER WITHIN CRZS OF SIGNIFICANT TREES. STEEP SLOPES, DEEP EXCAVATIONS AND PAVEMENT/CURB REMOVAL WILL BE REVIEWED WHEN OPEN FOR HAND ROOT PRUNING DURING CONSTRUCTION.
   - 5.3. COORDINATE WITH SILT FENCE INSTALLATION TO MINIMIZE UNNECESSARY ROOT DAMAGE.
   - 5.4. ROOT PRUNING SHALL BE PERFORMED BY A CERTIFIED ARBORIST
6. CONSTRUCTION MONITORING/INSPECTIONS
   - 6.1. A CERTIFIED ARBORIST SHALL ACTIVELY MONITOR THE SITE TO ENSURE ADHERENCE TO ALL TREE PROTECTION REQUIREMENTS.
   - 6.2. THIS WORK IS TYPICALLY PREFORMED BY THE CONTRACT ARBORIST, TO BE HIRED BY THE GENERAL CONTRACTOR OR OWNER.
   - 6.3. SCHEDULE:
     - 6.3.1. PHASE 1 (DURING INITIAL CLEARING AND INSTALLATION OF TREE PROTECTION AND PERIMETER E&S CONTROLS) INSPECTIONS SHALL BE AT LEAST WEEKLY.
     - 6.3.2. PHASE 2 (DURING ALL REMAINING SITE WORK AND UNTIL PROJECT COMPLETION) INSPECTIONS SHALL BE AT LEAST MONTHLY.
     - 6.3.3. TRANSITION FROM WEEKLY TO MONTHLY SCHEDULE SHALL REQUIRE OWNER AND *CITY FORESTER* APPROVAL.
   - 6.4. REPORTS SHALL BE PROVIDED TO THE OWNER AND *CITY FORESTER*. REPORTS SHALL DOCUMENT CONDITION OF TREE PROTECTION DEVICES AND PROVIDE RECOMMENDATIONS FOR MAINTENANCE AND/OR ADDITIONAL CARE.
   - 6.5. ADDITIONAL ARBORIST INSPECTIONS AND/OR DIRECT ARBORIST OVERSIGHT OF CRITICAL TREE PRESERVATION ACTIVITIES, TREE PRUNING, TREE REMOVAL, OR OTHER SENSITIVE ACTIVITIES MAY BE REQUIRED. WEEKLY INSPECTIONS DO NOT SATISFY THE NEED FOR DIRECT ARBORIST OVERSIGHT THAT MAY BE REQUIRED FOR SPECIFIC ACTIVITIES. REFER TO SPECIAL ARBORIST TREATMENT AREAS.
7. MISCELLANEOUS TREE PROTECTION REQUIREMENTS
   - 7.1. NO TOXIC MATERIALS SHALL BE STORED WITHIN 100' OF TREE PROTECTION AREAS.
   - 7.2. ALL WORK IN OR NEAR TREE PROTECTION AREAS SHALL BE PERFORMED IN A MANNER TO MINIMIZE DAMAGE TO TREES, SHRUBS, GROUND COVER, SOIL AND ROOT SYSTEMS.
   - 7.3. MECHANIZED EQUIPMENT SHALL NOT BE PERMITTED TO ENTER ANY TREE PROTECTION AREAS WITHOUT EXPLICIT APPROVAL BY THE PROJECT ARBORIST AND *CITY FORESTER*, AND WITH ADEQUATE APPROVED ROOT PROTECTION DEVICES.
8. CONSTRUCTION STRATEGIES FOR TREE PROTECTION
   - 8.1. CONSTRUCTION STAGING, STOCKPILING, EQUIPMENT STORAGE, MASONRY SET-UP AND WASHOUT, ETC. SHALL BE LIMITED TO AREAS OF EXISTING PAVEMENT AND AREAS WITHIN THE LOD EXCEPT AS OTHERWISE NOTED.
   - 8.2. CONSTRUCTION EQUIPMENT ACCESS BETWEEN VARIOUS WORK AREAS SHALL REMAIN ON EXISTING PAVEMENT/IMPROVED SURFACES TO THE GREATEST EXTENT POSSIBLE. WHERE THIS IS NOT POSSIBLE AND WITHIN THE CRITICAL ROOT ZONE (CRZ) OF ANY TREE TO REMAIN, ACCESS SHALL BE MADE ON ROOT PROTECTION MATTING (RPM)(SEE DETAIL) OR APPROVED ALTERNATIVE. CONTRACTOR TO DETERMINE ACCESS NEEDS AND COORDINATE RPM INSTALLATION WITH THE CONTRACT ARBORIST AT THE PRE-CONSTRUCTION MEETING OR BEFORE.
   - 8.3. PROPOSED LANDSCAPE PLANTINGS WITHIN TREE PROTECTION AREAS SHALL BE INSTALLED BY HAND. MECHANIZED EQUIPMENT SHALL NOT BE USED OUTSIDE THE LOD OR OFF OF EXISTING PAVED AREAS TO EXCAVATE FOR PLANTINGS OR FOR STAGING PLANT MATERIAL.
   - 8.4. COORDINATE PLANTING LOCATIONS WITHIN CRZS WITH THE CONTRACT ARBORIST TO AVOID UNNECESSARY ROOT DAMAGE. PLANTING PITS WITHIN CRZS SHOULD BE DUG BY HAND OR USING AIRTOOL EXCAVATION EQUIPMENT. ROOTS GREATER THAN 1" SHOULD NOT BE CUT.
9. PUBLICATIONS INCLUDED BY REFERENCE

   PUBLICATIONS LISTED HEREIN ARE PART OF THIS WORK TO EXTENT REFERENCED:
   - 9.1. ANSI A300 – 2023 TREE CARE STANDARDS, AND MOST RECENT UPDATES
   - 9.2. ANSI Z133.1 – 2026 SAFETY AND HEALTH REQUIREMENTS FOR ARBORICULTURAL OPERATIONS, AND MOST RECENT UPDATES
10. TREE TRUNK PROTECTION WRAP
    - 10.1. TRUNKS OF TREES IN CLOSE PROXIMITY TO CONSTRUCTION SHALL BE PROTECTED WITH A SINGLE WRAP OF GEOCOMPOSITE. GEOCOMPOSITE SHALL BE DOUBLE SIDED, GEONET CORE WITH NON-WOVEN COVERING (SUCH AS TENSAR ROADRAIN RD7) OR EQUIVALENT.
    - 10.2. WRAP SHALL BE NOT LESS THAN 10' HIGH ON TRUNK OR UP TO THE LOWEST LIMB (WHICHEVER IS LESS). EXPOSED ROOT FLARE SHALL ALSO BE FULLY COVERED.
    - 10.3. WRAP SHALL BE TIED WITH ROPE OR WIRE. TIE MATERIAL SHALL NOT CONTACT TRUNK.
    - 10.4. WRAP SHALL BE REMOVED PROMPTLY AFTER CONSTRUCTION.
11. SPECIAL ARBORIST TREATMENT AREAS
    - 11.1. AREAS DESIGNATED FOR SPECIAL ARBORIST TREATMENT ARE AREAS WITHIN THE GENERAL CONTRACTORS SCOPE OF WORK THAT REQUIRE SPECIAL EFFORTS TO MINIMIZE DAMAGE TO ROOTS OF ADJACENT TREES AND MINIMIZE SOIL COMPACTION.
    - 11.2. ALL WORK WITHIN THESE AREAS MUST BE DONE UNDER THE DIRECT SUPERVISION OF A CERTIFIED ARBORIST. THE CONTRACT ARBORIST SHALL PROVIDE A QUALIFIED ARBORIST TO OVERSEE ALL WORK. THE ARBORIST SHALL HAVE AUTHORITY TO DIRECT WORK BY OTHER CONTRACTORS/SUBS WITHIN THIS AREA. THE ARBORIST SHALL ENSURE THAT ALL WORK (DEMOLITION, CONSTRUCTION, SITE PREP, UTILITY, OR OTHER) IS DONE IN A MANNER THAT MINIMIZES SOIL COMPACTION, ROOT DAMAGE, TREE TRUNK/BRANCH DAMAGE, ETC.
    - 11.3. PRIOR TO ANY DEMOLITION OR CONSTRUCTION WORK WITHIN OR ADJACENT TO SPECIAL TREATMENT AREAS, A PRE-CONSTRUCTION SITE WALK SHALL BE HELD TO INCLUDE THE CONTRACT ARBORIST AND PROJECT ARBORIST WITH THE CONTRACTOR, ARCHITECT, *CITY FORESTER*, AND OWNER.
    - 11.4. ALL TREE PROTECTION MEASURES WITHIN SPECIAL TREATMENT AREAS MUST BE IN PLACE PRIOR TO COMMENCEMENT OF DEMOLITION, SITE CLEARING OR CONSTRUCTION AND MAINTAINED THROUGHOUT CONSTRUCTION. TREE PROTECTION MEASURES WITHIN SPECIAL TREATMENT AREAS MAY ONLY BE REMOVED WITH *CITY FORESTER* APPROVAL.
    - 11.5. ALL MEASURES WILL BE REVIEWED AFTER INSTALLATION AND APPROVED BY OWNER AND *CITY FORESTER*.
    - 11.6. ALL WORK WITHIN SPECIAL TREATMENT AREAS SHALL CONFORM TO THE FOLLOWING MEASURES TO MINIMIZE COMPACTION, MINIMIZE ROOT DAMAGE/DISTURBANCE, AND SHALL BE APPLIED AS DIRECTED BY THE CONTRACT ARBORIST, PROJECT ARBORIST, AND *CITY FORESTER*
    - 11.7. SPECIAL DEMOLITION PROCEDURES
      - 11.7.1. DEMOLITION OF ASPHALT/CONCRETE PAVEMENTS, WALLS, FOOTINGS, WALKS, CURBS, AND OTHER IMPROVEMENTS OR HARDSCAPE WITHIN TREE PROTECTION AREAS (TPAS) SHALL BE DIRECTLY SUPERVISED BY A CERTIFIED ARBORIST.
      - 11.7.2. ALL WORK MUST BE PERFORMED IN A MANNER TO AVOID ROOT DAMAGE/DISTURBANCE, SOIL COMPACTION, OR OTHER TREE IMPACTS.
      - 11.7.3. UTILITIES SHOULD BE ABANDONED IN PLACE WHEREVER POSSIBLE.
      - 11.7.4. MECHANIZED EQUIPMENT SHALL NOT ENTER THE TPAS, EXCEPT WHERE EXPLICITLY APPROVED BY THE PROJECT ARBORIST AND UTILIZING APPROVED ROOT PROTECTION DEVICE.
      - 11.7.5. WORK SHALL BE SEQUENCED SUCH THAT ALL MECHANIZED EQUIPMENT WILL REMAIN ON EXISTING HARDSCAPE/PAVEMENT AS WORK PROGRESSES TO AVOID SOIL COMPACTION.
      - 11.7.6. BACKFILL OF VOIDS FROM DEMOLITION WITHIN THE TPAS SHALL BE LOOSELY PLACED TOPSOIL. ONLY THE AMOUNT OF SOIL NECESSARY TO FILL THE VOID WITHOUT SPREADING OVER EXISTING ADJACENT GRADES SHALL BE ALLOWED. BACKFILL SHALL NOT BE COMPACTED.
      - 11.7.7. ROOTS ENCOUNTERED DURING DEMOLITION SHALL BE REVIEWED ON A CASE-BY-CASE BASIS BY THE CONTRACT ARBORIST. THE ARBORIST SHALL PROVIDE APPROPRIATE TREATMENT OR PRUNING METHODS AS NEEDED AND IN GENERAL CONFORMANCE WITH ACCEPTED INDUSTRY STANDARDS AND THIS SECTION.
    - 11.8. EXCAVATION WITHIN CRZS
      - 11.8.1. EXCAVATION FOR PROPOSED GRADE CUTS, UTILITIES, DRAINAGE PLUMBING, LIGHTING CONDUITS, HARDSCAPE, IRRIGATION, OR OTHER IMPROVEMENTS WITHIN TREE PROTECTION AREAS (TPAS) SHALL BE EXCAVATED BY HAND OR BY SUPERSONIC AIRTOOL (SSAT) TO MINIMIZE DAMAGE TO ROOT SYSTEMS.
      - 11.8.2. OWNER, CONTRACTOR, CONTRACT ARBORIST, AND *CITY FORESTER* SHALL REVIEW THE PROPOSED LOCATION(S) DURING THE PRE-CONSTRUCTION MEETING.
      - 11.8.3. PRE-WATERING OF THE PROPOSED AREAS OF EXCAVATION DURING SUMMER AND FALL MONTHS IS RECOMMENDED TO MAINTAIN ROOT / SOIL MOISTURE.
      - 11.8.4. THE CONTRACT ARBORIST SHALL PROVIDE A QUALIFIED ARBORIST CREW EXPERIENCED WITH SUCH WORK TO PROTECT ADJACENT TREES, OPEN THE EXCAVATION, HAND PRUNE MINOR ROOTS, AND IDENTIFY AND PROTECT PRIORITY ROOTS TO REMAIN. COORDINATION WITH THE APPROPRIATE SUB-CONTRACTOR SHALL BE MADE TO DETERMINE APPROPRIATE WIDTH, DEPTH & SEQUENCING, UTILITY INSTALLATION, BACKFILL, COMPLETION, AND COVER.
      - 11.8.5. ALL WORK WITHIN TPAS SHALL BE DIRECTLY SUPERVISED BY A CERTIFIED ARBORIST.
      - 11.8.6. COMPACTION OF EXISTING SOILS SHALL BE MINIMIZED.
    - 11.9. GRADE FILL PLACEMENT WITHIN CRZS
      - 11.9.1. PROPOSED GRADE FILL WITHIN PROTECTED TREE CRZS SHALL UTILIZE A WELL DRAINED SOIL MATERIAL WITH HIGH SAND/LOAM CONTENT AND LOW CLAY CONTENT IN ORDER TO PROMOTE DRAINAGE AND AERATION INTO EXISTING GRADE. GRADE FILL SHALL NOT EXCEED 6" DEPTH.
      - 11.9.2. SHOULD EXISTING SOILS WITHIN PROTECTED CRZS BE DESIGNATED AS "COMPACTED", THEN DECOMPACTION USING AN AIR-TOOL SHALL BE DONE PRIOR TO OR IN CONJUNCTION WITH FILL PLACEMENT. DEPTH OF AIR TOOL DECOMPACTION SHALL BE 12" OR UNTIL REFUSAL. PRE-WATERING DURING DROUGHT TIMES IS REQUIRED.
      - 11.9.3. PLACEMENT OF FILL SHALL NOT FURTHER COMPACT EXISTING SOIL. USE OF RUBBER TRACKED, LOW-PSI EQUIPMENT IS REQUIRED, OR EQUIVALENT.
      - 11.9.4. GRADE FILL SHALL NOT BE PLACED TO COVER THE ROOT FLARE. USE CAUTION TO AVOID GOUGES OR SCRAPES TO TRUNK OR ROOT FLARE.
      - 11.9.5. WOOD CHIP MULCH SHALL BE INSTALLED AFTER FINAL GRADING.
    - 11.10. LANDSCAPE PLANTING EXCAVATION
      - 11.10.1. PROPOSED LANDSCAPE PLANTING OF B&B PLANTS WITHIN CRITICAL ROOT ZONES WITHIN TPAS SHALL BE REVIEWED BY THE CONTRACT ARBORIST, CONTRACTOR, AND *CITY FORESTER* IN THE FIELD TO DETERMINE POTENTIAL FOR DAMAGE TO PRIORITY ROOTS SYSTEMS OF SELECT TREES AND LAYOUT THE LIMIT OF WORK.
      - 11.10.2. PRE-WATERING OF THE PROPOSED AREAS OF EXCAVATION DURING SUMMER AND FALL MONTHS IS RECOMMENDED TO MAINTAIN ROOT / SOIL MOISTURE.
      - 11.10.3. THE CONTRACT ARBORIST SHALL PROVIDE A QUALIFIED ARBORIST CREW EXPERIENCED WITH THE SSAT AND LANDSCAPE PLANTING EXCAVATION TO PROTECT ADJACENT NATURAL RESOURCES AND CONSTRUCTION WORK, OPEN THE EXCAVATION, HAND PRUNE MINOR ROOTS, AND IDENTIFY AND PROTECT PRIORITY ROOTS TO REMAIN. COORDINATION WITH THE APPROPRIATE SUB-CONTRACTOR SHALL BE MADE TO DETERMINE APPROPRIATE WIDTH, DEPTH, SEQUENCING.
      - 11.10.4. ALL WORK WITHIN TPAS SHALL BE DIRECTLY SUPERVISED BY A CERTIFIED ARBORIST.
      - 11.10.5. THE CONTRACT ARBORIST SHALL PROVIDE ADEQUATE PROTECTION FOR PEDESTRIANS, STRUCTURES, VEHICLES, ETC. DURING THIS OPERATION.
    - 11.11. ARBORIST OVERSIGHT
      - 11.11.1. THE CONTRACT ARBORIST SHALL DIRECTLY OVERSEE ALL WORK, INCLUDING DEMOLITION, EXCAVATION, OR CONSTRUCTION, WITHIN SPECIAL TREATMENT AREAS.
      - 11.11.2. THE CONTRACT ARBORIST SHALL ENSURE THAT THE CREWS PERFORMING WORK WITHIN SPECIAL TREATMENT AREAS MINIMIZE SOIL COMPACTION AND AVOID ROOT DAMAGE.
      - 11.11.3. THE CONTRACT ARBORIST SHALL DOCUMENT ALL WORK AND PROVIDE REGULAR PROGRESS REPORTS TO THE PROJECT ARBORIST, OWNER, AND *CITY FORESTER*. WEEKLY REPORTING IS TYPICALLY ACCEPTABLE, BUT MORE FREQUENT REPORTING MAY BE REQUIRED IN AREAS OF INTENSIVE WORK OR NEAR CRITICAL TREES AS DETERMINED BY THE OWNER AND PROJECT TEAM AT THE PRE-CONSTRUCTION MEETING.
      - 11.11.4. IN THE EVENT THAT SOIL, ROOTS, OR TREES ARE DISTURBED/DAMAGED BEYOND PLANNED, APPROVED, OR ACCEPTABLE LEVELS, THE CONTRACT ARBORIST SHALL IMMEDIATELY NOTIFY THE PROJECT ARBORIST, OWNER, AND *CITY FORESTER* TO DETERMINE APPROPRIATE REMEDIAL/MITIGATION STRATEGIES.
      - 11.11.5. IF ROOTS ARE ENCOUNTERED DURING ANY WORK WITHIN THE SPECIAL TREATMENT AREAS, THE CONTRACT ARBORIST SHALL REVIEW IMMEDIATELY. ROOTS MAY BE PRUNED OR PROTECTED AT THE CONTRACT ARBORIST'S DISCRETION. ROOTS GREATER THAN 1"ø SHOULD NOT BE CUT. ALL ROOT DAMAGE/PRUNING SHALL BE DOCUMENTED WITH PHOTOS AND INCLUDED IN THE REGULAR REPORTS.
    - 11.12. EROSION CONTROL COORDINATION
      - 11.12.1. TRENCHING FOR CONVENTIONAL SILT FENCE CAN DAMAGE TREE ROOTS.
      - 11.12.2. INSTALLATION OF SILT FENCE FOR EROSION CONTROL SHALL BE COORDINATED WITH THE CONTRACT ARBORIST AND PROJECT TEAM TO PREVENT DAMAGE TO TREE ROOTS FROM TRENCHING OPERATIONS. TRENCHLESS EROSION CONTROL MEASURES (SUCH AS COMPOST FILTER SOCKS OR SIMILAR DEVICES) SHOULD BE USED IN LIEU OF OR IN COMBINATION WITH SILT FABRIC IF POSSIBLE.



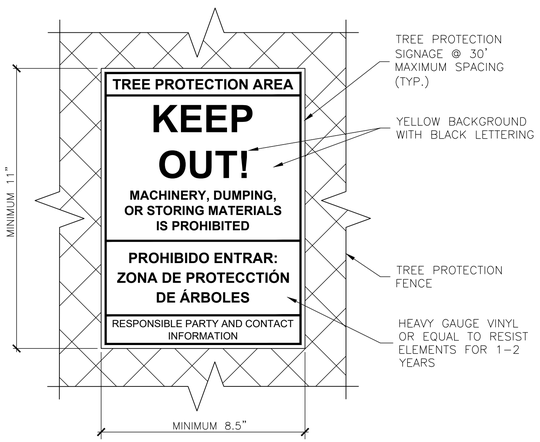
NOTES:
1. TREE PROTECTION FENCE SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION.
2. WHERE REQUIRED, SUPER SILT FENCE MAY BE USED IN LIEU OF WELDED WIRE FOR TREE PROTECTION PROVIDED IT IS INSTALLED AND MAINTAINED AS A TREE PROTECTION MEASURE AND IS POSTED WITH TREE PROTECTION SIGNS.
3. TREE PROTECTION FENCE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. REMOVE FENCE ONLY WITH APPROVAL AND AFTER ALL SITE WORK HAS BEEN COMPLETED.

1 LJ5.1 WELDED WIRE TREE PROTECTION FENCE (TYPICAL)
SCALE: NTS



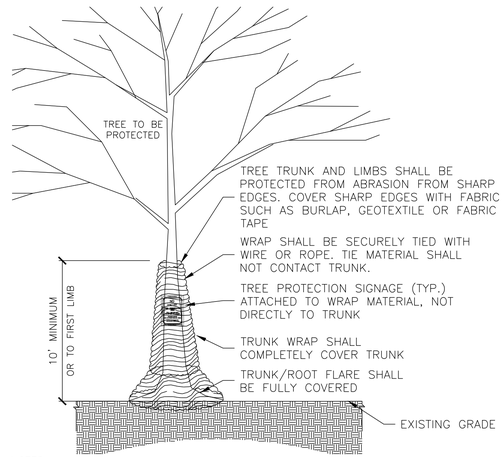
NOTES:
1. TREE PROTECTION AREA WILL BE DETERMINED AS PART OF THE PLAN REVIEW PROCESS. EXACT LOCATION, DEPTH AND METHODS OF ROOT PRUNING TO BE DETERMINED IN THE FIELD BY PROJECT ARBORIST.
2. EXACT LOCATION OF TREE PROTECTION AREAS SHALL BE STAKED OR FLAGGED PRIOR TO TRENCHING.
3. TRENCH SHOULD BE BACKFILLED IMMEDIATELY OR INCORPORATED WITH SILT FENCE INSTALLATION.
4. ROOTS SHOULD BE SEVERED BY ROCK SAW, TRENCHER, VIBRATORY PLOW OR APPROVED EQUIVALENT.
5. ROOTS OVER 1" DIAMETER SHOULD BE CLEANLY CUT BY HAND. ROOT PRUNING ADJACENT TO SPECIMEN TREES MAY REQUIRE SOIL REMOVAL BY SUPERSONIC AIR TOOL TO MINIMIZE TREE AND ROOT IMPACTS.
6. COORDINATE WITH SILT FENCE INSTALLATION (IF REQUIRED) TO MINIMIZE ROOT IMPACTS FROM ADDITIONAL TRENCHING.

2 LJ5.1 ROOT PRUNING (TYPICAL)
SCALE: NTS



NOTES:
1. SIGNS TO BE ATTACHED TO TREE PROTECTION FENCE OR POSTS AT READABLE LEVEL.
2. 30' MINIMUM SPACING AVERAGE ADJUSTED FOR MAXIMUM READABILITY.
3. MINIMUM ONE SIGN FOR SMALL TREE PROTECTION AREAS.
4. SIGNS MAY BE REMOVED FROM RESIDENTIAL LOTS UPON ISSUANCE OF USE AND OCCUPANCY.
5. SIGNS TO REMAIN ON NON RESIDENTIAL SITES FOR MAINTENANCE PERIOD.

3 LJ5.1 TREE PROTECTION AREA SIGN (TYPICAL)
SCALE: NTS



NOTES:
1. TRUNK WRAP MATERIAL SHALL BE DOUBLE SIDED GEOCOMPOSITE, GEONET CORE WITH NON-WOVEN COVERING (SUCH AS TENSAR ROADRAIN RD7) OR EQUIVALENT.
2. WRAP SHALL BE INSTALLED BY A CERTIFIED ARBORIST.
3. WRAP SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION.
4. WRAP SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. REMOVE WRAP ONLY WITH APPROVAL AND AFTER ALL SITE WORK HAS BEEN COMPLETED.
5. WRAP SHALL BE REMOVED PROMPTLY AFTER CONSTRUCTION.
6. MAJOR SCAFFOLD LIMBS MAY ALSO REQUIRE THIS PROTECTION AS DIRECTED BY THE PROJECT ARBORIST.

4 LJ5.1 TREE TRUNK & LIMB PROTECTION WRAP (TYP)
SCALE: NTS

DAVEY Resource Group

TREE PRESERVATION NOTES AND DETAILS

MILHAM PARK PHASE 1 IMPROVEMENTS

MILHAM PARK
Kalamazoo, MI

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INTERNATIONAL SOCIETY OF ARBORICULTURE
CARY HULSE
ISA# PD-1080A
CERTIFIED ARBORIST

REVISIONS

No.	Date	Description	Rev. By	App. By

SCALE: As Noted C.I.: 1'

DATE: JUNE 9, 2026

Horizontal Datum: MI83-SIF

Vertical Datum:

Boundary and Topo Source:
OCBA
AR ENGINEERING

Design	Draft	Approved
NE	NE	CH

Sheet #
LJ5.1

WSSI Project Number:
37079.01

L:\37000s\37000\37079.01\CADD\05-ENVR\TREES\37079.01_MilhamPark_2026.06.09.dwg 5.1 Plotted By: Cary Hulse, 6/9/2026 12:53 PM

PREPARED FOR O'BOYLE, COWELL, BLALOCK & ASSOCIATES, INC.

MILHAM PARK WOODLAND PROTECTION PLAN

DAVEY Resource Group

Introduction

In June and July 2025, DRG conducted a tree assessment within Milham Park located at 607 E. Kilgore Road, Kalamazoo, MI 49001. O'Boyle, Cowell, Blalock & Associates, Inc. (OCBA) has proposed redesigning the park to better serve the City's needs. As part of this process, and in accordance with the Natural Feature Protection (NFP) Overlay zoning ordinance, an International Society of Arboriculture (ISA) Certified Arborist was required to prepare a tree inventory, woodland delineation, and Woodland Protection Plan for City of Kalamazoo approval prior to park enhancement activities.

The purpose of this report is to minimize potential or unintended damage to the remaining woodland areas. It presents the findings from the woodland delineation and tree inventory and provides recommended protection and stress-reduction measures to guide construction activities. Attachment A illustrates the woodland delineation, while a companion PDF AutoCAD map, titled *Tree Assessment*, depicts the tree inventory along with the proposed Tree Protection Fence for the woodland. The map also includes tabulated data to support the recommendations outlined in this plan.

ASSIGNMENT

DRG was contracted to provide the following:

- Delinate woodland boundaries;
- Characterize woodland stands;
- Locate all trees within the project area that fall under Kalamazoo's Protected Species List;
- Measure the trunk diameter of each protected tree;
- Assign preservation priority rankings for each protected tree;
- Provide maps for planning purposes; and,
- Write a Woodland Protection Plan to guide the construction process near designated woodlands and protected trees.

LIMITATIONS OF ASSESSMENT

- Only trees and woodlands within the designated project area were assessed.
- Woodland classification followed Kalamazoo's minimum qualifications:
    - Minimum size: ≥21,780 sq. ft. (½ acre).
    - Tree density: ≥40 trees per acre (≥2" DBH, ≥50 ft. mature height).
    - Ground cover: ≤25% mowed turfgrass.
    - Understory: Presence of smaller trees, shrubs, or forbs.
- Trees exceeding 24" DBH or listed as protected by Kalamazoo were not counted toward woodland classification.
- Trees were visually assessed from the ground; no overhead crown inspections or subsurface assessments were performed.

- Tree conditions are dynamic and may change over time due to environmental events. Assessment data reflect conditions only at the time of evaluation.
- Individual trees respond uniquely to site conditions, so predictions of tree response are not absolute.

METHODS

Woodlands were classified when land cover met Kalamazoo's criteria for size, tree density, ground cover, and understory composition. Gaps within woodlands smaller than 8,000 sq. ft. were included in area and density calculations. All woodlands and trees were located, assessed, and recorded by a DRG ISA certified arborist.

Woodland boundaries were initially estimated using current and historical aerial imagery, then refined during field visits. Woodland characterization employed varied-size (10-factor prism) plot sampling, which estimates tree density, basal area, and stand structure without fixed-area plots. Sample points were placed systematically or randomly. At each point, the arborist used a 10-factor prism at eye level (4.5 ft.) to determine which trees were "in" or "out" based on visual overlap. Basal area per acre was calculated by multiplying the number of "in" trees by the prism's basal area factor, and averages across all points determined overall stand metrics.

All trees meeting Kalamazoo's Protected Species List criteria were inventoried. Visual assessments included the tree base, trunk, scaffold limbs, twigs, and foliage. Trunk diameters were measured with a forester's diameter tape or Biltmore stick, and multi-stem trees were measured as individual stems below 4.5 ft. Small species such as flowering dogwood (*Cornus florida*) and hawthorn (*Crataegus* sp.) were measured below the branching canopy.

The tree inventory data was compiled into a table on the companion PDF AutoCAD map, titled Tree Assessment, including: Tree #, Ownership, DBH, Common Name, Botanical Name, Number of Stems, Structural Critical Root Zone (SCRZ), Critical Root Zone (CRZ), Priority, and Defects. This data provides a foundation for site planning and protected tree preservation decisions.

Woodland protection zones, or proposed Tree Protection Fence areas, were identified using delineated woodland edges and basal area analyses of inventoried protected trees. DRG did not evaluate potential development impacts when establishing these recommendations.

ASSESSMENT RESULTS

The woodland delineation identified three forest stand types (Attachment B):

1. **Stand 1:** 2.32 acres, ~242 stems, basal area 161 ft^2; dominant species: northern red oak (*Quercus rubra*), sugar maple (*Acer saccharum*), eastern hophornbeam (*Ostrya virginiana*).
2. **Stand 2:** 0.87 acres, ~60 stems, basal area 181 ft^2; dominated by Norway maple (*Acer platanoides*).
3. **Stand 3:** 0.76 acres, ~44 stems, basal area 151 ft^2; dominant species: black willow (*Salix nigra*), white ash (*Fraxinus americana*).

The tree inventory identified 566 trees (Tree Assessment Map). Most common species were white oak (*Quercus alba*), northern red oak (*Q. rubra*), and eastern hophornbeam. The average trunk diameter was 24 inches. Priority classifications included:

4. **Priority 1:** 1 tree, highly unique, recommended for preservation.
5. **Priority 2:** 256 trees, generally healthy, recommended for preservation.
6. **Priority 3:** 195 trees, less desirable, may be removed due to species, structure, or location.
7. **Priority 4:** 114 trees, recommended for removal due to poor health or structural defects.

Overall, 59% of trees exhibited defects including dead/dying branches, decay, problematic architecture, root issues, or trunk concerns. Diameters ranged from 4” to 87”.

PROTECTION GUIDELINES

Property development and construction are complex processes that can significantly impact existing trees, altering the appearance and character of the property and surrounding areas. Activities such as demolition, soil compaction, concrete or asphalt installation, utility placement, and trenching can disrupt root systems and negatively affect both the immediate and long-term health and stability of trees. Woodland delineations, tree assessments, and the implementation of planned preservation measures help ensure a healthy urban forest that can be enjoyed well beyond the construction phase.

Preservation suitability is a qualitative evaluation based on tree and site attributes, development plans, and budget. Even Priority Preservation 1 trees may require careful consideration if they conflict with construction plans. While tree survival cannot be guaranteed, healthy and vigorous trees are more likely to tolerate construction impacts and adapt to post-construction conditions. The Tree Assessment Map provides a snapshot of each woodland and tree within the NFP Overlay at the time of assessment. Additional survey-grade mapping and leaf-on assessments may be needed once construction plans are finalized, particularly for trees with root zones near construction areas.

The proposed Tree Protection Fence is designed to respect existing natural features and minimize impacts. Woodlands are delicate ecosystems that rely on a balance of soil, water, vegetation, and wildlife. Soil compaction from equipment, foot traffic, or material storage can restrict root growth and nutrient uptake, while chemical runoff from fuels or concrete can alter soil chemistry and harm soil organisms. Clearly marking and enforcing tree protection areas prevents soil compaction, root damage, trunk injury, and grade changes, helping preserve tree health, stability, and long-term viability.

The Tree Assessment Map also identifies Structural Critical Root Zones (SCRZ) and Critical Root Zones (CRZ) for each protected tree. The SCRZ represents the minimum root plate radius required for structural stability; if any root damage or fill is anticipated within this zone, the tree should be removed. The CRZ defines the minimum area necessary for tree health and survival, with minimal disturbance (≤25%) generally acceptable for healthy trees when mitigation measures are implemented, though the Kalamazoo ordinance restricts any disturbance within the CRZ (50-6.2-F.2.a).

Construction can affect both below-ground roots and above-ground tree components, including foliage, limbs, and trunk. Protected trees within the delineated woodland are included in the proposed Tree Protection Fence area. Large canopies extending beyond fenced limits require additional measures to minimize impacts, such as pruning for equipment clearance under the guidance of a certified arborist.

These guidelines are intended to provide clear, accessible information to support informed decision-making and preservation planning. A collaborative approach among the owner, landscape architect, civil engineer, construction contractor, and arborist is essential to successfully protect trees in areas where construction activities occur, as these operations allow little margin for error.

For OCBA's consideration, DRG has provided a list of Tree Preservation and Stress-Reduction Measures to support the development of a Woodland and Tree Preservation Plan and ensure best practices for tree protection throughout construction.

PLANNING FOR CONSTRUCTION DISTURBANCES

Recommended Steps:

1. **Identify preservation areas** — Determine woodlands and trees to be preserved based on their location relative to the construction plan limits of disturbance.
2. **Improve tree location accuracy** — Engage a certified surveyor to refine tree locations using the same projection as other construction documents for all trees targeted for preservation (Steps 2–5), including those just outside the limits of disturbance.
3. **Select final specimen candidates** — Identify the final group of specimen trees for preservation near construction areas, considering woodland floor and root zone impacts.
4. **Reassess candidate condition** — Reevaluate the health and condition of all specimen preservation candidates prior to the construction phase.
5. **Install tree protection fence** — Install six-foot steel chain-link fencing along woodland edges, with two cross beams at 2' and 6' and mesh barrier affixed to posts. Adjust spacing if roots ≥2" diameter are encountered.
6. **Develop a Woodland and Tree Preservation Plan** — Convert the Tree Assessment Map into a comprehensive Tree and Woodland Preservation Plan to guide preservation activities before, during, and after construction. Include tree care specifications and protection measures as part of the plan.

MANAGING CONSTRUCTION DISTURBANCES

Recommended Steps:

1. **Plan Review**
   Overlay the woodland and tree assessment (with tree protection fencing, CRZs, and SRZs) and plan on all design elements (utilities, foundations, grading). Identify and mitigate conflicts before construction.

2. **Coordination with Construction Managers**
   Ask, “How will this be built?” Adjust equipment, access, staging, and stockpiles to minimize impacts. Document special measures in Construction Documents.

3. **Educational Sessions**
   Conduct pre-construction training for contractors and trades working near trees. If projects are phased, hold additional sessions. Recommended session elements:
   - Owner introduction to demonstrate commitment and request cooperation.
   - Brief overview of tree physiology and construction risks.
   - Review of key preservation methods and equipment adjustments.
   - Illustrated handout and project-specific hard-hat sticker.
   - On-site walk to highlight protected trees and sensitive work areas.

After Construction

Recommended Steps:

1. ISA certified arborist conducts a final inspection of all trees.
2. Perform pruning or repairs as recommended.
3. Replace trees that cannot be restored per city ordinances.
4. Construction Manager notifies NFP staff of all replacements.

References

Coder, Kim D. 1996a. Construction Damage Assessments: Trees and Sites. Athens: The University of Georgia Cooperative Extension Forest Services Unit.

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Cook, Thomas W., and Ann Marie VanDerZanden. 2011. Sustainable Landscape Management: Design, Construction, and Maintenance. Hoboken, NJ: John Wiley & Sons, Inc.

Loehle, Craig. 1987. "Tree Life History Strategies: The Role of Defenses." Canadian Journal of Forest Research 18 (2): 209-222.

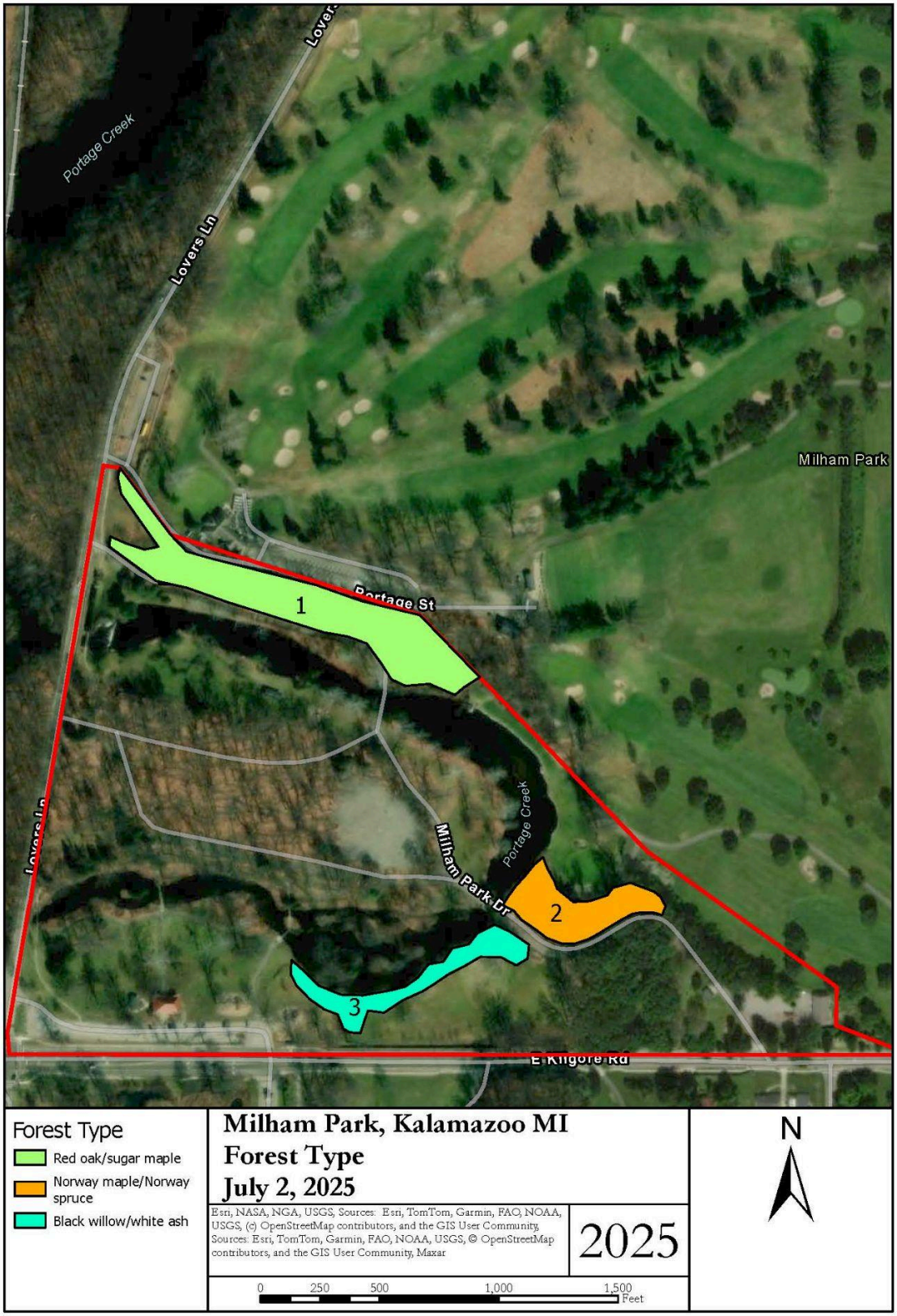
Luley, Christopher J. 2005. Wood Decay Fungi Common to Urban Living Trees in the Northeast and Central United States. Palmyra, NY: Urban Forestry LLC.

Matheny, Nelda P., and James R. Clark. 1998. Trees and Development: A Technical Guide to Preservation of Trees During Land Development. Champaign, IL: International Society of Arboriculture.

United States Department of Agriculture. Executive Order 13751. United States Department of Agriculture. April 2022. {https://www.invasivespeciesinfo.gov/executive-order-13751}

VanDerZanden, A. M. & T. W. Cook. 2010. Sustainable Landscape Management: Design, Construction, and Maintenance. Hoboken, NJ: John Wiley & Sons, Inc.

Appendix A
Map 1. Woodland Delineation


Portage Creek
Lovers Ln
Milham Park
1
Portage St
Lovers Ln
Milham Park Dr
Portage Creek
2
3
E Kilgore Rd
Forest Type
Red oak/sugar maple
Norway maple/Norway spruce
Black willow/white ash
Milham Park, Kalamazoo MI
Forest Type
July 2, 2025
Esri, NASA, NGA, USGS, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Maxar
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0 250 500 1,000 1,500
Feet
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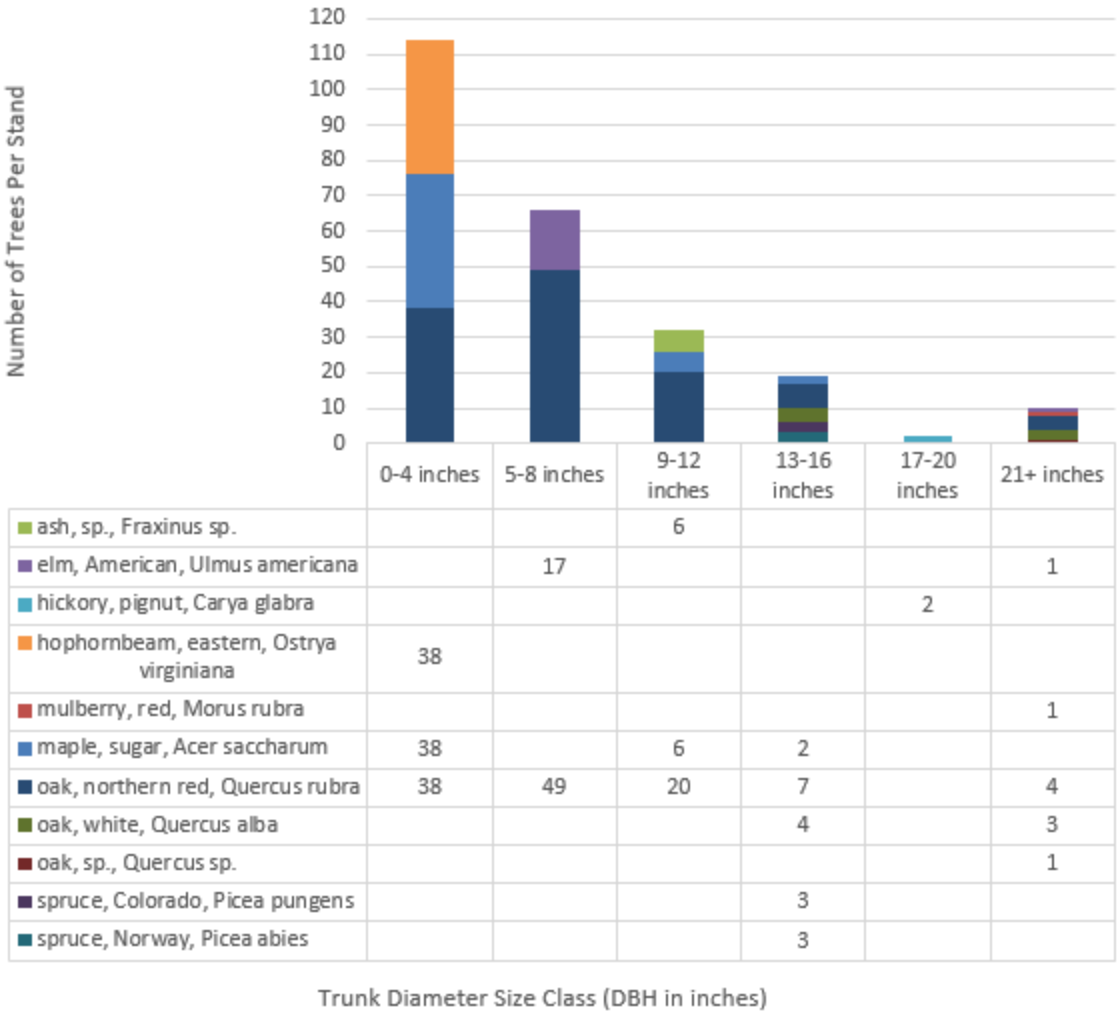
Appendix B

Table 1. Woodland Stand Analysis

Stand	Stems per Acre							Basal Area Square Feet
	0-4 inches	5-8 inches	9-12 inches	13-16 inches	17-20 inches	21+ inches	Grand Total	
1	114	66	32	19	2	10	243	161
2		29	15		5	12	61	181
3		19	20			5	44	152
Grand Total	**114**	**114**	**67**	**19**	**7**	**27**	**348**	**494**



	0-4 inches	5-8 inches	9-12 inches	13-16 inches	17-20 inches	21+ inches
ash, sp., Fraxinus sp.			6			
elm, American, Ulmus americana		17				1
hickory, pignut, Carya glabra					2	
hophornbeam, eastern, Ostrya virginiana	38					
mulberry, red, Morus rubra						1
maple, sugar, Acer saccharum	38		6	2		
oak, northern red, Quercus rubra	38	49	20	7		4
oak, white, Quercus alba				4		3
oak, sp., Quercus sp.						1
spruce, Colorado, Picea pungens				3		
spruce, Norway, Picea abies				3		

Figure 1. Stand 1 species composition and stem counts per acre.

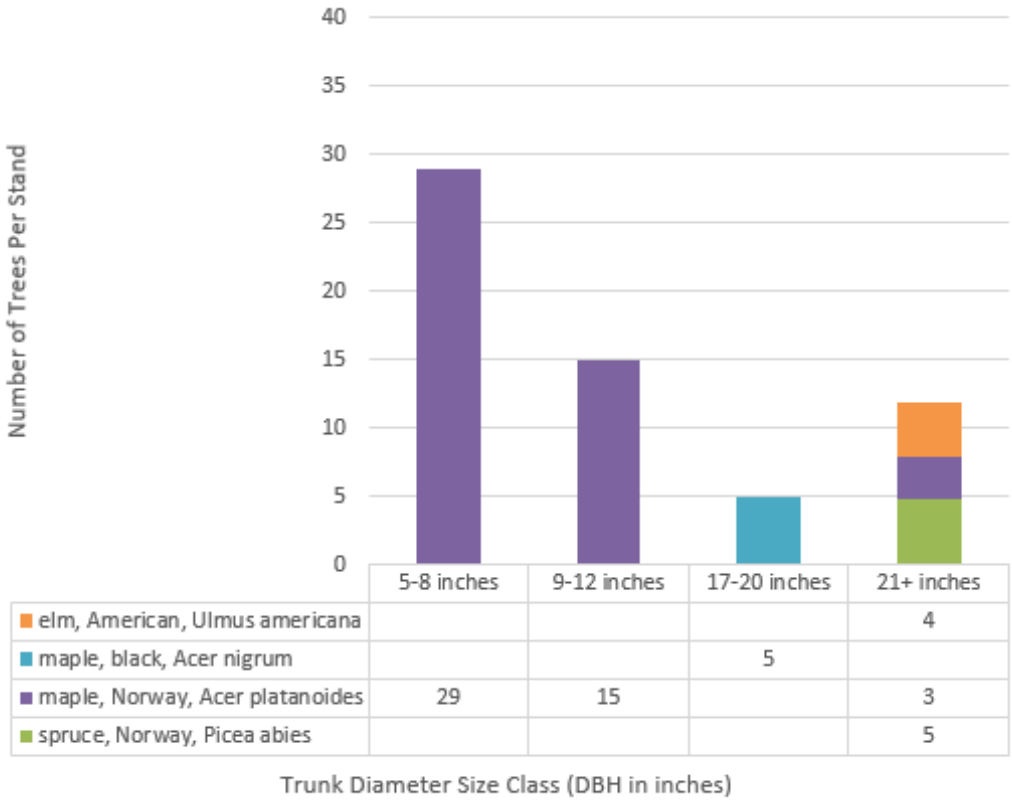


Figure 2. Stand 2 species composition and stem counts per acre.

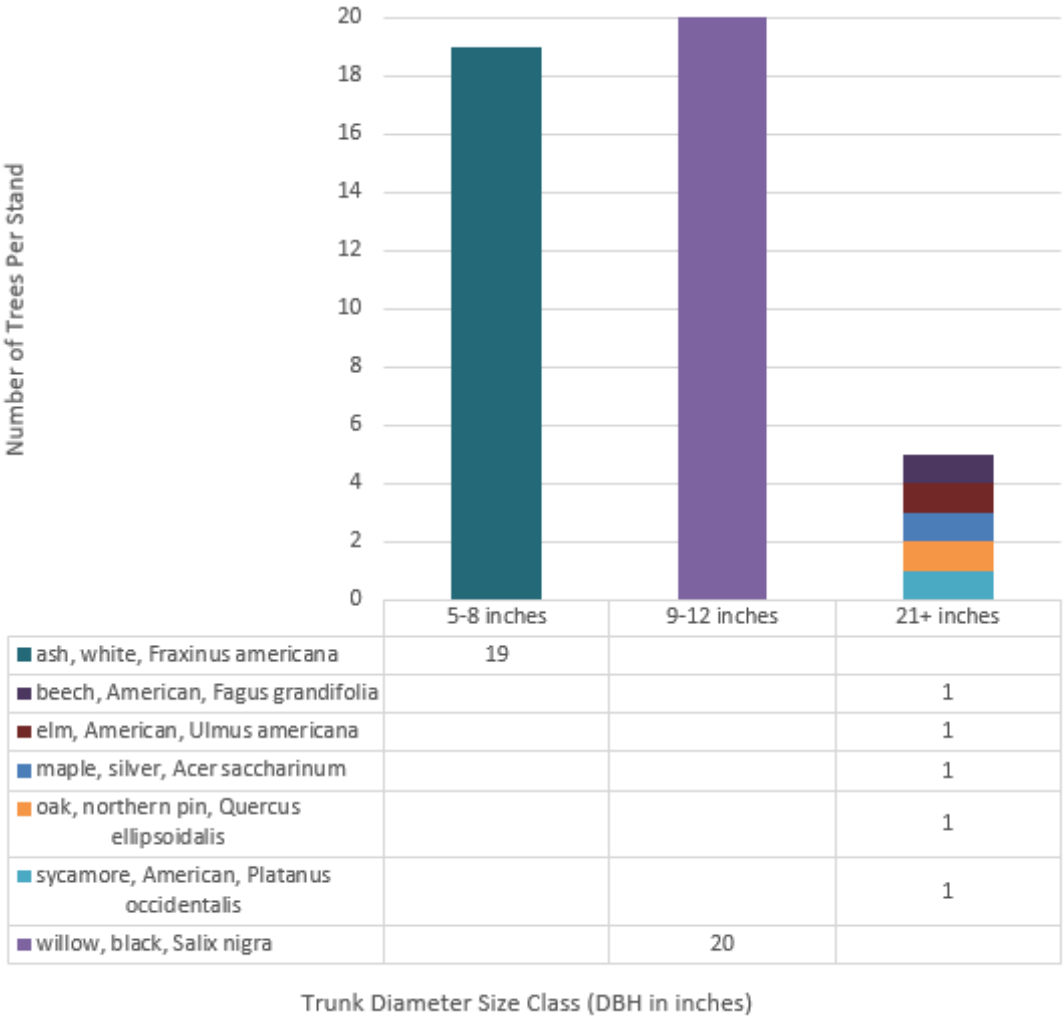


Figure 3. Stand 3 species composition and stem counts per acre.

Appendix C
Tree Preservation Measures

TREE PROTECTION FENCE

Tree protection area will be determined as part of the plan review process. Install protective fencing along construction limits per the Woodland and Tree Protection Plan. DRG prefers the use of 6’ steel chain-link over other materials, spaced no more than 8’ apart and buried at least 2’ below grade. The fence must include two cross beams, placed approximately at 2’ and 6’ above grade, with a plastic mesh barrier affixed to the front of the posts. If using an auger or post hole digger and a tree root over 2" diameter is encountered, adjust the spacing between posts to protect the tree root.

PROHIBITED ACTIVITIES

The NFP Overlay prohibited these activities within the Tree Protection Fencing: spreading soil spoils, heavy equipment or vehicle traffic, storage of construction materials or debris, and any grading changes that would alter moisture conditions within a CRZ, whether temporarily or permanently. Do not store excavated soil, building materials, or dumpster within the Tree Protection Fenced area.

MONITORING AND INSPECTIONS

Have a project arborist who is ISA certified conduct regular inspections, ideally weekly, during active construction and demolition. Reports provided to the City of Kalamazoo document the condition of trees and tree protection devices and offer recommendations for maintenance or additional care as needed.

CANOPY PRUNING

Prune only injured, broken, dying, or dead branches unless otherwise directed by the project arborist. All pruning must comply with ANSI A300 standards. Use sharp pruning tools to make clean cuts; avoiding chopping or tearing of branches.

TEMPORARY ROOT PROTECTION MATTING

Install matting where temporary access is required (e.g., for equipment, stockpiles, staging). Options include light-, heavy-, or extreme-duty mats based on equipment ground pressure and duration of use. A combination of materials, such as wood chip mulch, may also be used. Contractors shall submit material specifications for approval.

SILTATION CONTROL

For trees near masonry work where runoff may enter the CRZ, use Filtrex logs or non-invasive silt fence fabric.

ROOT PRUNING

Conduct clean pruning cuts to avoid tearing or breaking roots. Proper pruning encourages wound closure and root re-sprouting. An arborist should expose roots at the designated line (per the Woodland and Tree Preservation Plan) using a Supersonic Air Tool (SSAT), and then prune with sharp tools and backfill immediately.

UTILITY AND SHALLOW EXCAVATION

For underground utilities running through root zones, arborists should expose and carefully excavate around roots using SSAT, coordinating with engineers to determine conduit cover, backfill, and installation methods.

DEEP EXCAVATION (FOUNDATIONS, MAJOR UTILITIES)

Below 24 inches, SSAT alone is insufficient. Arrange for vacuums appropriate to project scale, ranging from small portable units to Vac-Truck rigs with long hose access (up to 300 feet).

ROOT INVESTIGATION STUDY

For high-value trees, conduct root studies during design. Options include Ground Penetrating Radar (GPR, for mapping root presence and depth) or SSAT excavation (to directly identify fine, medium, or coarse roots). This allows accurate pruning and stress-reduction planning where excavation or structures are proposed.

Appendix D
Stress Reduction Measures

VERTICAL MULCHING

Fracture compacted soil in the upper 12–24 inches with SSAT. Amend soils with materials such as biochar to improve biology and structure.

BIOCHAR APPLICATIONS

Apply biochar through vertical mulching, liquid injection, or top-dressing. Biochar improves aeration, drainage, microbial habitat, and long-term soil carbon.

SLOW-RELEASE LIQUID FERTILIZERS

Inject fertilizers under pressure to stimulate root growth and soil chemistry. Fertilizer choice, rate, and timing should be prescribed by a qualified arborist technician. Examples include:

- **PolyPhosphite 30 (0-0-27):** Provides potassium to strengthen cell walls and enhance drought resistance.
- **Arbor Green PRO (30-10-7):** Provides slow-release nitrogen and phosphorous, mimicking natural forest nutrient availability.

WOOD CHIP MULCH

Apply 3 inches of aged whole-tree wood chips across root zones (avoid direct trunk contact). For temporary access, apply 4”–12” as cushioning. Mulch improves soil moisture, biology, and compaction resistance.

SUPPLEMENTAL WATERING

Apply approximately 5 gallons of water per inch of trunk diameter per week, adjusting rates based on precipitation and soil moisture. Delivery methods may include drip irrigation, water trucks, or soil injection systems.

PLANT GROWTH REGULATORS (PRGS)

Apply paclobutrazol (e.g., Cambistat) to reduce drought stress and increase fine root density. PRG choice, rate, and timing should be prescribed by a qualified arborist technician. Applications last 2–3 years and should be applied well in advance of construction.

October 2025

THREATENED AND ENDANGERED SPECIES ASSESSMENT

Milham Park Improvements
City of Kalamazoo,
Kalamazoo County, MI
O'Boyle, Cowell, Blalock & Associates, Inc.

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Threatened and Endangered Species Assessment

Milham Park Improvements
O'Boyle, Cowell, Blalock & Associates, Inc.

City of Kalamazoo,
Kalamazoo County, Michigan

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EXECUTIVE SUMMARY

Overview

Niswander Environmental (NE) conducted a Threatened and Endangered (T&E) Species Assessment of three areas within Milham Park (Review Area), a city-owned park, located northeast of the Kilgore Road/Lovers Lane intersection in the City of Kalamazoo, Kalamazoo County, Michigan.

The T&E Species Assessment included a review of available maps and existing data, followed by an on-site investigation on July 11, 2025. Qualitative habitat data collected during the field investigation were compared to the habitat requirements (suitable habitat) of state and federally listed T&E species with documented occurrences or known ranges within two miles of the Review Area. NE then evaluated the likelihood of species presence or probable absence and made Effect Determinations, a likelihood analysis and determination of potential project impacts to each listed species.

Findings, Regulatory Considerations, & Recommendations

No state or federally listed species were observed within the Review Area during the site investigation. No rare natural communities or critical habitats are present within two miles of the Review Area. **NE's site investigation confirmed that no natural heritage areas are present within the Review Area, as defined by the City of Kalamazoo's Natural Features Protection Overlay**. However, the following extant species with documented occurrences or known ranges within two miles of the Review Area have the potential to occur within the Review Area based on the presence of suitable or marginally suitable habitat:

- Indiana bat
- Eastern massasauga rattlesnake (EMR)
- Eastern box turtle
- Red-headed woodpecker
- Osprey
- Red-shouldered hawk
- Bald and golden eagles
- Mussels (Creek heelsplitter and flutedshell)

NE determined the proposed project is **Not Likely to Adversely Affect** Indiana bat and EMR, provided the Indiana bat and EMR construction best management practices (BMPs) are implemented. All other T&E species documented by USFWS and MNFI received a determination of **No Effect or No Take** due to the following reasons:

- The documented occurrences are historical, or the species are extirpated.
- The Review Area does not contain the species' suitable habitat.
- The project's scope will not impact species or their suitable habitat within the Review Area (e.g., no proposed work will occur in streams).
- Implementation of conservation measures and construction BMPs for Indiana bat, EMR, eastern box turtle, red-headed woodpecker, osprey, red-shouldered hawk, creek heelsplitter, and flutedshell.

It is NE's professional opinion that **with the implementation of the conservation measures and construction BMPs herein, the proposed project will not adversely affect or result in take of state or federal rare, threatened, or endangered species**. Minor tree clearing should only occur during the bat inactive season (October 1 through April 14), unless a species-specific survey confirms protected bat absence prior to tree clearing. All other ground disturbance or highly noisy project activities should be limited to occur from late July through the fourth week of October. Finally, the Review Area contains regulated wetlands, Portage Creek (regulated stream), and Regulatory Floodway and 100-year floodplain, as mapped by the Federal Emergency Management Agency. A state of Michigan permit must be obtained prior to any alteration or occupation of the 100-year floodplain of a stream or impacts to regulated wetlands or streams.

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INTRODUCTION

On July 11, 2025, Niswander Environmental (NE) conducted a site investigation within three areas of Milham Park (Review Area) to characterize habitat and evaluate the potential presence of rare, threatened, and endangered species, as well as critical habitats. NE performed a database review to supplement the site investigation and to identify previously documented occurrences of rare, threatened, and endangered species and critical habitats within two miles of the Review Area.

The Review Area consists of three areas within Milham Park, a city-owned park located northeast of the Kilgore Road/Lovers Lane intersection in the City of Kalamazoo, Kalamazoo County, Michigan (Figure 1). It is in Sections 34 and 35, Town 2 South, Range 11 West. The City of Kalamazoo plans to make phased improvements to Milham Park with recreational amenities. Minor tree clearing is required as part of this project. Tree clearing will be conducted during the protected bat inactive season, which extends from October 1 through April 14 (i.e., no tree clearing will occur April 15 through September 30). The proposed improvements include new lighting to illuminate bathroom facilities for human safety. The new lighting will be directed away from suitable habitat for protected bats and will be downward facing, shielded, full cut-off lens lights with a warm color temperature. No work is proposed in streams as part of this project. Impacts to wetlands are not anticipated.

This Threatened and Endangered (T&E) Species Assessment was completed to meet due diligence guidelines and to ensure compliance with several key state and federal regulations protecting rare, threatened, and endangered species and critical habitats, including:

- The Endangered Species Act of 1973 (ESA)
- The Migratory Bird Treaty Act of 1918 (MBTA)
- The Bald and Golden Eagle Protection Act of 1940 (BGEPA)
- Part 365 of the Michigan Natural Resources and Environmental Protection Act (1994, as amended) (NREPA)
- The Michigan Department of Natural Resources (MDNR) Director's Order, Regulations on the Take of Reptiles and Amphibians, dated October 12, 2001 (Section 324 of PA 451)

Additionally, this T&E Species Assessment was completed to ensure compliance with the site development standards promulgated by the City of Kalamazoo's Natural Features Protection Overlay (NFP).

REGULATORY BACKGROUND

Federal Regulations

The ESA establishes protections and recovery efforts for federally listed T&E species and the habitats upon which they depend. Section 9 of the ESA prohibits the unauthorized (unpermitted) take, possession, transport, sale, trade, or destruction of federally endangered species, including actions such as carrying, importing, exporting, delivering, receiving, shipping, damaging, removing, cutting, or digging up, for any purpose. Federally threatened species are also generally afforded these protections. The term "Take", as it pertains to the ESA, "means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The USFWS administers the ESA for terrestrial and freshwater organisms.

Although not afforded protection under the ESA, migratory birds, and bald and golden eagles, including their nests and eggs, are protected from unauthorized take under the MTBA and the BGEPA, respectively.

State of Michigan Regulations

Part 365 of NREPA authorizes the MDNR to establish a list of species that are threatened or endangered in the state of Michigan in cooperation with the federal government, pursuant to the ESA. Part 365 of NREPA protects state T&E species and makes it unlawful to "take, possess, transport, import, export, process, sell, offer for sale, buy, or offer to buy, and a common or contract carrier shall not transport or receive for shipment, any species [protected under this statute], or attempt to engage in any such conduct". "Take" means, in reference to the state of Michigan's fish and wildlife, to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. "Take" means, in reference to the state of Michigan's plants, to collect, pick, cut, dig up, or destroy in any manner.

The state of Michigan designation of special concern indicates declining or relict species in Michigan. While not protected by state of Michigan law, special concern species are at risk of becoming threatened or endangered. Special concern species benefit when they are considered during project planning and from the implementation of conservation best management practices (BMPs). Although not afforded protection under T&E species legislation, Michigan special concern reptiles and amphibians are protected under the MDNR's Director's Order, Regulations on the Take of Reptiles and Amphibians, dated October 12, 2001 (Section 324 of PA 451).

Local Regulations

The City of Kalamazoo's Natural Features Protection Overlay (NFP), included as Section 50-6.2 in the City of Kalamazoo's Municipal Code, protects natural heritage areas. Section 50-6.2(I)(1) of the NFP defines natural heritage areas as either:

- Any species considered to be rare, threatened, or endangered by the state of Michigan, federal government, or listed on the Michigan Natural Features Inventory (MNFI) Natural Heritage Database.
- Any remnant of a natural community listed on the Michigan Natural Features Inventory (MNFI) Michigan's Natural Communities List.

The NFP requires the use of MNFI's Natural Heritage Database to determine if any rare species have been located within a two-mile radius of the project parcel(s). If MNFI identifies a rare species within two miles of the project parcel, then an on-site survey conducted by a consultant with a Michigan endangered species permit or another qualified professional approved by the City of Kalamazoo Planner is required. If the on-site survey confirms that a natural heritage area exists, all state and federal protections and/or mitigation activities must be followed. A copy of any required permit obtained from a state or federal agency must be submitted to the City of Kalamazoo.

These state and federal regulations make it unlawful to take, possess, transport, or sell species listed as threatened or endangered without appropriate permits. Agency authorization is required for any activity that results in take of listed species or their critical habitat. State special concern

species, federal candidate species, federal proposed threatened species, or federal proposed endangered species, and rare natural communities receive no statutory protection under state or federal endangered species legislation until rules to list are finalized. However, regulatory agencies may review impacts to these species or communities under other regulatory authorities (e.g., wetland protection regulations), and local standards may apply.

METHODS

NE conducted a desktop review of available maps and existing data to characterize habitat within the Review Area and to identify documented occurrences and known ranges of rare, threatened, and endangered species and their critical habitats within two miles of the Review Area. This data was then compared to existing conditions and plant communities and habitat within the Review Area.

As part of its desktop review, NE requested MNFI to conduct a Rare Species Review (RSR) of the Review Area. The MNFI checked its natural heritage database for documented occurrences of rare species and unique natural features within the Review Area and a two-mile radius surrounding it. The MNFI's findings are reported in the RSR response letter #5463 and its Section 7 Comments, dated June 4, 2025 (Appendix A). NE also obtained an Official Species List (OSL) from USFWS' Information for Planning and Consultation (IPaC), a project planning tool that streamlines the USFWS environmental review process. The OSL, dated October 5, 2025, summarizes federally listed T&E species known to occur within Kalamazoo County, Michigan, and is included as Appendix B.

On July 11, 2025, NE (Todd Losee, Michigan Threatened and Endangered Species Permit Holder TE084 and Nicole Stewart, Professional Wetland Scientist) conducted an on-site investigation to search for state-listed species reported in MNFI's RSR response letter #5463, as well as federally listed species in the OSL. Qualitative habitat data collected during the field investigation were compared to listed species' habitat requirements (suitable habitat), as defined by MNFI and USFWS, to evaluate the likelihood of species presence or probable absence and make Effect Determinations, a likelihood analysis and determination of potential project impacts to each listed species.

In addition, NE completed USFWS' IPaC All-Species Michigan Endangered Species Determination Key (DKey) to assess potential impacts to and confirm Effect Determinations for federally listed T&E species. The DKey is a logically structured set of questions designed to assist users in determining if a project qualifies for a pre-determined consultation outcome based on existing programmatic consultations or internal USFWS standing analyses. The DKey generated a USFWS Verification Letter (Project code: 2026-0001278), dated October 5, 2025, summarizing Effect Determinations for federally listed species (Appendix B). If USFWS does not provide notification within 30 days of completing the DKey and submitting the Verification Letter through IPaC, then the Verification Letter remains valid, confirming that the project has fulfilled federal consultation requirements for T&E species. The Dkey was completed and the Verification Letter was submitted to USFWS on October 5, 2025. The Effect Determinations within the Verification Letter are contingent upon the implementation of the construction BMPs outlined on Page 5 of the USFWS Verification Letter (Appendix B). Failure to implement these conservation measures and

BMPs invalidate the Effect Determinations for federally listed species and may result in the project being in violation with federal and state endangered species regulations.

RESULTS

USGS The National Map

The U.S. Geological Survey (USGS) The National Map indicates that elevations within the Review Area range from approximately 815 to 855 feet above mean sea level (Figure 2). Wetlands are depicted at the northern edge of the Review Area along Portage Creek. While the Review Area encroaches into Portage Creek, no work within the stream is proposed as part of this phase of the Milham Park Improvement project. Impacts to wetlands are not anticipated. USGS topographic maps typically show only the more distinct wetland and water features and should be utilized for preliminary analysis only. Field mapping is necessary to determine the actual existence, type, and boundaries of wetlands and water features.

USFWS National Wetlands Inventory Map

The U.S. Fish & Wildlife Service (USFWS) National Wetlands Inventory (NWI), a national wetland mapping program, was reviewed prior to the site inspection. The NWI map depicts Portage Creek (riverine) within the western two Review Area segments (Figure 3). No work within the stream is proposed as part of this project. Impacts to wetlands are not anticipated.

FEMA National Flood Hazard Map

The Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL) was reviewed prior to the site inspection (Figure 4). The NFHL is a digital database that contains flood hazard mapping data from FEMA's National Flood Insurance Program. FEMA Panel 26077C0302E indicates that the western two Review Area segments contain 100-year and 500-year floodplain and Regulatory Floodway. No work within the stream is proposed as part of this project. Impacts to wetlands are not anticipated. The State of Michigan's Floodplain Regulatory Authority found in Part 31, Water Resources Protection, of NREPA, requires that a permit be obtained prior to any alteration or occupation of the 100-year floodplain of a river, stream or drain, as mapped by FEMA or those with a drainage area that is two square miles or greater.

State of Michigan Species Database Review

The MNFI RSR identified six T&E species with documented occurrences within two miles of the Review Area, one of which is designated as extant: eastern box turtle (*Terrapene carolina carolina*). The eastern box turtle is a state threatened species, and its last documented occurrence within two miles of the Review Area occurred in August 2023.

Four of the state-listed T&E species have historical occurrences:

- Rusty-patched bumble bee (*Bombus affinis*)
- Spotted turtle (*Clemmys guttata*)
- Eastern massasauga (*Sistrurus catenatus*) (EMR)
- Ginseng (*Panax quinquefolius*)

One species, white or prairie false indigo (*Baptisia lactea*), is designated as extirpated (locally extinct). Species having an MNFI Element Occurrence Rank Code of H (historical) or E (extirpated) are unlikely to occur within the Review Area.

The MNFI also lists nine special concern species with document occurrences within two miles of the Review Area. Of these, five are extant, including:

- Red-shouldered hawk (*Buteo lineatus*)
- Osprey (*Pandion haliaetus*)
- Red-headed woodpecker (*Melanerpes erythrocephalus*)
- Creek heelsplitter (*Lasmigona compressa*)
- Flutedshell (*Lasmigona costata*)

The remaining listed special concern species are historical or extirpated, and therefore, highly unlikely to occur within the Review Area. Please note that EMR is also a federally threatened species and is known to occur throughout its range. The OSL indicates that the Review Area is within EMR Range. Table 1 summarizes state of Michigan T&E species and special concern species with documented occurrences within two miles of the Review Area.

Table 1. State-Listed Species Known to Occur within Two Miles of the Review Area

Common Name	Scientific Name	Status	Category	Suitable Habitat
Eastern box turtle	*Terrapene carolina carolina*	State Threatened	Reptile	The eastern box turtle occurs in forested habitats with sandy soils near a source of water such as a stream, pond, lake, marsh, or swamp. They also occupy thickets, old fields, pastures, or vegetated dunes. Access to unshaded nesting sites in sandy, open areas, is critical for successful reproduction. The eastern box turtle is known to occur within two miles of the Review Area.
Spotted turtle	*Clemmys guttata*	State Threatened	Reptile	Inhabits clean, shallow bodies of standing or slow-flowing water with muddy or mucky bottoms and aquatic or emergent vegetation. During mating and nesting, they are found on land in open habitats. They overwinter in shallow water in the mud or in mammal burrows.
Eastern massasauga	*Sistrurus catenatus*	State & Federally Threatened	Reptile	Occupies a variety of wetland habitats, including wet prairies, marshes, fens, sedge meadows, peatlands, and low areas along rivers and lakes. In southern Michigan, EMR primarily occurs in open wetlands like prairie fens, with seasonal use of adjacent, open uplands or forest openings. Suitable habitat is characterized by (1) open, sunny areas intermixed with shaded areas for thermoregulation, (2) the presence of the

Common Name	Scientific Name	Status	Category	Suitable Habitat
				water table near the surface, (3) and variable elevations between adjoining lowland and upland habitats. Microtopography (e.g., downed woody debris, small mammal burrows, or pit and mounds) is a critical component of EMR habitat.
Rusty-patched bumble bee	*Bombus affinis*	State & Federally Endangered	Insect	A habitat generalist that occupies dunes, marshes, forests, farmland, and urban areas.
White or prairie false indigo	*Baptisia lactea*	State Threatened	Plant	In dry to mesic prairies and savannas, dry open roadsides, along railroads, and in fencerows.
Ginseng	*Panax quinquefolius*	State Threatened	Plant	Occurs in rich shaded forests with loamy soils and heavy canopies.
Creek heelsplitter	*Lasmigona compressa*	Special Concern	Mussel	Creeks and small rivers in a variety of substrates. Known to occur in Portage Creek.
Flutedshell	*Lasmigona costata*	Special Concern	Mussel	Small and medium rivers, and in Lake St. Clair and Lake Erie. It is often found in sandy mud and cobble substrates.
River fingernail clam	*Sphaerium fabale*	Special Concern	Clam	Occurs in coarse sand or gravel in both creeks and rivers.
Osprey	*Pandion haliaetus*	Special Concern	Avian	Nests in trees or snags. Preferred nest sites are above or near water.
Red-shouldered hawk	*Buteo lineatus*	Special Concern	Avian	Nests in a variety of habitats but seem to be closely associated with mature forests in or adjacent to wet meadows and swamps.
Red-headed woodpecker	*Melanerpes erythrocephalus*	Special Concern	Avian	Found in open woodlands with widely spaced mature trees and oak and oak-pine savanna systems. Red-headed woodpeckers also utilize golf courses and country parks.
Leadplant	*Amorpha canescens*	Special Concern	Plant	Found in dry to mesic prairies and savannas, dry bluffs and hills, sandy roadsides, and clearings
Cut-leaved water parsnip	*Berula erecta*	Special Concern	Plant	In cold headwater streams and seeps within a variety of non-forested and forested wetlands, including prairie fens, southern wet meadow, southern shrub-carr, rich tamarack swamp,

Common Name	Scientific Name	Status	Category	Suitable Habitat
				hardwood-conifer swamp, and rich conifer swamp.
Horsetail spike rush	*Eleocharis equisetoides*	Special Concern	Plant	Found in shallow water in emergent marshes, lakeshore edges, and ponds, particularly where waters or substrates are slightly acidic.

Federal Species Database Review

NE obtained an OSL (Appendix B) which includes federally listed species known to occur in Kalamazoo County, Michigan, and may occur within the Review Area if suitable habitat is present. Species included in the OSL are summarized in Table 2. The MNFI RSR Section 7 Comments provides additional information for federally listed species in Kalamazoo County. The MNFI RSR Section 7 Comments indicate that there is suitable habitat for Indiana bat (*Myotis sodalis*) within two miles of the Review Area. There are no known hibernacula or roost trees for northern long-eared bat (*Myotis septentrionalis*), a state threatened and federally endangered species, within two miles of the Review Area.

The MNFI RSR Section 7 Comments indicate that there does not appear to be suitable habitat for EMR within two miles of the Review Area and that the Review Area falls outside Tier 1 and Tier 2 EMR habitat as designated by USFWS. The Review Area is however within the known range of EMR. Furthermore, there does not appear to be suitable habitat for copperbelly water snake (*Nerodia erythrogaster neglecta*) within two miles of the Review Area. The copperbelly water snake is a federally threatened and state endangered species. The MNFI RSR Section 7 Comments indicate that there does not appear to be suitable habitat for Mitchell's satyr butterfly (*Neonympha mitchellii mitchellii*) or snuffbox (*Epioblasma triquetra*), both state and federally endangered species.

Table 2. USFWS Official Species List of Federally Threatened & Endangered Species

Common Name	Scientific Name	Status	Category	Suitable Habitat
Indiana bat	*Myotis sodalis*	Federally Endangered	Mammal	Summer habitat includes stream corridors, woodlots, and forests. Indiana bats primarily use dead or dying trees for roosting; however, USFWS defines potential roost trees as any live tree or snag ≥5 inches DBH with exfoliating bark or cracks/crevices. Individual trees may be considered suitable habitat when they meet the definition of a potential roost tree and are within 1,000 feet of other wooded habitat. Indiana bat typically hibernate in caves and mines during the winter.

Common Name	Scientific Name	Status	Category	Suitable Habitat
Whooping crane	*Grus americana*	Experimental Population, Non-Essential	Avian	Variety of habitats including marshes, lakes, open ponds, shallow bays, upland swales, wet meadows, pastures, and agricultural fields.
Eastern massasauga	*Sistrurus catenatus*	Federally Threatened	Reptile	Occupies a variety of wetland habitats, including wet prairies, marshes, fens, sedge meadows, peatlands, and low areas along rivers and lakes. In southern Michigan, EMR primarily occurs in open wetlands like prairie fens, with seasonal use of adjacent, open uplands or forest openings. Suitable habitat is characterized by (1) open, sunny areas intermixed with shaded areas for thermoregulation, (2) the presence of the water table near the surface, (3) and variable elevations between adjoining lowland and upland habitats. Microtopography (e.g., downed woody debris, small mammal burrows, or pit and mounds) is a critical component of EMR habitat.
Mitchell's Satyr butterfly	*Neonympha mitchellii mitchellii*	Federally Endangered	Insect	Inhabits calcareous wetlands containing numerous sedge species (e.g., prairie fens).
Monarch butterfly	*Danaus plexippus*	Federally Proposed Threatened	Insect	Found across North America wherever suitable feeding, breeding, and overwintering habitat exists. They primarily occur in prairies, meadows, grasslands and along roadsides containing milkweed species, their host plant.

There are no rare natural communities or critical habitats within the Review Area.

On-Site Habitat Assessment

NE conducted an on-site habitat assessment of the Review Area on July 11, 2025. Site photos are included as Appendix C.

Mowed Grass & Maintained Parkland

The Review Area contains routinely mowed grass and maintained parkland fragmented by asphalt, non-motorized paths. Scattered trees are planted throughout this area around existing park facilities, including asphalt parking lots, playgrounds, shelters, grills, picnic tables, and restrooms. One Review Area segment, located where Portage Creek bends westward, primarily consists of an abandoned asphalt parking lot accessible via Milham Park Drive.

Upland Forest

Over half of the Review Area is forested. The forest is primarily composed of moderately spaced white oak (*Quercus alba*), with a canopy structure that permits light to reach its grassy understory. The grassy understory is frequently mowed. Other commonly observed trees include red oak (*Quercus rubra*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), hop-hornbeam (*Ostrya*

virginiana), Norway spruce (*Picea abies*), and white mulberry (*Morus alba*). Most trees within the Review Area are greater than five inches diameter at breast height (DBH), and many of these trees contain cracks and crevices suitable for roosting bats. These forested areas, having potential bat roosting trees and an open understory for unobstructed flight along a stream, constitute suitable habitat for bats. The forest within the easternmost Review Area segment is compositionally similar but occurs more densely on a gradual hillslope with a west facing aspect.

Portage Creek and Wetlands

Part of the Review Area contains Portage Creek and its wetland fringe. While two Review Area segments encroach into these sensitive features, no work within the stream is proposed as part of this phase of the Milham Park Improvement project. Impacts to wetlands are not anticipated.

Portage Creek is an over widened stream where it flows east-northeast between Lovers Lane and Milham Park Drive before bending westward to flow below Lovers Lane again. The Michigan Department of Environment, Great Lakes, and Energy's (EGLE) Wetlands Map Viewer indicates that this reach of Portage Creek is a warm transitional stream.

Wetland within the southwestern Review Area segment is emergent and contains cattails (*Typha spp.*), late goldenrod (*Solidago gigantea*), purple loosestrife (*Lythrum salicaria*), and jewelweed (*Impatiens capensis*). Wetland within the northern Review Area segment is emergent and contains a diversity of herbaceous species established as part of a recent stream restoration project extending between Milham Park Drive and Lovers Lane. This emergent wetland area contains swamp mallow (*Hibiscus moscheutos*), bristly Sedge (*Carex comosa*), common Lake Sedge (*Carex lacustris*), bottlebrush sedge (*Carex lurida*), common tussock sedge (*Carex stricta*), fox sedge (*Carex vulpinoidea*), soft-stemmed rush (*Juncus effusus*), rice cut grass (*Leersia oryzoides*), hard stemmed bulrush (*Schoenoplectus acutus*), soft bulrush (*Schoenoplectus tabernaemontani*), sweet flag (*Acorus americanus*), common water plantain (*Alisma subcordatum*), swamp milkweed (*Asclepias incarnata*), false nettle (*Boehmeria cylindrica*), spotted Joe-pye weed (*Eutrochium maculatum*), cardinal flower (*Lobelia cardinalis*), great blue lobelia (*Lobelia siphilitica*), monkey flower (*Mimulus ringens*), ditch stonecrop (*Penthorum sedoides*), common arrowhead (*Sagittaria latifolia*),common bur reed (*Sparganium eurycarpum*), and blue vervain (*Verbena hastata*).

REGULATORY CONSIDERATIONS

Effect Determinations for State of Michigan Listed Species

T&E species are regulated by both state and federal governments. MNFI's RSR provides state-listed species that, based on recorded occurrences, could potentially occur within the Review Area and be impacted by the project if the species or its suitable habitat is present. NE's determinations for potential impacts (i.e., Take or No Take) to state-listed species are summarized in Table 3.

The Review Area contains suitable or marginally suitable habitat for the following extant, state-listed species:

- Eastern box turtle (state threatened)
- Red-shouldered hawk (special concern)
- Osprey (special concern)
- Red-headed woodpecker (special concern)

- Creek heelsplitter (special concern)
- Flutedshell (special concern)

The Review Area is also within the known range of EMR (state threatened).

Table 3. State-Listed Species Determination of Effects

Common Name	Scientific Name	Status	Suitable Habitat Present?	NE Effect Determination
Eastern box turtle	*Terrapene carolina carolina*	State Threatened	Yes	**No Take** – If ground disturbance is limited to occur during the turtle active period (from the fourth week of April to fourth week of October) and if wildlife enclosure barriers (e.g., silt fence) and visual checks are completed prior to ground disturbance.
Spotted turtle	*Clemmys guttata*	State Threatened	Yes	**No Take** – Historical occurrence. The construction BMPs for eastern box turtle are also protective of spotted turtle.
Eastern massasauga	*Sistrurus catenatus*	State & Federally Threatened	No, but the Review Area is within the known range of EMR.	**No Take** – If EMR BMPs are implemented.
Rusty-patched bumble bee	*Bombus affinis*	State Endangered	Yes	**No Take** – Historical occurrence and this species escapes disturbance, and its sources of food and shelter will not be impacted.

Common Name	Scientific Name	Status	Suitable Habitat Present?	NE Effect Determination
White or prairie false indigo	*Baptisia lactea*	State Threatened	No	**No Take**
Ginseng	*Panax quinquefolius*	State Threatened	No	**No Take**
Creek heelsplitter	*Lasmigona compressa*	Special Concern	Yes	**No Take** – No work is proposed within streams or wetlands. Silt fences will be used.
Flutedshell	*Lasmigona costata*	Special Concern	Yes	**No Take** – No work is proposed within streams or wetlands. Silt fences will be used.
River fingernail clam	*Sphaerium fabale*	Special Concern	Yes	**No Take** – No work is proposed within streams or wetlands. Silt fences will be used.
Osprey	*Pandion haliaetus*	Special Concern	Yes	**No Take** – If tree clearing and noisy or disruptive project activities are avoided during the nesting season (from the third week of April to fourth week of July).
Red-shouldered hawk	*Buteo lineatus*	Special Concern	Yes	**No Take** – If tree clearing and noisy or disruptive project activities are avoided during the nesting season (from the third week of March to fourth week of June).
Red-headed woodpecker	*Melanerpes erythrocephalus*	Special Concern	Yes	**No Take** – If tree clearing and noisy or

Common Name	Scientific Name	Status	Suitable Habitat Present?	NE Effect Determination
				disruptive project activities are avoided during the nesting season (during the fourth week of May to first week of July).
Leadplant	*Amorpha canescens*	Special Concern	No	**No Take**
Cut-leaved water parsnip	*Berula erecta*	Special Concern	No	**No Take**
Horsetail spike rush	Eleocharis equisetoides	Special Concern	No	**No Take**

Eastern Box Turtle *(Terrapene carolina carolina)*
State Threatened
The project is anticipated to have No Take of eastern box turtle, provided the construction BMPs listed below are implemented.

According to MNFI, the eastern box turtle is Michigan's only truly terrestrial turtle. It typically occurs in forested habitats with sandy soils near a source of water such as a stream, pond, lake, marsh, or swamp. They also may be found in adjacent thickets, old fields, pastures, or vegetated dunes. Access to unshaded nesting sites in sandy, open areas, is critical for successful reproduction. They brumate below ground. NE did not observe eastern box turtle within the Review Area during its site investigation. The Review Area contains marginally suitable habitat which is degraded by routine mowing and frequent anthropogenic disturbance. Due to the proximity of recent documented occurrences of eastern box turtle, the project should implement the following construction BMPs to ensure No Take:

- Limit ground disturbance to occur during the active period when turtles can escape disturbance. The active period is from the fourth week of April to fourth week of October.
- Install exclusionary fencing like silt fence around the project area and conduct visual meander searches to ensure that no reptiles or amphibians will be impacted by the proposed work.

Although unlikely to occur within the Review area, these BMPs are also protective of spotted turtles and other reptiles and amphibians. Spotted turtles overwinter in shallow water in the mud or in mammal burrows or lodges.

Red-headed woodpecker (*Melanerpes erythrocephalus*)
State Special Concern
The project is not anticipated to impact red-headed woodpecker upon implementation of the construction BMP listed below.

According to MNFI, the red-headed woodpecker inhabits open woodlands with widely spaced mature trees. The Review Area's forests constitute suitable habitat for red-headed woodpecker.

According to the Cornell Lab of Ornithology's online eBird Species Mapper, a citizen/public observer documented red-headed woodpecker approximately 0.50-mile west of the Review Area in September 2025. NE did not observe red-headed woodpecker or their nests within the Review Area during its site investigation. This species is capable of evading disturbance, but noisy and highly disruptive project activities must by limited to occur outside the nesting and breeding season. To avoid impacts to red-headed woodpecker and ensure No Take, implement the following BMP:

- Avoid tree clearing and noisy or disruptive project activities during the fourth week of May to first week of July.

Osprey (*Pandion haliaetus*)
State Special Concern
The project is not anticipated to impact osprey upon implementation of the construction BMP listed below.

According to the Cornell Lab of Ornithology's online eBird Species Mapper, observations of osprey have been reported within one mile of the Review Area. Osprey nest in trees or snags, but they have adapted to use some man-made structures such as utility poles and towers. Their preferred nest sites are above or near water. Osprey often return to the same nest in successive years. The Review Area contains suitable habitat for osprey, and osprey may forage over or nest within the Review Area. NE did not observe osprey or their nests within the Review Area during its site investigation. Do not clear trees if they are discovered to contain osprey nests. To avoid impacts to osprey and ensure No Take, implement the following BMP:

- Avoid tree clearing and noisy or highly disruptive project activities within one-quarter mile radius around active nests, between the onset of courtship in April and fledging of young birds in July. Nesting occurs from the third week of April to fourth week of July.

Red-shouldered hawk (*Buteo lineatus*)
State Special Concern
The project is not anticipated to impact red-shouldered hawk upon implementation of the construction BMP listed below.

According to the Cornell Lab of Ornithology's online eBird Species Mapper, observations of red-shouldered hawk have been reported within one mile of the Review Area. According to MNFI, red-shouldered hawks will nest in a variety of habitats but seem to be closely associated with mature forests in or adjacent to wet meadows and swamps. The Review Area contains marginally suitable habitat for red-shouldered hawk. NE did not observe red-shouldered hawk or their nests within the Review Area during its site investigation. Do not clear trees if they are discovered to contain red-shouldered hawk nests. To avoid impacts to red-shouldered hawk and ensure No Take, implement the following BMP:

- Avoid tree clearing and noisy or disruptive project activities during the nesting season which extends from the third week of March to fourth week of June.

Creek Heelsplitter (*Lasmigona compressa*) and Flutedshell (*Lasmigona costata*)
State Special Concern Mussels

The project is not anticipated to impact creek heelsplitter or flutedshell upon implementation of the construction BMP listed below.

Creek heelsplitter is known to occur within Portage Creek, and Portage Creek constitutes suitable habitat for flutedshell. No work is proposed within Portage Creek (stream) as part of this project; therefore, the proposed work will have no direct effects to mussels. To avoid potential indirect effects to mussels and ensure No Take, implement the following BMP:

- Use silt fence throughout the duration of the project to prevent siltation into Portage Creek.

With the implementation of this construction BMP, the project will not impact (No Take) special concern or T&E mussels

Effect Determinations for Federally Listed Species

USFWS' OSL provides federally listed species that could potentially occur within the Review Area and be impacted by the project if the species or its suitable habitat is present. NE used IPaC to verify that the proposed project meets criteria to utilize the DKey and used the DKey to obtain Effect Determinations, which are outlined in the USFWS-generated Verification Letter and are contingent upon compliance with the construction BMPs included in the letter. Effect Determinations for federally listed species are summarized in Table 4.

The Review Area contains suitable habitat for the following federally listed species:

- **Indiana bat** (federally endangered)
- **Monarch butterfly** (federally proposed threatened)

The Review Area is within the known range of EMR (federally threatened).

Table 4. Federally Species Determination of Effects

Common Name	Scientific Name	Status	Suitable Habitat Present?	DKey Effect Determination
Indiana bat	*Myotis sodalis*	Federally Endangered	Yes	**Not Likely to Adversely Affect** – If minor tree clearing is limited to occur during the protected bat inactive season, which extends from October 1 through April 14 (i.e., no tree clearing will occur April 15 through September 30), and if any new lighting will be directed away from suitable protected bat habitat and will be downward facing, shielded, full cut-off lens lights with a warm color temperature.

Common Name	Scientific Name	Status	Suitable Habitat Present?	DKey Effect Determination
Whooping crane	*Grus americana*	Experimental Population, Non-Essential	No	**No Effect**
Eastern massasauga	*Sistrurus catenatus*	Federally Threatened	No, but the Review Area is within the known range of EMR.	**Not Likely to Adversely Affect** – If EMR BMPs are implemented.
Mitchell's Satyr butterfly	*Neonympha mitchellii mitchellii*	Federally Endangered	No	**No Effect**
Monarch butterfly	*Danaus plexippus*	Proposed Threatened	Yes – Marginal	**No Effect**

Indiana Bat (*Myotis sodalis*)
State-Endangered & Federally Endangered
The project is Not Likely to Adversely Affect (NLAA) Indiana bat, provided the construction BMPs summarized below and detailed on Page 5 of the USFWS Verification Letter (Appendix B) are implemented.

Forested areas and individual park trees greater than five inches DBH with cracks, crevices, or exfoliating bark within the Review Area constitute suitable habitat for Indiana bat. Although not listed in the OSL, these areas are also suitable habitat for northern long-eared bat (*Myotis septentrionalis*) and tricolored bat (*Perimyotis subflavus*). The northern long-eared bat is federally endangered and state-threatened. The tricolored bat is state threatened federally proposed endangered.

USFWS defines potential roost trees for Indiana bat as any live tree or snag greater than or equal to five inches DBH with exfoliating bark or cracks/crevices. USFWS defines potential roost trees for northern long-eared bat as any live tree or snag greater than or equal to three inches DBH with exfoliating bark or cracks/crevices. Individual trees may be considered suitable habitat when they meet the definition of a potential roost tree and are within 1,000 feet of other wooded habitat.

The project is NLAA Indiana bat provided the construction BMPs on **Page 5 of the USFWS Verification Letter (Appendix B)** are implemented. In accordance with USFWS' recommendations for *Listed Bat Conservation Planning Zone 5*, to avoid impacts to protected bats do not clear/remove trees during the bat active season, which extends from April 15 through September 30.

To avoid impacts to Indiana bat implement the following BMPs:

- Conduct minor tree clearing during the protected bat **inactive** season, which extends from October 1 through April 14 (i.e., no tree clearing will occur April 15 through September 30).
- Any new lighting will be directed away from protected bat suitable habitat and will be downward facing, shielded, full cut-off lens lights with a warm color temperature.

If tree clearing or lighting restrictions cannot be adhered to, potential impacts to federally protected bats will need to be reevaluated prior to project commencement. If USFWS' tree clearing restrictions cannot be adhered to, a species-specific survey for protected bats would be required to assess bat presence and to determine whether tree clearing can occur during the bat active season.

Eastern Massasauga (*Sistrurus catenatus*)
State-Threatened & Federally-Threatened
The project is NLAA EMR, provided the three EMR BMPs listed below and on Page 5 of USFWS Verification Letter (Appendix B) are implemented.

EMR have been found in a variety of wetland habitats in Michigan. Populations in southern Michigan are typically associated with open wetlands, particularly prairie fens, while those in northern Michigan are known to occur in open wetlands and lowland coniferous forests, such as cedar swamps. Some populations of EMR also utilize open uplands and/or forest openings for foraging, basking, gestation, and parturition (i.e., giving birth to young). EMR habitats generally appear to be characterized by the following: (1) open, sunny areas intermixed with shaded areas, presumably for thermoregulation; (2) presence of the water table near the surface for hibernation; and (3) variable elevations between adjoining lowland and upland habitats. EMR habitats and potential habitats have been estimated throughout Michigan using on the ground and remote sensing technologies, and use the following Tiers to approximate the potential presence of EMR habitat on any particular site:

- **Tier 1 Habitat:** Areas known to be occupied by EMR or highly likely to be occupied by EMR.
- **Tier 2 Habitat:** Areas with high potential habitat and may be occupied by EMR.

Although the Review Area does not contain suitable habitat for EMR and is located outside of Tier 1 and Tier 2 habitats, it is within the known range of EMR. To maintain the Effect Determination that the project is NLAA EMR, the project must implement the following EMR BMPs:

- Materials used for erosion control and site restoration must be wildlife friendly. Do not use erosion control products containing plastic mesh netting or other similar material that could entangle EMR.
- To increase human safety and awareness of EMR, those implementing the project must first review the EMR factsheet (available at https://www.fws.gov/media/eastern-massasauga-rattlesnake-fact-sheet), and watch MDNR's "60-Second Snakes: The Eastern Massasauga Rattlesnake" video (available at https://www.youtube.com/watch?v=-PFnXe_e02w).
- During project implementation, report sightings of any federally listed species, including EMR, to the USFWS within 24 hours. This contact should be made to NE and we will make the notification to USFWS should EMR be encountered.

Monarch Butterfly (*Danaus plexippus*)
Federally Proposed Threatened
The proposed work has No Effect on monarch butterfly unless the rule to list is finalized before project completion.

Monarch butterfly prefers prairies, meadows, grasslands, open fields and rights-of-ways containing milkweed species, their host plant. Milkweeds are a cosmopolitan species. If present, it is NE's professional opinion that milkweed abundances within the Review Area are low and

limited to non-mowed areas, and that the proposed project is not likely to jeopardize the continued existence of monarch butterfly. Therefore, NE determined the proposed project has No Effect on monarch butterfly.

Monarch butterfly is proposed threatened, meaning USFWS has determined that it is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and USFWS has proposed a draft rule to list it as threatened. Proposed threatened species are not protected by the take prohibitions of Section 9 of the ESA, consistent with any protective regulations finalized under Section 4(d) of the ESA, until the rule to list is finalized. USFWS is gathering public comments through May 19, 2025. After reviewing public comments, USFWS will write the final decision, and if listed as threatened, monarch butterfly will receive federal protections under Section 4(d) of the ESA. Protections for the monarch butterfly would apply after the effective date of a final rule. However, as is the case for proposed species or candidate species under Section 7(a)(4) of the ESA, federal agencies must confer with USFWS if their action will jeopardize the species' continued existence.

The proposed project is not likely to jeopardize the continued existence of monarch butterfly. At this time, no further action is required under the ESA, however, if a final rule lists the monarch butterfly, and the ongoing project is likely to result in Take of the monarch, the developer will need to coordinate with the USFWS to ensure any action remains compliant with the ESA.

USFWS encourages implementing measures that will remove or reduce threats to this species and possibly make listing unnecessary. Planting a diverse group of native plant species will help support the nutritional needs of Michigan's pollinators. For more information, please visit https://www.fws.gov/initiative/pollinators/monarchs.

Bald and Golden Eagles

The MNFI RSR does not report documented occurrences of bald or golden eagles (*Haliaeetus leucocephalus*) within two miles of the Review Area. NE's on-site assessment found no evidence of bald or golden eagle use or nests within the Review Area. However, due to the wide variety of habitats used by bald eagles in Michigan, there is potential for the bald eagle to be present within the Review Area at certain times of the year (i.e., migration, nesting, feeding, resting). It is recommended that NE be contacted should any bald eagles or their nests be encountered during construction of the proposed project. Eagle nests are constructed with large sticks and may be lined with moss, grass, plant stalks, lichens or sod. Nests are usually about four to six feet in diameter and three feet deep, although larger nests exist. If eagle nests are present, construction should maintain a one-quarter mile buffer zone around the nest during the nesting season, which extends from the third week of March to the second week of July

Rare Natural Communities and Critical Habitats

No rare natural communities or critical habitats are located within the Review Area.

SUMMARY

NE conducted a T&E Species Assessment of three areas within Milham Park (Figures 1 through 4). As part of the evaluation, NE coordinated with USFWS for federally listed species utilizing the Michigan DKey within the IPaC planning tool. NE also coordinated with MDNR and MNFI by requesting the RSR to assess the potential presence of state-listed T&E species and associated habitats within the Review Area. Applying the information obtained from state and federal agencies, NE conducted an on-site habitat assessment for species identified by USFWS and MNFI.

NE's site investigation confirmed that no natural heritage areas are present within the Review Area, as defined by the City of Kalamazoo's NFP. However, the following extant species with documented occurrences or known ranges within two miles of the Review Area have the potential to occur within the Review Area based on the presence of suitable or marginally suitable habitat:

- Indiana bat
- EMR
- Eastern box turtle
- Red-headed woodpecker
- Osprey
- Red-shouldered hawk
- Bald and golden eagles
- Creek heelsplitter
- Flutedshell

NE determined that the proposed project is **Not Likely to Adversely Affect** Indiana bat and EMR, provided the Indiana bat and EMR construction BMPs are implemented. All other T&E species documented by USFWS and MNFI received a determination of **No Effect or No Take** due to the following reasons:

- The documented occurrences are historical, or the species are extirpated.
- The Review Area does not contain suitable habitat.
- The project's scope will not impact species or their suitable habitat within the Review Area (e.g., no proposed work will occur in streams).
- Implementation of conservation measures and construction BMPs for Indiana bat, EMR, eastern box turtle, red-headed woodpecker, osprey, red-shouldered hawk, creek heelsplitter, and flutedshell.

Therefore, it is critical that the conservation measures and construction BMPs identified in this report and detailed on Page 5 of the USFWS Verification Letter (Appendix B) are implemented to avoid impacts to protected species.

It is NE's professional opinion that the proposed project will not result in adverse impacts to or take of state or federal rare, threatened, or endangered species, provided that conservation measures and construction BMPs for Indiana bat, EMR, eastern box turtle, red-headed woodpecker, osprey, red-shouldered hawk, creek heelsplitter, and flutedshell are implemented. In consideration of the applicable BMPs, minor tree clearing should only occur during the bat inactive season (October 1 through April 14), unless a species-specific survey confirms protected bat

absence prior to tree clearing. All other ground disturbance or highly noisy project activities should be limited to occur from late July through the fourth week of October.

The implementation of project design guidelines, conservation measures, and BMPs will satisfy USFWS and MDNR requirements and avoid the need to obtain state and federal T&E permits. If the scope of proposed work changes or a listed species is encountered during construction, a reevaluation of potential impacts to T&E species will be required. Notably, if the project cannot implement the tree clearing restrictions for Indiana bat, then a species-specific survey for protected bats would be required to determine whether tree clearing can occur during the bat active season.

Finally, FEMA indicates that the Review Area contains 100-year and 500-year floodplain and Regulatory Floodway. The Review Area also contains a regulated stream (Portage Creek) and regulated wetlands. No work within Portage Creek (stream) is proposed. Impacts to wetlands are not anticipated. Wetlands, streams, and floodplains are regulated by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) under the Floodplain Regulatory Authority found in Part 31, Water Resources Protection, Part 301, Inland Lakes and Streams, and Part 303, Wetlands Protection, of Michigan's NREPA. The potential need for floodplain and wetland permits will be determined through early coordination with the Michigan Department of Environment, Great Lakes, and Energy.

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U.S. Fish and Wildlife Service Michigan Ecological Services Field Office. 2023. *Project Design Guidelines for Federally Listed Bats in Michigan, V1*.

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Finding solutions in a complex world

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Figures

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SITE LOCATION MAP
KALAMAZOO COUNTY, MICHIGAN

LEGEND

REVIEW AREA

NE 1970-1

MILHAM PARK IMPROVEMENTS

T.02S R.11W SEC. 34 & 35
CITY OF KALAMAZOO
KALAMAZOO COUNTY, MICHIGAN

NISWANDER ENVIRONMENTAL
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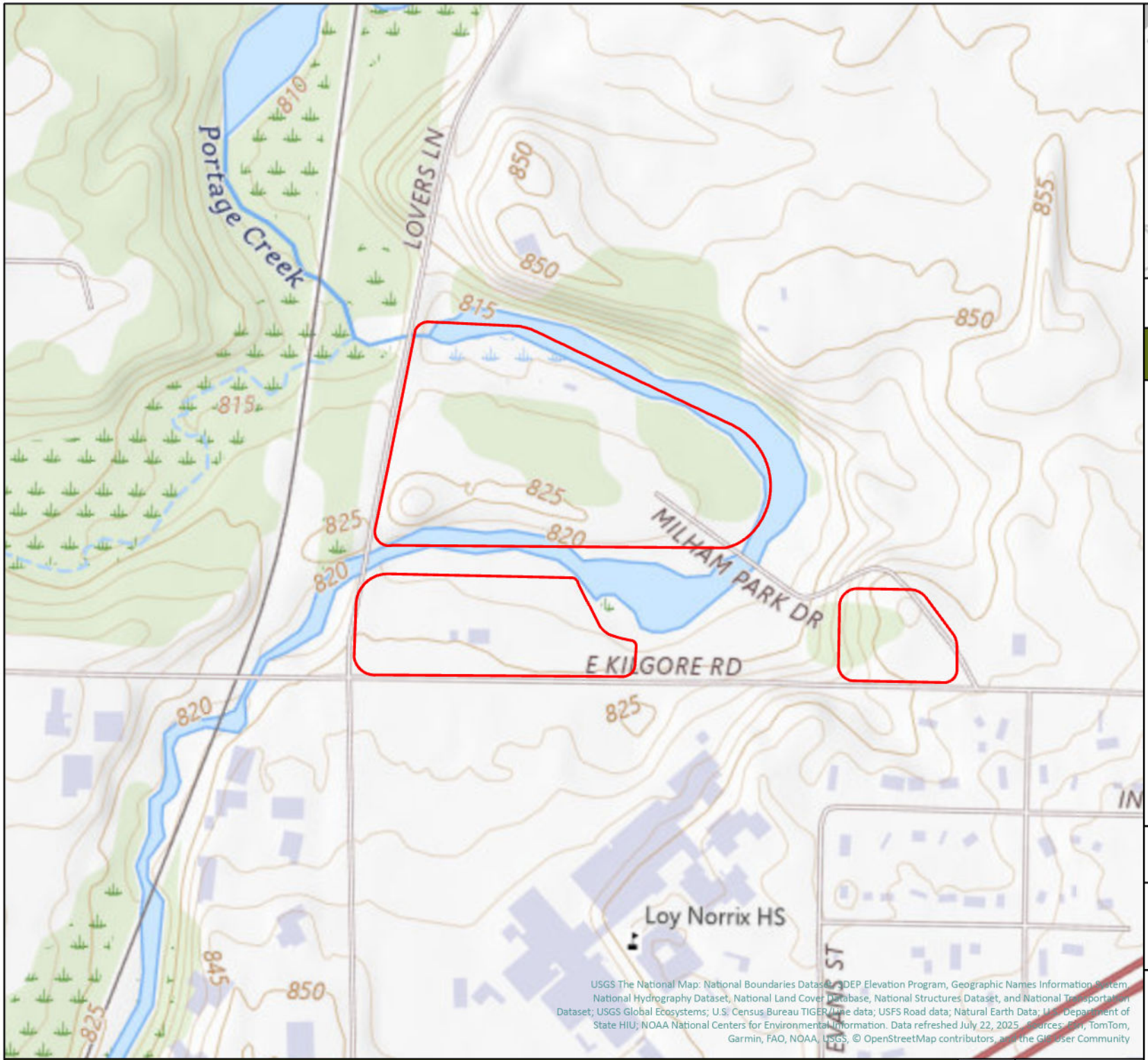
FIGURE 1. SITE LOCATION MAP

0 1,000 2,000 4,000 FEET

N

DATE: 9/15/2025
DRAWN BY: NS

PROJECTION: NAD 1983 2011 StatePlane Michigan South FIPS 2113 Ft Intl



SITE LOCATION MAP
KALAMAZOO COUNTY, MICHIGAN

LEGEND

REVIEW AREA

NE 1970-1

MILHAM PARK IMPROVEMENTS

T.02S R.11W SEC. 34 & 35
CITY OF KALAMAZOO
KALAMAZOO COUNTY, MICHIGAN

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FIGURE 2. USGS THE NATIONAL MAP

0 200 400 800 FEET

N

DATE: 9/15/2025
DRAWN BY: NS

PROJECTION: NAD 1983 2011 StatePlane Michigan South FIPS 2113 Ft Intl

Content Item: U.S. Environmental Protection Agency, Office of Mission Support; Data Steward: U.S. Department of the Interior, U.S. Fish and Wildlife Service. Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Maxar

SITE LOCATION MAP
KALAMAZOO COUNTY, MICHIGAN

LEGEND

- REVIEW AREA
- FRESHWATER EMERGENT WETLAND
- FRESHWATER FORESTED/ SHRUB WETLAND
- FRESHWATER POND
- LAKE
- RIVERINE

NE 1970-1

MILHAM PARK IMPROVEMENTS

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CITY OF KALAMAZOO
KALAMAZOO COUNTY, MICHIGAN

FIGURE 3. USFWS NWI MAP

0 125 250 500 FEET

N

DATE: 9/15/2025
DRAWN BY: NS

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PROJECTION: NAD 1983 2011 StatePlane Michigan South FIPS 2113 Ft Intl

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Maxar

SITE LOCATION MAP
KALAMAZOO COUNTY, MICHIGAN

LEGEND

- REVIEW AREA
- 1% ANNUAL CHANCE FLOOD HAZARD
- 0.2% ANNUAL CHANCE FLOOD HAZARD

NE 1970-1

MILHAM PARK IMPROVEMENTS

T.02S R.11W SEC. 34 & 35
CITY OF KALAMAZOO
KALAMAZOO COUNTY, MICHIGAN

FIGURE 4. FEMA NATIONAL FLOOD HAZARD MAP

0 125 250 500 FEET

N

DATE: 9/15/2025
DRAWN BY: NS

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Appendix A

MNFI RARE SPECIES REVIEW RESPONSE LETTER #5463
MNFI SECTION 7 COMMENTS

MICHIGAN STATE UNIVERSITY | Extension

Nicole Stewart
Niswander Environmental LLC
9436 Maltby Road
Brighton, MI 48116

June 4, 2025

Re: Rare Species Review #5463 – Park improvements Milham Park, City of Kalamazoo, Michigan

Hello:

The location for the proposed project was checked against known localities for rare species and unique natural features, which are recorded in the Michigan Natural Features Inventory (MNFI) natural heritage database. This continuously updated database is a comprehensive source of existing data on Michigan's endangered, threatened, or otherwise significant plant and animal species, natural plant communities, and other natural features. Records in the database indicate that a qualified observer has documented the presence of special natural features. The absence of records in the database for a particular site may mean that the site has not been surveyed. The only way to obtain a definitive statement on the status of natural features is to have a competent biologist perform a complete field survey.

Under Act 451 of 1994, the Natural Resources and Environmental Protection Act, Part 365, Endangered Species Protection, "a person shall not take, possess, transport, …fish, plants, and wildlife indigenous to the state and determined to be endangered or threatened," unless first receiving an Endangered Species Permit from the Michigan Department of Natural Resources (MDNR), Wildlife Division. Responsibility to protect endangered and threatened species is not limited to the lists below. Other species may be present that have not been recorded in the database.

Several at-risk species and/or natural communities have been documented within 2 miles of the project location, and it is possible that adverse impacts will occur. This response reflects a desktop review of the database and MNFI cannot fully evaluate this project without visiting the area. MNFI offers several levels of Rare Species Reviews, including field surveys which I would be happy to discuss with you.

Sincerely,

Michael Sanders

Michael Sanders
Environmental Review Specialist/Zoologist
Michigan Natural Features Inventory

MSU EXTENSION

Michigan Natural Features Inventory

PO Box 13036
Lansing MI 48901

(517) 284-6200
Fax (517) 373-9566

mnfi.anr.msu.edu

Comments for Rare Species Review #5463

It is important to note that it is the applicant's responsibility to comply with both state and federal threatened and endangered species legislation. Therefore, if a state listed species occurs at a project site, and you think you need an endangered species permit, please contact Amy Bleisch at DNR-Wildlife Division, DNR-StateTEPermit@michigan.gov and review details on the MDNR's Threatened/Endangered Species resource page. If a federally listed species is involved and, you think a permit is needed, please contact Jessica Pruden, U.S. Fish and Wildlife Service, East Lansing office, 517-351-8316, or Jessica_Pruden@fws.gov.

NOTE: Special concern species and natural communities are not protected under endangered species legislation, but efforts should be taken to minimize any or all impacts. Please consult MNFI's Rare Species pages for additional information on Michigan's rare plants and animals.

Table 1: Occurrences of Threatened & Endangered Species within 2 miles of Project Site

Element Category	Scientific Name	Common Name	Federal Status	State Status	G Rank	S Rank	EO Rank	First Observed Date	Last Observed Date
Animal	*Bombus affinis*	Rusty-patched bumble bee	LE	E	G2	SH	H	1963-07-25	1975-07-12
Animal	*Clemmys guttata*	Spotted turtle		T	G5	S2	H	1958	1958-04-21
Animal	*Sistrurus catenatus*	Eastern massasauga	LT	T	G3	S3	H	1993-10	1995-08-23
Animal	*Terrapene carolina carolina*	Eastern box turtle		T	G5T5	S2S3	E	2019-08-08	2023-08-24
Animal	*Terrapene carolina carolina*	Eastern box turtle		T	G5T5	S2S3	E	2021-06-08	2021-06-08
Plant	*Baptisia lactea*	White or prairie false indigo		T	G4Q	S3	X	1979-07-17	1979-07-17
Plant	*Panax quinquefolius*	Ginseng		T	G3G4	S2S3	H	1838-07-27	1838-07-27

Comments for Table 1

Eastern box turtle (*Terrapene carolina carolina*)

Habitat

Known to occur in the area. The Eastern Box Turtle is Michigan's only truly terrestrial turtle. It typically occurs in forested habitats with sandy soils near a source of water such as a stream, pond, lake, marsh or swamp. They also may be found in adjacent thickets, old fields, pastures, or vegetated dunes. Access to unshaded nesting sites in sandy, open areas, is critical for successful reproduction.

Management Recommendations

Conservation efforts should concentrate on protecting large tracts of habitat especially on public land to provide the box turtle additional protection from the effects of development. Wetland hydrology and quality should be maintained by preventing improper off-road vehicle use, implementing minimum development set-back distances, leaving buffer zones during timber harvest, grazing and agricultural operations, minimizing use of herbicides and pesticides in or near wetlands, and/or controlling invasive

plants. Upland nesting areas should be identified, protected and in some cases created. Construction of new roads should be minimized or routed to avoid separating foraging and/or overwintering habitat from nesting areas. Finally, the public should be educated about the laws protecting reptiles and amphibians and encouraged to leave wild turtles in their natural habitats rather than collecting them for pets.

For more information, see the *Terrapene carolina carolina* species page on the MNFI website.

Table 2: Occurrences of Special Concern Species and Natural Communities within 2 miles of Project Site

Element Category	Scientific Name	Common Name	Federal Status	State Status	G Rank	S Rank	EO Rank	First Observed Date	Last Observed Date
Animal	*Buteo lineatus*	Red-shouldered hawk		SC	G5	S4	E	2022-04-15	2022-04-15
Animal	*Lasmigona compressa*	Creek heelsplitter		SC	G5	S3	E	2018-07-16	2018-07-16
Animal	*Lasmigona costata*	Flutedshell		SC	G5	SNR	E	2018-07-12	2018-07-12
Animal	*Melanerpes erythrocephalus*	Red-headed woodpecker		SC	G5	S3	E	2024-06-15	2024-06-15
Animal	*Pandion haliaetus*	Osprey		SC	G5	S4	E	2009-07-08	2020
Animal	*Pandion haliaetus*	Osprey		SC	G5	S4	E	2017	2023-08-18
Animal	*Sphaerium fabale*	River fingernail clam		SC	G5	SNR	H		
Plant	*Amorpha canescens*	Leadplant		SC	G5	S3	X	1980	1990
Plant	*Berula erecta*	Cut-leaved water parsnip		SC	G4G5	S2	H	1947	1947
Plant	*Eleocharis equisetoides*	Horsetail spike rush		SC	G4	S3	H	1936	1936-08-04

Comments for Table 2

Creek heelsplitter (*Lasmigona compressa*)

Habitat

Known to occur in Portage Creek. The creek heelsplitter is found in creeks and small rivers in a variety of substrates.

Management Recommendations

The creek heelsplitter is at risk from point source pollution, non-point source pollution, alteration of natural stream flow patterns, barriers to host fish passage, direct alteration of habitat, and invasive zebra

mussels.

Maintain riparian buffers along streams and promote land conservation programs to help reduce excessive erosion, sedimentation, and nutrient input from non-point sources. Maintaining integrity of headwater streams and wetlands is especially important for creek heelsplitters since they are strongly associated with small rivers and creeks. Improve passage for fish by removing unnecessary dams and upgrading poor stream/road crossings such as culverts that are too small or are perched. Creek heelsplitter and other native mussels require fish hosts to complete their life cycle and rely on fish passage to travel to new habitats and facilitate gene flow among mussel populations. Avoid dredging, channelization, and other in-stream impacts whenever possible. Limit or eliminate point source discharges of ammonia, chloride, sulfate, heavy metals, and other substances toxic to native mussels.

Since the range of creek heelsplitter is typically restricted to smaller sized streams with little or no boat traffic, this species has not been impacted by zebra mussels as much as most other native mussel species. Still, the spread of zebra mussels into Michigan's streams and lakes remains a serious threat. Avoid the transport of water or aquatic plants – which can contain zebra mussel larvae – from one body of water to another while boating, fishing, and hunting. Wash boats, trailers, and gear, and let them dry over night to reduce the potential for spreading zebra mussels.

For more information, see the *Lasmigona compressa* species page on the MNFI website.

Codes to accompany tables

State Protection Status Code Definitions
E = Endangered
T = Threatened
SC = Special concern

Federal Protection Status Code Definitions
LE = listed endangered
LT = listed threatened
LELT = partly listed endangered and partly listed threatened
PDL = proposed delist
E(S/A) = endangered based on similarities/appearance
PS = partial status (federally listed in only part of its range)
C = species being considered for federal status

Global Heritage Status Rank Definitions (G RANK)
The priority assigned by NatureServe's national office for data collection and protection based upon the element's status throughout its entire world-wide range. Criteria not based only on number of occurrences; other critical factors also apply. Note that ranks are frequently combined.
G1 = critically imperiled globally because of extreme rarity (5 or fewer occurrences range-wide or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.
G2 = imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.
G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g. a single western state, a physiographic region in the East) or because of other factor(s) making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 to 100.
G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
Q = Taxonomy uncertain

State Heritage Status Rank Definitions (S RANK)
The priority assigned by the Michigan Natural Features Inventory for data collection and protection based upon the element's status within the state. Criteria not based only on number of occurrences; other critical factors also apply. Note that ranks are frequently combined.
S1 = Critically imperiled in the state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation in the state.
S2 = Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.
S3 = Rare or uncommon in state (on the order of 21 to 100 occurrences). S4 = apparently secure in state, with many occurrences.
S5 = demonstrably secure in state and essentially ineradicable under present conditions.
SX = apparently extirpated from state.

EO Rank Codes

Element Occurrence (EO) ranks refer to the viability or ecological integrity of the occurrence; they provide an assessment of the likelihood that if current conditions prevail the EO will persist for a defined period of time, typically 20-100 years.

A - Excellent estimated viability/ecological integrity
A? - Possibly excellent estimated viability/ecological integrity
AB - Excellent or good estimated viability/ecological integrity
AC - Excellent, good, or fair estimated viability/ecological integrity
B - Good estimated viability/ecological integrity
B? - Possibly good estimated viability/ecological integrity
BC - Good or fair estimated viability/ecological integrity
BD - Good, fair, or poor estimated viability/ecological integrity
C - Fair estimated viability/ecological integrity
C? - Possibly fair estimated viability/ecological integrity
CD - Fair or poor estimated viability/ecological integrity
D - Poor estimated viability/ecological integrity
D? - Possibly poor estimated viability/ecological integrity
E - Verified extant (viability/ecological integrity not assessed)
F - Failed to find
F? - Possibly failed to find
H - Historical
H? - Possibly historical
X - Extirpated
X? - Possibly extirpated
U - Unrankable
NR - Not ranked

Section 7 Comments for Rare Species Review #5463
Park improvements Milham Park, City of Kalamazoo, Michigan
Nicole Stewart
Niswander Environmental LLC
9436 Maltby Road
Brighton, MI 48116

June 4, 2025

For projects involving Federal funding or a federal agency authorization

The following information is provided to assist you with Section 7 compliance of the Federal Endangered Species Act (ESA). The ESA directs all Federal agencies "to work to conserve endangered and threatened species. Section 7 of the ESA, called "Interagency Cooperation," is the means by which Federal agencies ensure their actions, including those they authorize or fund, do not jeopardize the existence of any listed species."

The project falls within the range of the following federally listed/proposed/candidate species which have been identified by the U.S. Fish and Wildlife Service (USFWS) to occur in **Kalamazoo County, Michigan:**

Federally Endangered

Indiana bat – there does appear to be suitable habitat within 2 miles of the project. Indiana bats (*Myotis sodalis*) are found only in the eastern United States and are typically confined to the southern three tiers of counties in Michigan. Indiana bats that summer in Michigan winter in caves in Indiana and Kentucky. This species forms colonies and forages in riparian and mature floodplain habitats. Nursery roost sites are usually located under loose bark or in hollows of trees near riparian habitat. Indiana bats typically avoid houses or other artificial structures and typically roost underneath loose bark of dead elm, maple and ash trees. Other dead trees used include oak, hickory and cottonwood. Foraging typically occurs over slow-moving, wooded streams and rivers as well as in the canopy of mature trees. Movements may also extend into the outer edge of the floodplain and to nearby solitary trees. A summer colony's foraging area usually encompasses a stretch of stream over a half-mile in length. Upland areas isolated from floodplains and non-wooded streams are generally avoided.

Management and Conservation: Every March, the USFWS publishes survey guidelines to assist project proponents (both Federal and non-Federal) with conservation planning for Federally listed bats in Michigan. We strongly encourage project managers and their designated representatives to use the U.S. Fish and Wildlife Service (USFWS) online planning tool Information for Planning and Consultation (IPaC) to evaluate potential effects of proposed activities on listed bats and other Federally listed species in Michigan. Projects that complete consultation or coordination through IPaC automatically adhere to the recommendations provided in these guidelines and are not required to implement any additional conservation measures for listed bats.

Snuffbox – there does not appear to be suitable habitat within 2 miles of the project. The state and federally endangered snuffbox mussel (*Epioblasma triquetra*) inhabits rivers and streams with cobble, gravel, or sand bottoms in swift currents and usually is deeply buried in the substrate. Glochidia, the parasitic larval stage of the mussel, are released from May to mid-July. In Michigan, the only host fish known for snuffbox is the log perch (*Percina caprodes*). In other parts of their range the banded sculpin (*Cottus carolinae*) is also a known host. After completing the parasitic stage and reaching adulthood, snuffbox remain relatively sessile on the river bottom, living between 8-10 years. The best time to survey for snuffbox is April through September.

Management and Conservation: the snuffbox mussel is sensitive to river impoundment, siltation, and disturbance, due to its requirement for clean, swift current and relative immobility as an adult. To maintain the current populations in Michigan, rivers need to be protected to reduce silt loading and run-off. Maintaining or establishing vegetated riparian buffers can aid in controlling many of the threats to mussels. Control of zebra mussels is critical to preserving native

mussels. And as with all mussels, protection of their hosts habitat is also crucial. Because the life cycle of the snuffbox is inherently linked with that of the logperch in Michigan, conservation and management of this fish species is needed to ensure that of the snuffbox.

Mitchell's satyr butterfly – there does not appear to be suitable habitat within 2 miles of the project. The federally endangered and state endangered Mitchell's satyr butterfly *(Neonympha mitchellii mitchellii)* is restricted to calcareous wetlands known as prairie fens. In Michigan, this habitat is characterized by scattered tamaracks, poison sumac, and dogwood with a ground cover of sedges, shrubby cinquefoil, and a variety of herbaceous species with prairie affinities. Adult Mitchell's satyr butterflies are active two to three weeks each summer, with males emerging before females. Adult flight dates are from mid-June to mid-July. Larvae hibernate near the bottom of a sedge. The larval food plant is thought to be several species of sedge. The caterpillar is green with white stripes.

Management and Conservation: the primary threat to the continued survival of this species is habitat loss and modification. Many of the wetland complexes occupied currently have been altered or drained for agriculture or development. Wetland alteration is responsible for extirpating the single known satyr population in Ohio. Wetland alteration also can lead to invasion by exotic plant species such as glossy buckthorn (*Rhamnus frangula*), purple loosestrife (*Lythrum salicaria*), common buckthorn (*Rhamnus cathartica*), and the common reed (*Phragmites australis*). In addition, landscape-scale processes that may be important for maintaining suitable satyr habitat and/or creating new habitat, such as wildfires, fluctuations in hydrologic regimes, and flooding from beaver (*Castor canadensis*) activity, have been virtually eliminated or altered throughout the species' range.

Northern long-eared bat – Northern long-eared bat (*M. septentrionalis*) numbers in the northeast US have declined up to 99 percent. Loss or degradation of summer habitat, wind turbines, disturbance to hibernacula, predation, and pesticides have contributed to declines in Northern long-eared bat populations. However, no other threat has been as severe to the decline as White-nose Syndrome (WNS). WNS is a fungus that thrives in the cold, damp conditions in caves and mines where bats hibernate. The disease is believed to disrupt the hibernation cycle by causing bats to repeatedly awake thereby depleting vital energy reserves. This species was federally listed in May 2015 primarily due to the threat from WNS.

Although no known hibernacula or roost trees have been documented within 2 miles of the project site, this activity occurs within the designated WNS zone (i.e., within 150 miles of positive counties/districts impacted by WNS. Also, there does appear to be suitable habitat within 2 miles of the project.

Also called northern bat or northern myotis, this bat is distinguished from other *Myotis* species by its long ears. In Michigan, northern long-eared bats hibernate in abandoned mines and caves in the Upper Peninsula; they also commonly hibernate in the Tippy Dam spillway in Manistee County. This species is a regional migrant with migratory distance largely determined by locations of suitable hibernacula sites.

Northern long-eared bats typically roost and forage in forested areas. During the summer, these bats roost singly or in colonies underneath bark, in cavities or in crevices of both living and dead trees. Roost trees are selected based on the suitability to retain bark or provide cavities or crevices. Common roost trees in southern Lower Michigan include species of ash, elm and maple. Foraging occurs primarily in areas along woodland edges, woodland clearings and over small woodland ponds. Moths, beetles, and small flies are common food items. Like all temperate bats this species typically produces only 1-2 young per year.

Management and Conservation: Every March, the USFWS publishes survey guidelines to assist project proponents (both Federal and non-Federal) with conservation planning for Federally listed bats in Michigan. We strongly encourage project managers and their designated representatives to use the U.S. Fish and Wildlife Service (USFWS) online planning tool Information for Planning and Consultation (IPaC) to evaluate potential effects of proposed activities on listed bats and other Federally listed species in Michigan. Projects that complete consultation or coordination through IPaC automatically adhere to the recommendations provided in these guidelines and are not required to implement any additional conservation measures for listed bats.

Federally Threatened

Eastern massasauga rattlesnake (EMR) – there does not appear to be suitable habitat within 2 miles of the project. **The project falls outside Tier 1/Tier 2 EMR habitat as designated by the U.S. Fish & Wildlife Service (USFWS**). The federally threatened and state special concern Eastern massasauga rattlesnake *(Sistrurus catenatus)* is Michigan's only venomous snake and is found in a variety of wetland habitats including bogs, fens, shrub swamps, wet meadows, marshes, moist grasslands, wet prairies, and floodplain forests. Eastern massasaugas occur throughout the Lower Peninsula but are not found in the Upper Peninsula. Populations in southern Michigan are typically associated with open wetlands, particularly prairie fens, while those in northern Michigan are better known from lowland coniferous forests, such as cedar swamps. These snakes normally overwinter in crayfish or small mammal burrows often close to the groundwater level and emerge in spring as water levels rise. During late spring, these snakes move into adjacent uplands they spend the warmer months foraging in shrubby fields and grasslands in search of mice and voles, their favorite food.

Often described as "shy and sluggish", these snakes avoid human confrontation and are not prone to strike, preferring to leave the area when they are threatened. However, like any wild animal, they will protect themselves from anything they see as a potential predator. Their short fangs can easily puncture skin and they do possess potent venom. Like many snakes, the first human reaction may be to kill the snake, but it is important to remember that all snakes play vital roles in the ecosystem. Some may eat harmful insects. Others like the massasauga consider rodents a delicacy and help control their population. Snakes are also a part of a larger food web and can provide food to eagles, herons, and several mammals.

Management and Conservation: protection of extant populations and suitable wetland and adjacent upland habitats is crucial for successful conservation of the Eastern Massasauga. Maintaining or restoring open habitat conditions is critical for this species. Fragmentation of suitable wetland-upland habitat complexes by roads or other barriers should be avoided or minimized. Land management practices such as timber harvesting, mowing, disking or prescribed burning should be conducted in such a manner so as to minimize the potential for adverse impacts to massasaugas (e.g., conducting management activities during the snakes' inactive season (November through early March) or on days when snakes are less likely to be active on the surface during the active season). Protecting suitable hibernation sites also is critical.

Copperbelly water snake – there does not appear to be suitable habitat within 2 miles of the project. The federally threatened and state endangered copperbelly water snake (*Nerodia erythrogaster neglecta)* can grow to a length of 4-5 feet. Adult snakes are easily identified by their deep brown or black back which contrasts easily with the unmarked reddish-to-orange belly and chin.

Copperbelly water snakes are usually found in or near shrub swamps, ponds, lakes, oxbow sloughs, fens, and slow-moving streams. They can also be found in mature or second-growth woodlands and in more open habitats adjacent to wetland areas. In spring these snakes often inhabit the open edges of shallow ponds and buttonbush swamps and frequently bask on shoreline vegetation, muskrat lodges, or woody debris. When temperatures rise, and these seasonal waters begin to dry up in early summer, the snakes migrate to permanent waters (lake and stream edges), often using fairly dry wooded or grassy upland corridors. They may become largely nocturnal during hot weather. As excellent swimmers, they hunt aquatic species including tadpoles, frogs, salamanders, insect larvae, and crayfish. In the spring, tadpoles seem to be especially tasty to hungry copper-bellied water snakes.

Management and Conservation: a copperbelly water snake travels often during spring, summer, and fall. It moves to different wetlands as water levels and food availability change and then travels to and from its hibernation site. When moving to various locations, these snakes are vulnerable to predators (e.g., skunks, raccoons, raptors, and snapping turtles), especially if the snakes must travel across cleared areas, such as roads, mowed areas and farmlands. the decline of this species can be attributed to habitat loss and fragmentation, collection for the pet trade and predation. Conservation efforts should protect or create riparian corridors and habitat corridors between wetlands, protect existing and expand upland forest habitats, and reduce forest fragmentation. Permanently lowering water tables can cause seasonally inundated wetlands and hibernacula sites to become permanently dry which could lead to local population extirpations. Maintaining adequate prey base (i.e., mainly frogs) and shrub and log cover along the edge of wetlands for

cover and thermoregulation also is crucial. Please inform field crews that snakes should not be killed, harmed, or harassed. Any copperbelly water snake sightings should be reported to this office.

USFWS Section 7 Consultation Technical Assistance can be found at:

https://www.fws.gov/service/esa-section-7-consultation

The website offers step-by-step instructions to guide you through the Section 7 consultation process with prepared templates for documenting “no effect” as well as requesting concurrence on "may affect, but not likely to adversely affect" determinations.

Please let us know if you have questions.

Michael Sanders
Environmental Review Specialist/Zoologist
Michigan Natural Features Inventory

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9436 Maltby Road
Brighton, MI 48116
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Appendix B

USFWS OFFICIAL SPECIES LIST
USFWS VERIFICATION LETTER (PROJECT CODE 2026-0001278)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Michigan Ecological Services Field Office
2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360
Phone: (517) 351-2555 Fax: (517) 351-1443

In Reply Refer To: 10/05/2025 12:01:08 UTC
Project Code: 2026-0001278
Project Name: Milham Park Improvement Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Official Species List
The attached species list identifies any Federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Under 50 CFR 402.12(e) (the regulations that implement section 7 of the Endangered Species Act), the accuracy of this species list should be verified after 90 days. You may verify the list by visiting the IPaC website (https://ipac.ecosphere.fws.gov/) at regular intervals during project planning and implementation. To update an Official Species List in IPaC: from the My Projects page, find the project, expand the row, and click Project Home. In the What's Next box on the Project Home page, there is a Request Updated List button to update your species list. Be sure to select an "official" species list for all projects.

Consultation requirements and next steps
Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize Federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-Federal representative) must consult with the Fish and Wildlife Service if they determine their project may affect listed species or critical habitat.

There are two approaches to evaluating the effects of a project on listed species.

Approach 1. Use the All-species Michigan determination key in IPaC. This tool can assist you in making determinations for listed species for some projects. In many cases, the determination key

will provide an automated concurrence that completes all or significant parts of the consultation process. Therefore, we strongly recommend screening your project with the **All-Species Michigan Determination Key (Dkey)**. For additional information on using IPaC and available Determination Keys, visit https://www.fws.gov/media/mifo-ipac-instructions (and click on the attachment), or for a video overview, please visit: https://www.youtube.com/watch?v=FfcerNCiL0I. Please carefully review your Dkey output letter to determine whether additional steps are needed to complete the consultation process.

Approach 2. Evaluate the effects to listed species on your own without utilizing a determination key. Once you obtain your official species list, you are not required to continue in IPaC, although in most cases using a determination key should expedite your review. If the project is a Federal action, you should review our section 7 step-by-step instructions before making your determinations: https://www.fws.gov/office/midwest-region-headquarters/midwest-section-7-technical-assistance. If you evaluate the details of your project and conclude "no effect," document your findings, and your listed species review is complete; you do not need our concurrence on "no effect" determinations. If you cannot conclude "no effect," you should coordinate/consult with the Michigan Ecological Services Field Office. The preferred method for submitting your project description and effects determination (if concurrence is needed) is electronically to EastLansing@fws.gov. Please include a copy of this official species list with your request.

For all **wind energy projects**, please contact this field office directly for assistance, even if no Federally listed plants, animals or critical habitat are present within your proposed project area or may be affected by your proposed project.

Migratory Birds
Please see the "Migratory Birds" section below for important information regarding incorporating migratory birds into your project planning. Our Migratory Bird Program has developed recommendations, best practices, and other tools to help project proponents voluntarily reduce impacts to birds and their habitats. The Bald and Golden Eagle Protection Act prohibits the take and disturbance of eagles without a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at https://www.fws.gov/program/eagle-management to help you avoid impacting eagles or determine if a permit may be necessary.

Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your consideration of threatened and endangered species during your project

planning. Please include a copy of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Michigan Ecological Services Field Office
2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360
(517) 351-2555

PROJECT SUMMARY

Project Code: 2026-0001278
Project Name: Milham Park Improvement Project
Project Type: Recreation - New Construction
Project Description: Milham Park, a city-owned park located in the City of Kalamazoo, Michigan. Improvements are planned for This project consists of proposed improvements to approximately 2026 – 2027, depending on grant funding. Based on awarded federal and state grant money, the proposed scope of work for this phase of the Milham Park Improvements project may include the construction of the following:

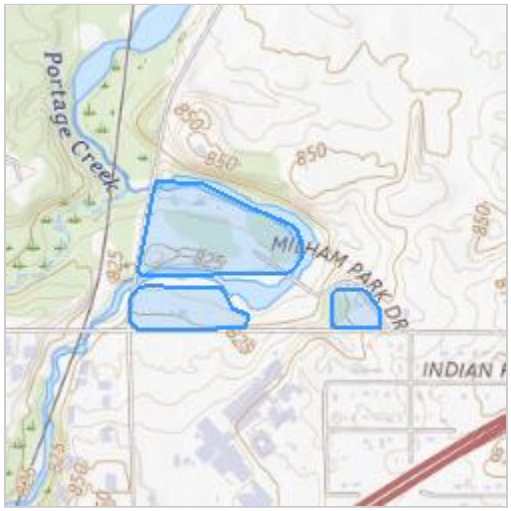
• Overlook decks and associated concrete walkways constructed in upland along Portage Creek. The associated concrete walkways will connect existing paths to the overlook decks.
• Enhancement and construction of a small parking lot and vehicular access drive off Lovers Lane.
• A bandshell with restrooms.
• Removal and replacement of the park's south parking lot off Kilgore Avenue. The new parking lot will be asphalt and have new concrete walks and ADA ramps associated with it to provide access to the existing pavilion and existing restroom building.
• Removal of the existing, centrally located asphalt/concrete lot off Milham Park Drive.
• Accessible concrete pads with picnic tables and grills.
• Expansion and construction of playgrounds.
• New shelters with game pockets.
• A senior exercise course.
• A new traffic gate restricting vehicular access on Milham Park Drive.
• Interior renovation of an existing restroom building.

Minor tree clearing is required as part of this project. Tree clearing will be conducted during the protected bat inactive season, which extends from October 1 through April 14 (i.e., no tree clearing will occur April 15 through September 30). New lighting is proposed on the new bathroom buildings for human safety. The lighting will follow AMMs for bats, being downward facing, shielded, and warm-colored.

NO WORK IS PROPOSED WITHIN STREAMS AS PART OF THIS PROJECT. Silt fences will be used to prevent siltation into streams and indirect disturbance of streams. Part 303 (Wetlands) and/or Part 31 (Floodplains) of Michigan NREPA permits will be acquired if they are determined to be necessary through EGLE coordination. Wetland impacts are not anticipated.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.2470974,-85.57265926450259,14z



Counties: Kalamazoo County, Michigan

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered

BIRDS

NAME	STATUS
Whooping Crane *Grus americana* Population: U.S.A. (AL, AR, CO, FL, GA, ID, IL, IN, IA, KY, LA, MI, MN, MS, MO, NC, NM, OH, SC, TN, UT, VA, WI, WV, western half of WY) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/758	Experimental Population, Non-Essential

REPTILES

NAME	STATUS
Eastern Massasauga (=rattlesnake) *Sistrurus catenatus* No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: ▪ For all Projects: Project is within EMR Range Species profile: https://ecos.fws.gov/ecp/species/2202 General project design guidelines: https://ipac.ecosphere.fws.gov/project/XNWKUKQUDNBXRB6GC2XP4LBMLM/documents/generated/5280.pdf	Threatened

INSECTS

NAME	STATUS
Mitchell's Satyr Butterfly *Neonympha mitchellii mitchellii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8062	Endangered
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

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1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/ activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information

on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

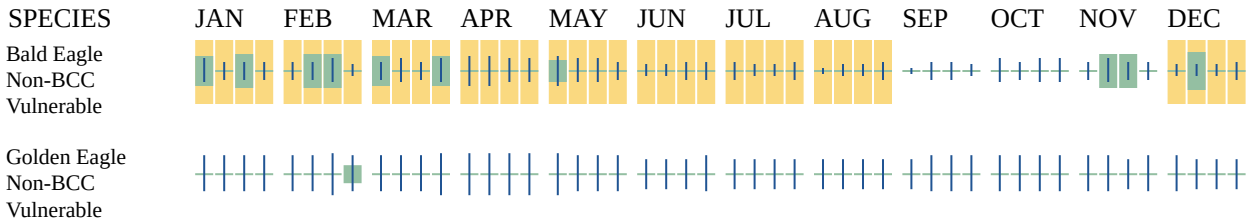
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort – no data



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31

NAME	BREEDING SEASON
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9454	Breeds May 20 to Jul 31
Canada Warbler *Cardellina canadensis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9643	Breeds May 20 to Aug 10
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10678	Breeds May 1 to Aug 20
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere
Grasshopper Sparrow *Ammodramus savannarum perpallidus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329	Breeds Jun 1 to Aug 20
Henslow's Sparrow *Centronyx henslowii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds May 1 to Aug 31
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere

NAME	BREEDING SEASON
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9478	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

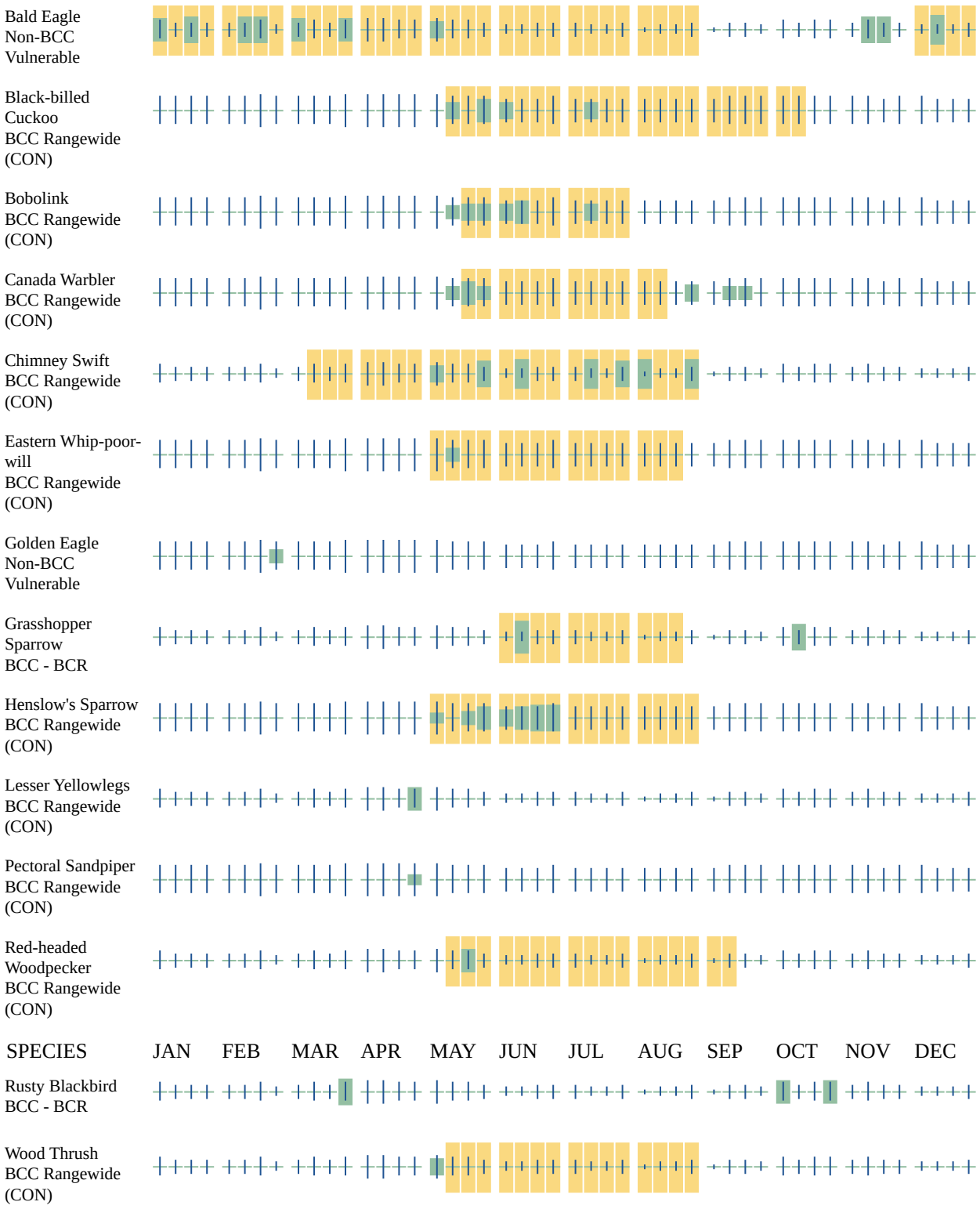
Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- R2UBH

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Nicole Stewart
Address: 9436 Maltby Rd
City: Brighton
State: MI
Zip: 48116
Email nstewart@niswander-env.com
Phone: 8108190021

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Michigan Ecological Services Field Office
2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360
Phone: (517) 351-2555 Fax: (517) 351-1443

In Reply Refer To: 10/05/2025 12:11:34 UTC
Project code: 2026-0001278
Project Name: Milham Park Improvement Project

Subject: Verification letter for the project named 'Milham Park Improvement Project' for specified threatened and endangered species that may occur in your proposed project location consistent with the Michigan Endangered Species Determination Key (Michigan DKey)

Dear Nicole Stewart:

The U.S. Fish and Wildlife Service (Service) received on **October 05, 2025** your effect determination(s) for the 'Milham Park Improvement Project' (the Action) using the Michigan DKey within the Information for Planning and Consultation (IPaC) system. The Service developed this system in accordance with the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Based on your answers and the assistance of the Service's Michigan DKey, you made the following effect determination(s) for the proposed Action:

Species	Listing Status	Determination
Eastern Massasauga (=rattlesnake) (*Sistrurus catenatus*)	Threatened	NLAA
Indiana Bat (*Myotis sodalis*)	Endangered	NLAA
Mitchell's Satyr Butterfly (*Neonympha mitchellii mitchellii*)	Endangered	No effect
Monarch Butterfly (*Danaus plexippus*)	Proposed Threatened	No effect
Whooping Crane (*Grus americana*)	Experimental Population, Non-Essential	No effect

The Service will notify you within 30 calendar days if we determine that this proposed Action does not meet the criteria for a "may affect, not likely to adversely affect" (NLAA) determination for Federally listed species in Michigan. If we do not notify you within that timeframe, you may proceed with the Action under the terms of the NLAA concurrence provided here. This

verification period allows the Michigan Ecological Services Field Office to apply local knowledge to evaluation of the Action, as we may identify a small subset of actions having impacts that were unanticipated. In such instances, the Michigan Ecological Services Field Office may request additional information to verify the effects determination reached through the Michigan DKey.

Your agency has met consultation requirements by informing the Service of your "No Effect" determination(s). No consultation is required for species that you determined will not be affected by the Action.

Please provide sufficient project details on your project homepage in IPaC (Define Project, Project Description) to support your conclusions and the Service's 30-day review period. Failure to disclose important aspects of your project that would influence the outcome of your effects determinations may negate your determinations and invalidate this letter. If you have site-specific information that leads you to believe a different determination is more appropriate for your project than what the Dkey concludes, you can and should proceed based on the best available information.

The Service recommends that you contact the Service or re-evaluate the project in IPaC if: 1) the scope or location of the proposed Action is changed; 2) new information reveals that the action may affect listed species or designated critical habitat in a manner or to an extent not previously considered; 3) the Action is modified in a manner that causes effects to listed species or designated critical habitat; or 4) a new species is listed or critical habitat designated. If any of the above conditions occurs, additional consultation with the Service should take place before project changes are final or resources committed.

For non-Federal representatives: Please note that when a project requires consultation under section 7 of the Act, the Service must consult directly with the Federal action agency unless that agency formally designates a non-Federal representative (50 CFR 402.08). Non-Federal representatives may prepare analyses or conduct informal consultations; however, the ultimate responsibility for section 7 compliance under the Act remains with the Federal agency. If the Federal agency concurs with your determination, the project as proposed has completed section 7 consultation. All documents and supporting correspondence should be provided to the Federal agency for their records.

Bats of Conservation Concern:

Implementing protective measures for bats, including both federally listed and unlisted species, indirectly helps to protect Michigan's agriculture and forests. Bats are significant predators of nocturnal insects, including many crop and forest pests. For example, Whitaker (1995) estimated that a single colony of 150 big brown bats (Eptesicus fuscus) would eat nearly 1.3 million pest insects each year. Boyles et al. (2011) noted the "loss of bats in North America could lead to agricultural losses estimated at more than $3.7 billion/year, and Maine and Boyles (2015) estimated that the suppression of herbivory by insectivorous bats is worth >1 billion USD globally on corn alone. In captive trials, northern long-eared bats were found to significantly reduce the egg-laying activity of mosquitoes, suggesting bats may also play an important role in controlling insect-borne disease (Reiskind and Wund 2009). Mosquitoes have also been found to be a consistent component of the diet of Indiana bats and are eaten most heavily during

pregnancy (6.6%; Kurta and Whitaker 1998). Taking proactive steps to help protect bats may be very valuable to agricultural and forest product yields and pest management costs in and around a project area. Such conservation measures include limiting tree clearing during the bat active season (varies by location) and/or the non-volant period (June through July), when young bats are unable to fly, and minimizing the extent of impacts to forests, wetlands, and riparian habitats.

Monarch butterfly and other pollinators:

Monarch butterfly was proposed for listing as threatened on December 12, 2024. Through May 19, 2025, we are gathering input through an extended public comment period to encourage the submission of any new information. We will review these comments and then will ultimately issue a final rule. If listed, protections would only go into place after the final rule is published. Section 7 conferences are required if a federal action is likely to jeopardize the continued existence of a proposed species.

For all projects, we recommend the following best management practices (BMPs) to benefit monarch and other pollinators.

Monarch and Pollinator BMP Recommendations

Consider monarch and other pollinators in your project planning when possible. Many pollinators are declining, including species that pollinate key agricultural crops and help maintain natural plant communities. Planting a diverse group of native plant species will help support the nutritional needs of Michigan’s pollinators. We recommend a mix of flowering trees, shrubs, and herbaceous plants so that something is always blooming and pollen is available during the active periods of the pollinators, roughly early spring through fall (mid-March to mid-October). To benefit a wide variety of pollinators, choose a wide range of flowers with diverse colors, heights, structure, and flower shape. It is important to provide host plants for any known butterfly species at your site, including native milkweed for Monarch butterfly. Incorporating a water source (e.g., ephemeral pool or low area) and basking areas (rocks or bare ground) will provide additional resources for pollinators.Many pollinators need a safe place to build their nests and overwinter. During spring and summer, leave some areas unmowed or minimize the impacts from mowing (e.g., decrease frequency, increase vegetation height). In fall, leave areas unraked and leave plant stems standing. Leave patches of bare soil for ground nesting pollinators.Avoid or limit pesticide use. Pesticides can kill more than the target pest. Some pesticide residues can kill pollinators for several days after the pesticide is applied. Pesticides can also kill natural predators, which can lead to even worse pest problems. Planting native wildflowers can also reduce the need to mow and water, improve bank stabilization by reducing erosion, and improve groundwater recharge and water quality. Resources:

https://www.fws.gov/initiative/pollinators/save-monarch

https://www.fws.gov/initiative/pollinators

Bald and Golden Eagles:
Bald eagles, golden eagles, and their nests are protected under the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended, 16 U.S.C. 668a-d) (Eagle Act). The Eagle Act prohibits, except when authorized by an Eagle Act permit, the “taking” of bald and golden eagles

and defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” The Eagle Act’s implementing regulations define disturb as “…to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.”

If the Action may impact bald or golden eagles, additional coordination with the Service under the Eagle Act may be required. For more information on eagles and conducting activities in the vicinity of an eagle nest, please visit https://www.fws.gov/library/collections/all-about-eagles. In addition, the Service developed the National Bald Eagle Management Guidelines (May 2007) in order to assist landowners in avoiding the disturbance of bald eagles. The full Guidelines are available at https://www.fws.gov/media/national-bald-eagle-management-guidelines-0.

If you have further questions regarding potential impacts to eagles, please contact Chris Mensing, Chris_Mensing@fws.gov or 517-351-2555.

Wetland impacts:
Section 404 of the Clean Water Act of 1977 (CWA) regulates the discharge of dredged or fill material into waters (including wetlands) of the United States. Regulations require that activities permitted under the CWA (including wetland permits issued by the Michigan Department of Environment, Great Lakes, and Energy (EGLE)) not jeopardize the continued existence of species listed as endangered or threatened. Permits issued by the U.S. Army Corps of Engineers must also consider effects to listed species pursuant to section 7 of the Endangered Species Act. The Service provides comments to the agencies that may include permit conditions to help avoid or minimize impacts to wildlife resources including listed species. For this project, we consider the conservation measures you agreed to in the determination key and/or as part of your proposed action to be non-discretionary. If you apply for a wetland permit, these conservation measures should be explicitly incorporated as permit conditions. Include a copy of this letter in your wetland permit application to streamline the threatened and endangered species review process.

Bat References

Boyles, J.G., P.M. Cryan, G.F. McCracken, T.H. Kunz. 2011. Economic Importance of Bats in Agriculture. Science 332(1):41-42.

Kurta, A. and J.O. Whitaker. 1998. Diet of the Endangered Indiana Bat (Myotis sodalis) on the Northern Edge of Its Range. The American Midland Naturalist 140(2):280-286.

Reiskind, M.H. and M.A. Wund. 2009. Experimental assessment of the impacts of northern long-eared bats on ovipositing Culex (Diptera: Culicidae) mosquitoes. Journal of Medical Entomology 46(5):1037-1044.

Whitaker, Jr., J.O. 1995. Food of the big brown bat Eptesicus fuscus from maternity colonies in Indiana and Illinois. American Midland Naturalist 134(2):346-360.

Summary of conservation measures for your project You agreed to the following conservation measures to avoid adverse effects to listed species and our concurrence is only valid if the measures are fully implemented. These must be included as permit conditions if a permit is required and/or included in any contract language.

Eastern Massasauga: Materials used for erosion control and site restoration must be wildlife-friendly. Do not use erosion control products containing plastic mesh netting or other similar material that could entangle eastern massasauga rattlesnake (EMR). Several products for soil erosion and control exist that do not contain plastic netting including net-less erosion control blankets (for example, made of excelsior), loose mulch, hydraulic mulch, soil binders, unreinforced silt fences, and straw bales. Others are made from natural fibers (such as jute) and loosely woven together in a manner that allows wildlife to wiggle free.

Eastern Massasauga: To increase human safety and awareness of EMR, those implementing the project must first review the EMR factsheet (available at https://www.fws.gov/media/eastern-massasauga-rattlesnake-fact-sheet), and watch MDNR's "60-Second Snakes: The Eastern Massasauga Rattlesnake" video (available at https://www.youtube.com/watch?v=-PFnXe_e02w).

Eastern Massasauga: During project implementation, report sightings of any federally listed species, including EMR, to the U.S. Fish and Wildlife Service within 24 hours.

Eastern Massasauga: The project will not result in permanent loss of more than one acre of wetland or conversion of more than 10 acres of EMR upland habitat (uplands associated with high quality wetland habitat) to other land uses.

Mitchell's Satyr: This project will not alter or fill more than three acres of wetlands.

Listed Bats: When installing new or replacing existing permanent lights, you will use downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting); or for those transportation agencies using the BUG system developed by the Illuminating Engineering Society, the goal is to be as close to 0 for all three ratings with a priority of "uplight" of 0 and "backlight" as low as practicable. You will direct temporary lighting away from suitable listed bat habitat during the active season.

Listed Bats: Tree cutting/trimming and/or prescribed burning will not clear ≥20 contiguous acres of forest (excluding narrow, linear corridors <1000 feet wide) and will not fragment a connective corridor between 2 or more forest patches of at least 5 acres.

Listed Bats: Tree cutting/trimming and/or prescribed burning will not clear ≥10 contiguous acres of modeled forested habitat (excluding narrow, linear corridors <1000 feet wide) and will not fragment a connective corridor between 2 or more forest patches of at least 5 acres.

Listed Bats: All tree cutting/trimming will be conducted outside the period of April 15 through September 30 (that is, limited to October 1 through April 14).

Listed Bats: The project will not include the application or potential drift of insecticides, fungicides, or rodenticides into forested habitats.

Listed Bats: The action will not include prescribed burning within or adjacent to (within 200 feet of) mature forest.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Milham Park Improvement Project

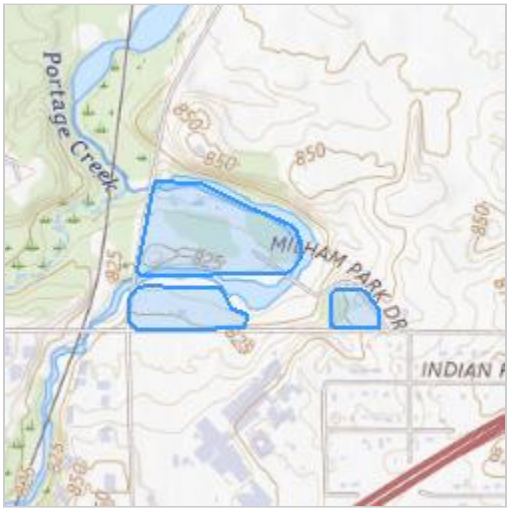
2. Description

The following description was provided for the project 'Milham Park Improvement Project':

> Milham Park, a city-owned park located in the City of Kalamazoo, Michigan. Improvements are planned for This project consists of proposed improvements to approximately 2026 – 2027, depending on grant funding. Based on awarded federal and state grant money, the proposed scope of work for this phase of the Milham Park Improvements project may include the construction of the following:
>
> • Overlook decks and associated concrete walkways constructed in upland along Portage Creek. The associated concrete walkways will connect existing paths to the overlook decks.
> • Enhancement and construction of a small parking lot and vehicular access drive off Lovers Lane.
> • A bandshell with restrooms.
> • Removal and replacement of the park's south parking lot off Kilgore Avenue. The new parking lot will be asphalt and have new concrete walks and ADA ramps associated with it to provide access to the existing pavilion and existing restroom building.
> • Removal of the existing, centrally located asphalt/concrete lot off Milham Park Drive.
> • Accessible concrete pads with picnic tables and grills.
> • Expansion and construction of playgrounds.
> • New shelters with game pockets.
> • A senior exercise course.
> • A new traffic gate restricting vehicular access on Milham Park Drive.
> • Interior renovation of an existing restroom building.
>
> Minor tree clearing is required as part of this project. Tree clearing will be conducted during the protected bat inactive season, which extends from October 1 through April 14 (i.e., no tree clearing will occur April 15 through September 30). New lighting is proposed on the new bathroom buildings for human safety. The lighting will follow AMMs for bats, being downward facing, shielded, and warm-colored.
>
> NO WORK IS PROPOSED WITHIN STREAMS AS PART OF THIS PROJECT. Silt fences will be used to prevent siltation into streams and indirect disturbance of streams. Part 303 (Wetlands) and/or Part 31 (Floodplains) of Michigan NREPA

permits will be acquired if they are determined to be necessary through EGLE coordination. Wetland impacts are not anticipated.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.2470974,-85.57265926450259,14z



QUALIFICATION INTERVIEW

1. Are there any possible effects to any listed species or to designated critical habitat from your project or effects from any other actions or projects subsequently made possible by your project?

   Note: select "**Yes**" even if the expected effects to the species or critical habitat are expected to be 1) extremely unlikely (discountable), 2) can't meaningfully be measured, detected, or evaluated (insignificant), or 3) wholly beneficial. Select "No" to confirm that the project details and supporting information allow you to conclude that listed species and their habitats will not be exposed to any effects (including discountable, insignificant, or beneficial effects) and therefore, you have made a "no effect" determination for all species. If you are unsure, select YES to answer additional questions about your project.

   Yes

2. This determination key is intended to assist the user in the evaluating the effects of their actions on Federally listed species in Michigan. It does not cover other prohibited activities under the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, purposeful take for scientific purposes or to enhance the survival of a species, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other statutes.

   Click **yes** to acknowledge that you must consider other prohibitions of the ESA or other statutes outside of this determination key.

   Yes

3. Is the action the approval of a long-term (i.e., in effect greater than 10 years) permit, plan, or other action?

   Note: For example, a new or re-issued hydropower license, a large-scale land management plan, or other kinds of documents that provide direction for projects or actions that may be conducted over a long term (>10 years) without the need for additional section 7 consultation.

   No

4. Is the action being funded, authorized, or carried out by a Federal agency?

   Yes

5. Does the action require a Michigan EGLE/Army Corps of Engineers joint permit?

   Yes

6. Is this an NRCS-funded Forest Management Plan?

   No

7. Does the action involve wind energy?

   No

8. Does the action involve solar energy?

   No

9. Are there at least 30 days prior to your action occurring?

   Endangered species consultation must be completed before taking any action that may have effects to listed species. **If you have already started some components of the project on the ground (e.g., removed vegetation) before completing this Dkey, answer "no" to this question.** The only exception is if you have received approval from the Michigan Field Office to use the Dkey less than 30 days before the action will occur. The U.S. Fish and Wildlife Service also needs time to review projects before we can verify conclusions in some dkey output letters.

   Yes

10. Does the action involve constructing a new communications tower or modifying an existing communications tower?

    No

11. Does the activity involve aerial or other large-scale application of any chemical (including insecticide, herbicide, lampricide, etc.)?

    No

12. Does your project include water withdrawal (ground or surface water) greater than 10,000 gallons/day?

    No

13. Will your action permanently affect hydrology?

    No

14. Will your action temporarily affect hydrology?

    No

15. Will your project have any direct impacts to a stream or river (including Horizontal Directional Drilling (HDD) due to potential for frac out, hydrostatic testing, stream/road crossings, new storm-water outfall discharge, dams, other in-stream work, changes to water quality or hydrology, etc.)?

    No

16. Does your project have the potential to indirectly impact the stream/river or the riparian zone (e.g., cut and fill, horizontal directional drilling due to the potential for frac out, hydrostatic testing, construction, vegetation removal, discharge, changes to water quality or hydrology, etc.)?

    Yes

17. Are you applying for one of the following Michigan EGLE/Army Corps of Engineers joint permit application Minor Permit (MP) Categories:
MP 3 - Boat Hoist; MP 5 - Boal Wells; MP 7 - Completed Enforcement Actions; MP 13 - Dock;
MP 22 - Fish and Wildlife Habitat Structures;
MP 25 - Ford Stream Crossings for Commercial Forestry Operations;
MP 31 - Maintenance and Repair of Serviceable Structures;
MP 52 - Temporary Recreational Structures;
MP 54 - Wetland Habitat Restoration and Enhancement?

    Verify the MP category number and associated description matches your project/ application (https://www.michigan.gov/documents/egle/WRD-Minor-Project-Categories_733320_7.pdf). If you don't know what category applies for your project, answer no to this question.

    No

18. Are you applying for one of the following Michigan EGLE/Army Corps of Engineers joint permit application General Permit (GP) Categories:
GP A - Aids to Navigation;
GP C - Clear Span Bridge;
GP J - Dry Fire Hydrant;
GP O - Minor Permit Revisions and Transfers;
GP Q - Mooring Buoy;
GP W - Scientific Measuring Devices;
GP X - Snow Road Stream Crossings for Forestry Operations;
GP Z - Spring Piles and Piling Clusters?

    Verify the GP category number and associated description matches your project/ application (https://www.michigan.gov/documents/deq/wrd-general-permit-categories_555828_7.pdf). If you don't know what category applies for your project, answer no to this question.

    No

19. Will your action disturb the ground or existing vegetation?

    Note: This includes any off road vehicle access, soil compaction, digging, seismic survey, directional drilling, heavy equipment, grading, trenching, placement of fill, pesticide application, vegetation management (including removal or maintenance using equipment or chemicals), tree clearing, cultivation, development, etc.

    Yes

20. Does the action intersect the **monarch butterfly** species list area?

    Automatically answered
    Yes

21. Monarch butterfly was proposed for listing as threatened on December 12, 2024. Through May 19, 2025, we are gathering input through an extended public comment period to encourage the submission of any new information. We will review these comments and then will ultimately issue a final rule. If listed, protections would only go into place after the final rule is published. We encourage implementing measures that will remove or reduce threats to monarch. If your project will have no effect on monarch butterflies (for example, if your project won't affect their habitat or individuals), then you can make a "no effect" determination for this project.

    Are you making a "**no effect**" determination for monarch? Please note that the FWS does not provide concurrence on "no effect" determinations.

    Yes

22. Does the action intersect the **Eastern massasauga rattlesnake** species list area?

    Automatically answered
    Yes

23. Does your action involve prescribed fire?

    No

24. Will this action occur entirely in the Eastern massasauga rattlesnake inactive season (October 16 through April 14)?

    No

25. Will this action occur entirely in the Eastern massasauga rattlesnake active season (April 15 through October 15)?

    No

26. Will the action result in permanent loss of more than one acre of wetland or conversion of more than 10 acres of uplands of potential Eastern massasauga rattlesnake habitat (uplands associated with high quality wetland habitat) to other land uses?

    No

27. Will you use wildlife safe materials for erosion control and site restoration and eliminate the use of erosion control products containing plastic mesh netting or other similar material that could ensnare eastern massasauga rattlesnake? Please note that ensnare eastern massasauga rattlesnake have been ensnared in plastic net erosion control netting outside known habitat.

    Yes

28. Will you watch MDNR's "60-Second Snakes: The Eastern Massasauga Rattlesnake (EMR)" video or review the EMR factsheet to increase human safety and awareness of EMR?

    Yes

29. Will all action personnel report any Eastern massasauga rattlesnake observations, or observation of any other listed threatened or endangered species, during action implementation to the Service within 24 hours?

    Yes

30. Does the action area intersect the **Mitchell's satyr** species list area?

    Automatically answered
    Yes

31. Does your project include alteration or fill of 3 or more acres of wetland?

    No

32. Does the action area intersect the **whooping crane (ex. Pop)** species list area?

    Automatically answered
    Yes

33. Have you determined that the action will have no effect on individuals within the whooping crane nonessential experimental population (NEP)?

    Yes

34. Does the action area intersect the **Indiana bat** species list area?

    Automatically answered
    Yes

35. Does the action area contain potential Indiana bat roost trees (trees ≥5 inches in diameter [at breast height] with cracks, crevices and/or exfoliating bark)?

    Yes

36. Does the action intersect the **tricolored bat** species list area?

    Automatically answered
    No

37. Does this project intersect the **Northern long-eared bat** species list area?

    Automatically answered
    No

38. Does the action area contain any known or potential hibernacula (natural caves, abandoned mines, or underground quarries)?

    No

39. Has a presence/absence bat survey or field-based habitat assessment following the USFWS Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines been conducted within the action area?

    No

40. Does the action involve removal/modification of a human structure (barn, house or other building) known to contain roosting bats?

    No

41. Does the action include removal/modification of an existing bridge?

    No

42. Does the action include temporary or permanent lighting of roadway(s), facility(ies), and/or parking lot(s)?

    Yes

43. Will you apply the following Avoidance and Minimization Measures for bats? 1. When installing new or replacing existing permanent lights, use downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting); or for those transportation agencies using the BUG system developed by the Illuminating Engineering Society, the goal is to be as close to 0 for all three ratings with a priority of "uplight" of 0 and "backlight" as low as practicable. 2. Direct temporary lighting away from suitable habitat during the active season.

    Yes

44. Does the action include herbicide application?

    No

45. Does the action include the application or potential drift of insecticides, rodenticides, or fungicides (not including herbicides) into forested habitats?

    Answer "Yes" if the application may result in transport (e.g., in water) or aerial drift of the pesticide into forested areas.

    No

46. Does the action include tree cutting/trimming of any kind?

    Yes

47. Does the action include prescribed burning within or adjacent to (within 200 feet of) mature forest?

    No

48. Is tree cutting/trimming and/or prescribed burning limited to that associated with forest management (e.g., cutting and/or burning in forest habitat as a part of continuing forest land-use)?

    Select "No" if the project includes cutting and/or burning for development or conversion of forested habitat other than forestry-related road/trail creation or maintenance.

    No

49. Does the action include emergency cutting/trimming of hazard trees in order to prevent imminent loss of human life and/or property?

    No

50. [Semantic] Is any portion of the action area within 5 miles of a known bat hibernaculum?

    Automatically answered
    No

51. Will the action clear or convert >20 acres of contiguous forest (i.e., connected by 1,000 feet or less) or fragment a riparian or other connective forested corridor (e.g., tree line) between 2 or more forest patches of at least 5 acres?

    Select "No" if the clearing will be limited to a narrow, linear corridor (e.g., a right-of-way) <1000 feet wide.

    For more information, see Appendix II.

    No

52. Your project intersected modeled bat habitat. Will all tree cutting/trimming be restricted to the inactive (hibernation) season for listed bats (that is, conducted during October 1 through April 14)?

    Yes

53. Will the action clear or convert >10 acres of forested, modeled bat habitat?

    Select "No" if the tree clearing will be limited to a narrow, linear corridor (e.g., a right-of-way) <1000 feet wide.

    No

54. The Michigan Field Office receives copies of all IPaC-generated output letters, and we routinely review all letters with the exception of May Affect Technical Assistance letters (which is one of five kinds of letters you may get depending on which determinations you receive). A biologist will reach out to you within 30 days via email (from MIFO_Dkey@fws.gov) if we have questions about your project description, answers to specific questions, or determinations.

    If your agency has an urgent need for approval and would like to request our review more quickly than 30 days, you can request expedited review by selecting yes to this question. Based on your planning cycle, if you do not have an urgent need for concurrence (i.e., concurrence within 30 days is sufficient), please select no.

    Are you requesting expedited review for this project?

    No

PROJECT QUESTIONNAIRE

Enter the total estimated acres of tree cutting/trimming included in the project as part of forest management (e.g., cutting or harvesting trees as a part of continuing forest land-use). If tree cutting/trimming will not occur as part of forest management, enter "0".

0

Enter the date range during which tree cutting/trimming will be conducted as part of forest management . If tree cutting/trimming will not occur as part of forest management, enter "NA."

NA

Enter the total estimated acres of tree cutting/trimming included in the project that is NOT associated with forest management (e.g., tree clearing/conversion or right-of-way creation/ maintenance). If tree cutting/trimming is limited to that associated with forest management, enter "0".

1

Enter the date range during which tree cutting/trimming will be conducted that is NOT part of forest management (e.g., tree clearing/conversion or right-of-way creation/ maintenance). If tree cutting/trimming is limited to that associated with forest management, enter "NA."

October 1 through April 14 (Protected Bat Inactive Season)

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Nicole Stewart
Address: 9436 Maltby Rd
City: Brighton
State: MI
Zip: 48116
Email nstewart@niswander-env.com
Phone: 8108190021

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Kalamazoo city

NISWANDER ENVIRONMENTAL
Finding solutions in a complex world

9436 Maltby Road
Brighton, MI 48116
810.225.0539 *office*
810.225.0653 *fax*
www.niswander-env.com

Appendix C

SITE PHOTOGRAPHS

SITE PHOTOGRAPHS

Photo 1
Representative photo of mowed and maintained parkland and the existing shelter (pavilion) and playground located immediately north of Kilgore Avenue.

Photo 2
Representative photo of the mowed and maintained parkland containing planted trees, and the existing park facilities located immediately north of Kilgore Avenue.

SITE PHOTOGRAPHS

Photo 3
Looking east towards the playground located immediately north of Kilgore Avenue.

Photo 4
Looking west across Milham Park's existing parking lot off of Kilgore Avenue.

SITE PHOTOGRAPHS

Photo 5
Existing asphalt lot within Milham Park, adjacent to Milham Park Drive.

Photo 6
Existing park facilities along Milham Park Drive.

SITE PHOTOGRAPHS

Photo 7
Looking east across mowed parkland located north of Kilgore Avenue and west of Milham Park Drive.

Photo 8
Looking west towards the park's forested hillside located north of Kilgore Avenue and west of Milham Park Drive.

SITE PHOTOGRAPHS

Photo 9
Looking north across Milham Park Drive.

Photo 10
Representative photo of the forested areas within Milham Park, adjacent to Lovers Lane.

SITE PHOTOGRAPHS

Photo 11
Representative photo of the forested areas of Milham Park.

Photo 12
Representative photo of Portage Creek within Milham Park. No work is proposed within streams or wetlands.

Wetland Delineation and Assessment Report

Milham Park
Kalamazoo, Michigan

Prepared For:

O'Boyle, Cowell, Blalock & Associates, Inc.
141 E Michigan Avenue, Suite 500
Kalamazoo, MI 49007

Prepared by:

Native Edge, LLC

NATIVEDGE
ECOLOGICALLY INSPIRED DESIGN

PO Box 140021
Grand Rapids, Michigan 49514
616-717-0656

May 25, 2026
Wetland Delineation and Assessment Report

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Appendix A: USACE/EGLE Wetland Determination Data Forms
Appendix B: Representative Photographs

1.0 INTRODUCTION

At the request of O'Boyle, Cowell, Blalock & Associates, Inc. (OCBA), Native Edge, LLC conducted a wetland delineation and developed this assessment report to determine the location and extent of wetlands at Milham Park along the Portage Creek within the delineation focus area as identified on Figure 2 of this report (Project Area). The Project Area is along the south side of the Portage Creek, east of the northern crossing of Lovers Lane as shown of Figure 1.

The purpose of this wetland investigation, delineation, and assessment was to determine the boundaries of any wetlands within the Project Area and to provide a professional opinion as to the regulatory status of any existing wetlands pursuant to Part 303, Wetland Protection, of the Natural Resources and Environmental Protection Act (NREPA) of 1994, as amended.

2.0 METHODS

The extent and composition of wetlands located within the Project Area were delineated in accordance with Part 303 of NREPA using the United States Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual and the Northeast and Northcentral Regional Supplement. This methodology has been adopted by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and includes investigation and analysis of vegetation, soils, and hydrology.

A dominance of wetland rated plants, and soils with field indicators of hydric soils coupled with visual signs of hydrology at the surface or within the soil profile were used to confirm the presence of, or the development of, wetlands. A dominance of upland rated plants, soils lacking field indicators of hydric soils and/or visual signs of hydrology were used to confirm the presence of upland surrounding the delineated wetlands.

Boundaries were flagged and sequentially numbered in the field using wire flags and flagging tape in accordance with EGLE procedures and the USACE 1987 Wetland Delineation Manual and the Northeast and Northcentral Regional Supplement. Wetland boundaries depicted on Figure 2 are approximations based on our field notes, aerial imagery, and gps data gathered in the field. Flagged wetland boundaries shall be used to determine the actual wetland boundary and quantify any potential wetland impacts from future development activities and can be professionally surveyed by others as needed. Wetlands within the Project Area were physically delineated, while any wetland boundaries which continued beyond the Project Area were not. USACE wetland data forms for the Northeast and Northcentral Region were completed to document wetland boundaries and to provide an understanding of the wetland parameters (soils, plants, and hydrology) associated with the delineated wetland/upland boundary.

3.0 RESULTS AND DISCUSSION

On April 30, 2026, Native Edge identified, delineated, and assessed wetlands within the Project Area, resulting in the delineation of one wetland area, 'Wetland A'.

USACE/EGLE Wetland Data forms documenting the delineated wetland boundaries for Wetland A is provided in Appendix A. Representative photographs of the wetland is provided in Appendix B. A brief description of Wetland A is provided below.

Wetland 'A'

Wet/mesic prairie wetland in the low-lying area along the Portage Creek. This area is strongly defined by topography, where the wetland transitions to upland when nears the top of bank area. Delineated by flags A1-A13. Approximately 0.24 acres in size (within the Project Area). Data forms DP1 and DP2 represent the wetland and upland data points for Wetland A, respectively.

Upland data point DP2: Dominant plant species present include Norway spruce (*Picea abies*) littleleaf linden (*Tilia cordata*), Morrow's honeysuckle (*Lonicera morrowii*), multiflora rose (*Rosa multiflora*) and Kentucky bluegrass (*Poa pratensis*). According to the USDA Natural Resource Conservation Service Kalamazoo County Soil Survey, soils in the upland areas are mapped as Urban Land-Glendora Complex. On-site investigation revealed a non-hydric soil profile and no indicators of hydrology. Based on the lack of wetland vegetation, soils and hydrology this area is considered to be upland.

Wetland data point DP1: Dominant wetland-rated plant species include sandbar willow (*Salix interior*), silky dogwood (*Cornus amomum*), phragmites (*Phragmites australis*), cattail (*Typha angustifolia*), and lake sedge (*Carex lacustris*). According to the USDA Natural Resource Conservation Kalamazoo County Soil Survey, soils in the wetland areas are mapped as Urban Land-Glendora Complex. On-site investigation revealed a soil profile that meets the criteria for sandy mucky mineral and sandy redox. Indicators of hydrology include high water table, saturation above 12", geomorphic position, and FAC-neutral test. Based on the presence of hydric soils, dominant wetland-rated plant species, and indicators of wetland hydrology, this area is considered to be wetland. Wetland 'A' has direct physical connection to Portage Creek and is therefore considered to be regulated pursuant to Part 303 of NREPA.

EXISTING UNDERGROUND INFRASTRUCTURE

Historic site infrastructure is buried on site in the location noted as 'Existing Underground Infrastructure' on Figure 2. This includes a wading pool in the location where visual saturation can be observed on aerial imagery, which was also present during the time of the delineation. Native Edge confirmed with OCBA that this area has previously been reviewed with EGLE, and has been determined not to be wetland due to the historic wading pool which is buried in this location and contributing to the ponding surface water.

Due to this prior determination, this area was not considered wetland despite initial observations of surface water.

4.0 CONCLUSIONS AND RECOMMENDATIONS

A wetland is determined to be regulated pursuant to Part 303, Wetland Protection, of the Natural Resources and Environmental Protection Act (NREPA), P.A. 451 of 1994, as amended, if it has a direct or seasonal surface water connection to an inland lake (5 acres or greater in size), pond (1-5 acres in size), river, or stream (pursuant to Part 301, Inland Lakes and Streams, of NREPA); is within 500 feet of one of the above-mentioned waterbodies; or has a total area greater than 5 acres in size.

It is Native Edge's professional opinion that Wetland A is regulated pursuant to Part 303 of NREPA as it has direct physical connection to Portage Creek. A permit is required pursuant to Part 303 of NREPA for any dredging, draining, filling, maintained use, or construction within this wetland area. Pursuant to the Rules of Part 303, mitigation for wetland impacts may be required if the area of impact exceeds 0.1 acres in size.

As of October 3, 1994, EGLE requires wetland mitigation for most filling activities proposed in regulated wetlands. Wetland mitigation is the creation of wetland from upland areas to replace acreage impacted by filling and other activities conducted in a regulated wetland. Currently EGLE requires that 1.5-2 acres of wetland be constructed for every acre proposed to be impacted, or fraction thereof above one tenth of an acre. The opportunity to gain permits for impacting any of the regulated wetlands on the site depends on the magnitude of the impact and the feasible/prudent justification available.

5.0 Summary

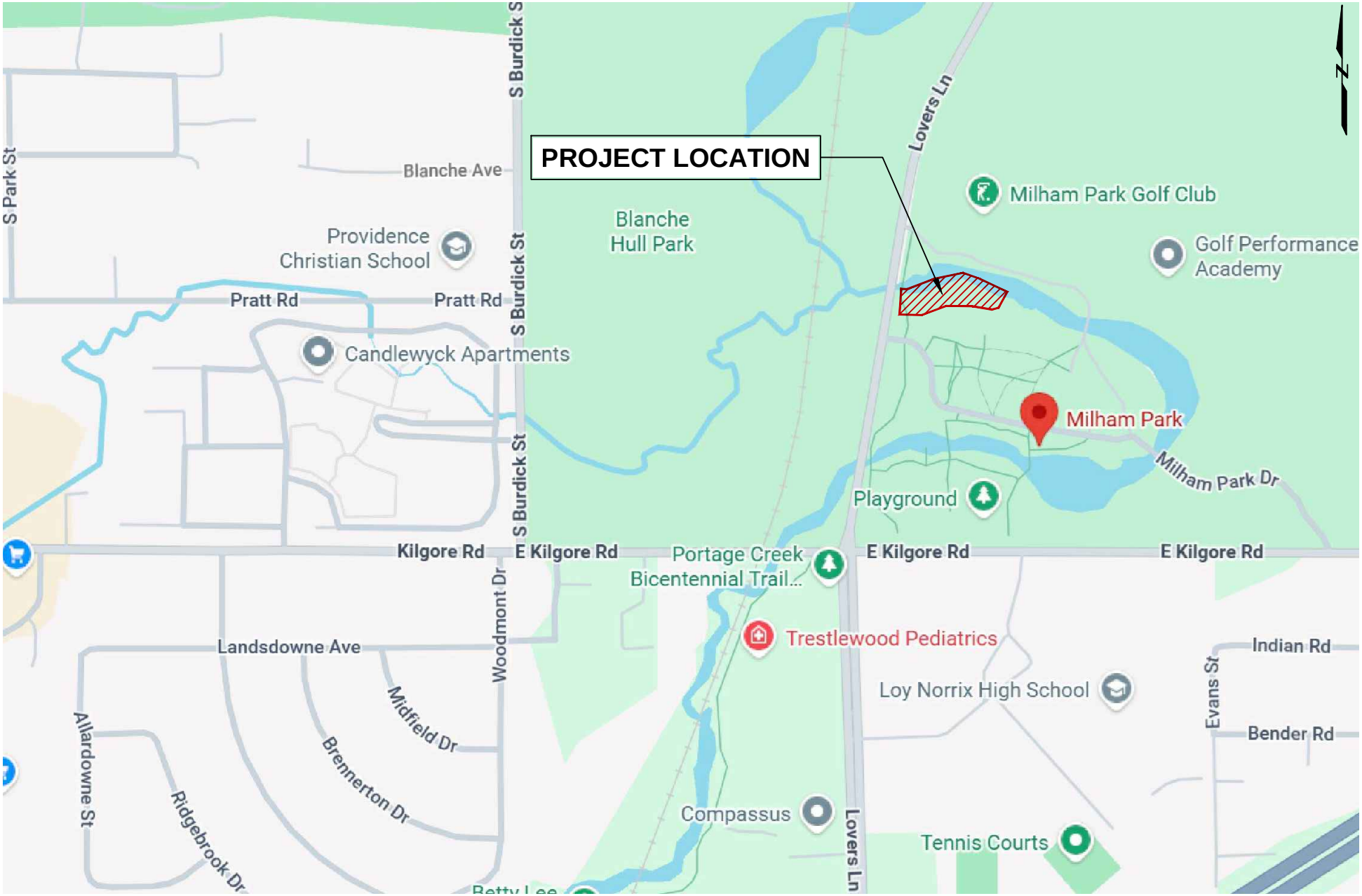
This report is a summary of our findings on the property, in a form intended to provide easily understood information. Due to the dynamic nature of wetland resources, this study reflects wetland boundaries as they existed during the time the delineation was completed. Please be advised this regulatory delineation represents our professional opinion based on the application of established regulatory methodologies.

EGLE is the state agency charged with wetland regulatory oversight within the State of Michigan. Native Edge recommends submitting this report, inclusive of all figures and appendices, to EGLE as part of a joint permit application prior to commencing any development or activities within the wetland areas.

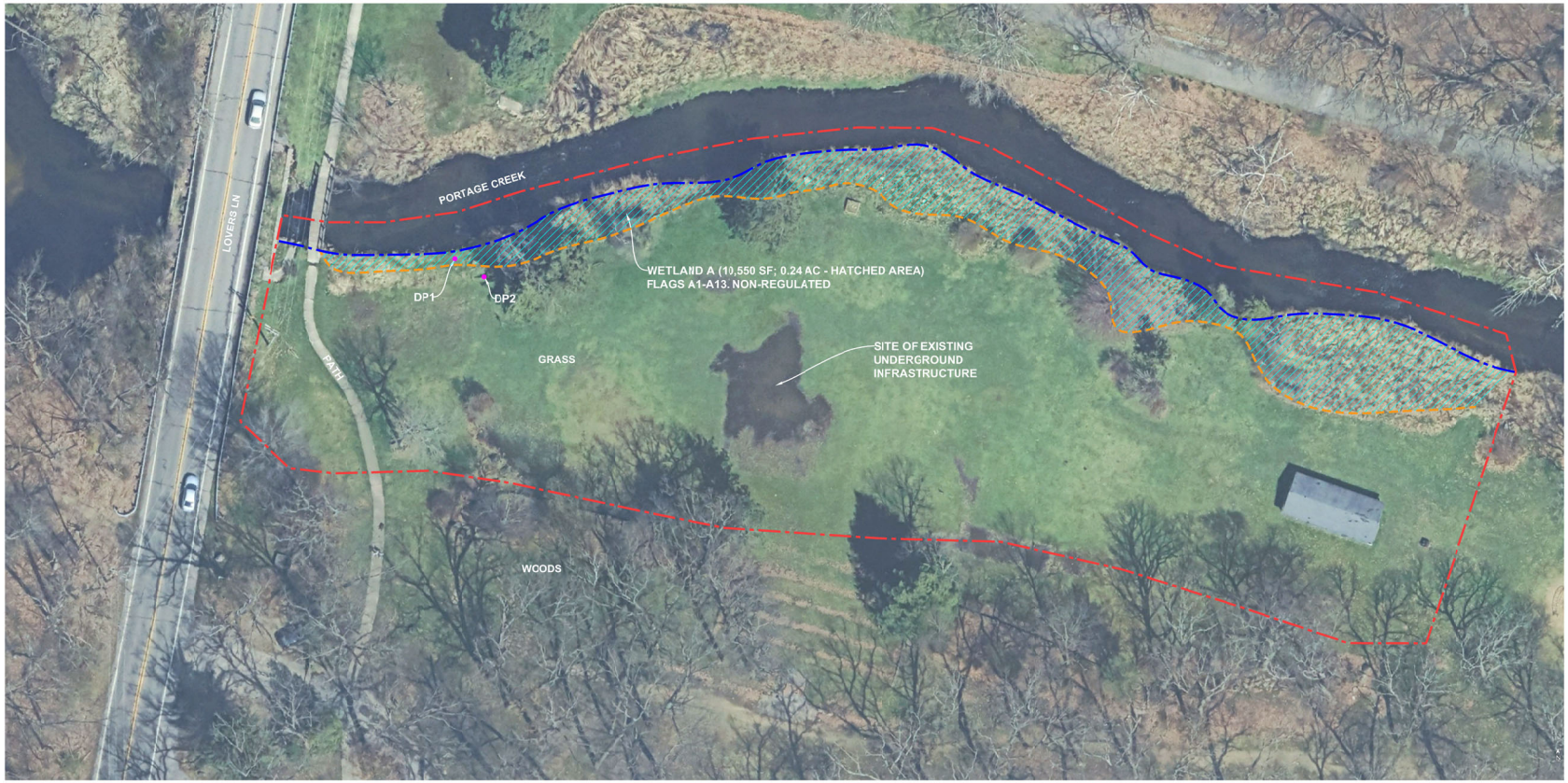
FIGURES

Figure 1: Site Location Map

Figure 2: Wetland Delineation Map



NATIVEDGE ECOLOGICALLY INSPIRED DESIGN	Wetland Delineation & Assessment Report Milham Park, Kalamazoo, Michigan 49001	Figure 1: Location Map
PN NE26400 5/25/2026	CLIENT: OCBA	



Notes:

1) Wetland delineated on 4/30/26.
2) Wetland boundaries shown on this figure are approximate and for informational purposes only. Boundaries on this figure are not to be used for permitting, or to guide any construction work. Delineated wetland boundary to professionally surveyed by others for use in all future permitting and construction activities.
3) EGLE is the authority in charge of regulated environmental features such as wetlands and water-bodies and has the final say on the regulated status of these features.
4) Refer to delineation report for information regarding the noted 'site of existing underground infrastructure'.

LEGEND

- DELINEATION FOCUS AREA
- FLAGGED WETLAND BOUNDARY
- STREAM
- WETLAND AREAS
- DATA POINT

N

0 80 160

SCALE: 1" = 80'

NATIVEDGE
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PN NE26400 5/25/2026

Wetland Delineation & Assessment Report
Milham Park, Kalamazoo, Michigan 49001

CLIENT: OCBA

Figure 2:
Wetland Delineation Map

APPENDIX A
USACE/MDEQ WETLAND DATA FORMS

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Milham Park City/County: Kalamazoo Sampling Date: 4/30/26

Applicant/Owner: OCBA State: MI Sampling Point: DP1

Investigator(s): Wes Landon Section, Township, Range: S34 T2S R11W

Landform (hillside, terrace, etc.): low bench along river edge. Local relief (concave, convex, none): concave Slope %: 1-4

Subregion (LRR or MLRA): LRR L Lat: 42.246035 Long: -85.574589 Datum: WGS 84

Soil Map Unit Name: Urban Land-Glendora Complex NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)	___ Surface Soil Cracks (B6)
X High Water Table (A2)	___ Aquatic Fauna (B13)	___ Drainage Patterns (B10)
X Saturation (A3)	___ Marl Deposits (B15)	___ Moss Trim Lines (B16)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Dry-Season Water Table (C2)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Crayfish Burrows (C8)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Saturation Visible on Aerial Imagery (C9)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Stunted or Stressed Plants (D1)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	X Geomorphic Position (D2)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	___ Shallow Aquitard (D3)
___ Sparsely Vegetated Concave Surface (B8)		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 6
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 3

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: DP1

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Salix interior*	10	Yes	FACW
2. *Cornus amomum*	5	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	15	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Phragmites australis*	40	Yes	FACW
2. *Typha angustifolia*	20	Yes	OBL
3. *Carex lacustris*	20	Yes	OBL
4. *Juncus effusus*	10	No	OBL
5. *Silphium perfoliatum*	5	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95	=Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	60	x 2 =	120
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		170 (B)

Prevalence Index = B/A = 1.55

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10yr 2/1	100					Mucky Sand	
2-6	10yr 4/2	60	10yr 4/6	15	C	M	Sandy	Prominent redox concentrations
	10yr 3/2	25						
6-12	10yr 2/1	80	10yr 4/6	20	C	M	Mucky Sand	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Milham Park City/County: Kalamazoo Sampling Date: 4/30/26

Applicant/Owner: OCBA State: MI Sampling Point: DP2

Investigator(s): Wes Landon Section, Township, Range: S34 T2S R11W

Landform (hillside, terrace, etc.): Top of Bank Local relief (concave, convex, none): convex/none Slope %: 1-2

Subregion (LRR or MLRA): LRR L Lat: 42.246035 Long: -85.574589 Datum: WGS 84

Soil Map Unit Name: Urban Land-Glendora Complex NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**		
Hydric Soil Present?	Yes ____	No X	**within a Wetland?**	**Yes** ____	**No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: DP2

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea abies*	35	Yes	UPL
2. *Tilia cordata*	10	Yes	UPL
3.			
4.			
5.			
6.			
7.			
	45	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Lonicera morrowii*	10	Yes	FACU
2. *Rosa multiflora*	5	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	15	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Poa pratensis*	90	Yes	FACU
2. *Taraxacum officinale*	5	No	FACU
3. *Plantago lanceolata*	5	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	115	x 4 =	460
UPL species	45	x 5 =	225
Column Totals:	160 (A)		685 (B)

Prevalence Index = B/A = 4.28

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10yr 2/1	100					Loamy/Clayey	
5-11	10yr 3/2	96	10yr 4/6	4	C	M	Loamy/Clayey	Prominent redox concentrations
11-15	10yr 3/2	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

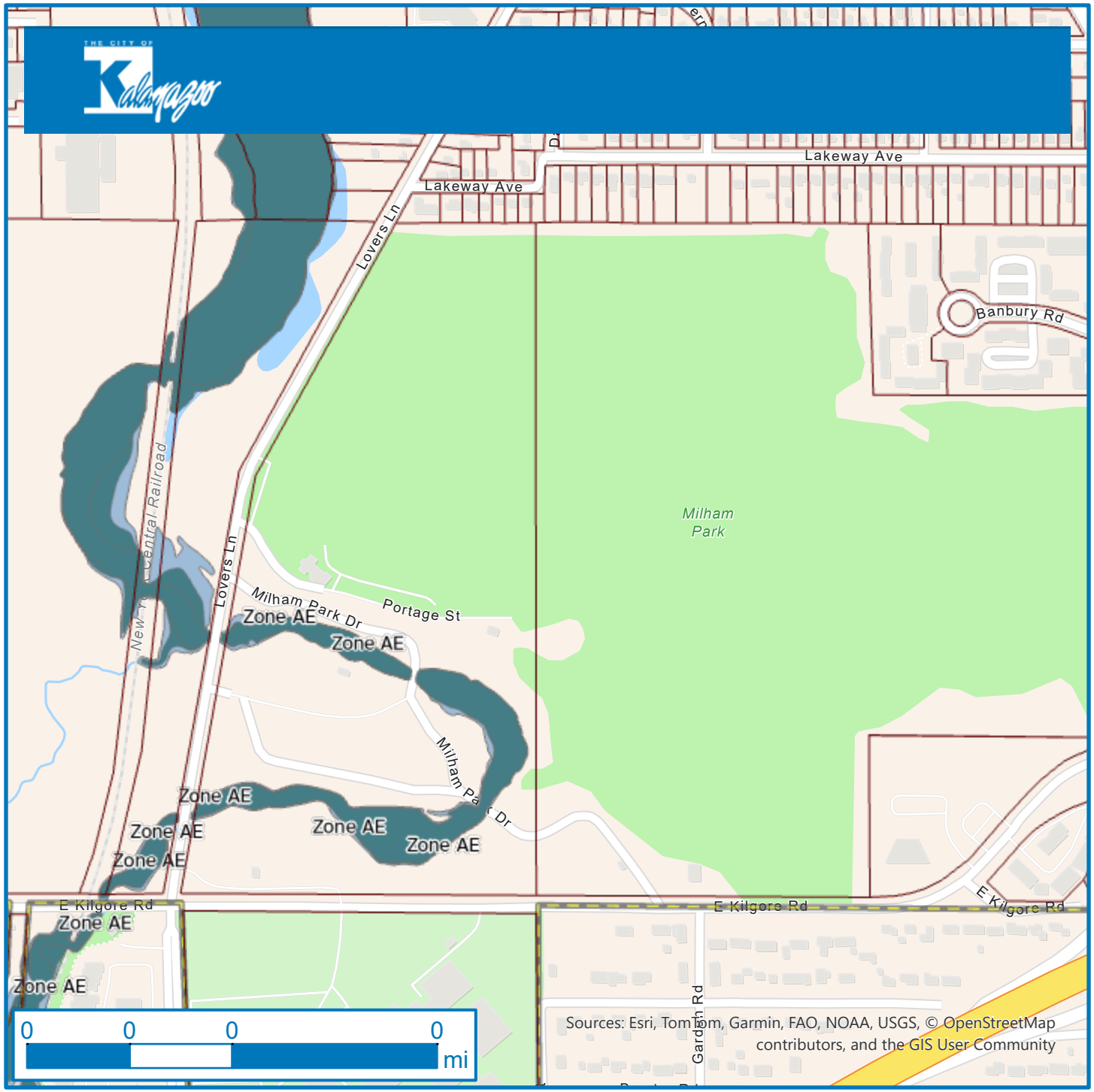
Hydric Soil Present? **Yes** ____ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

APPENDIX B
REPRESENTATIVE PHOTOGRAPHS

Photograph No. 1 – View northeast at Wetland Data Point 1 (DP1).

Photograph No. 2 – View northeast at Upland Data Point 2 (DP2).



LEGEND

PARCEL MAP

Parcel

GENERAL INFORMATION

City Boundary

FLOOD PLAIN

Legacy Floodplain

AE

X

2024 FEMA Approved Floodplain

1 PCT ANNUAL CHANCE FLOOD HAZARD

0.2 PCT ANNUAL CHANCE FLOOD HAZARD

FLOODWAY

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

12330 James Street, Suite H80
Holland, Michigan 49424
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

June 2, 2025 *via electronic mail*

Ms. Rachel Hughes-Nilsson
OCBA
141 East Michigan Avenue, Suite 500
Kalamazoo, Michigan 49007

Re: Geotechnical Report
Milham Park Improvements
607 East Kilgore Road, Kalamazoo, MI 49001
Driesenga & Associates, Inc. Project No 2550400.3A

Dear Ms. Hughes-Nilsson:

Driesenga & Associates, Inc. is pleased to submit the attached report of subsurface exploration performed for the above-referenced project. The report presents the exploration procedures, subsurface conditions encountered, and our recommendations for development of the site with respect to proposed earthwork, foundation construction, and pavement design. As the project nears construction you can contact Andrew Anschuetz at 269-808-1677 or andrewa@driesenga.com in our local office to provide a quote for construction materials testing and survey needs.

Proper execution of our recommendations will affect the design, construction and performance of the structure and related facilities, and the potential associated risks involved. Therefore, the issues and recommendations presented in this report should be discussed with the project team, including Driesenga & Associates, Inc. This will increase the likelihood that the issues are understood and our recommendations are applied in a manner consistent with the project budget, tolerance of risk, and expectations for performance and maintenance.

We appreciate the opportunity to be of service to you. If you have any questions concerning this report, or if we can be of further service as design and construction progresses, please contact our office.

Sincerely,
DRIESENGA & ASSOCIATES, INC.

Michael Stork
Senior Project Geologist

Musana Nabil
Senior Project Engineer

Randy Pail, P.E
Director of Geotechnical Engineering

GEOTECHNICAL REPORT

SITE:

MILHAM PARK IMPROVEMENTS
607 EAST KILGORE ROAD
KALAMAZOO, MICHIGAN

JUNE 2, 2025
PROJECT NO. 2550400.3A

PREPARED FOR:

OCBA
141 EAST MICHIGAN AVENUE, SUITE 500
KALAMAZOO, MICHIGAN 49007

Prepared by:

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

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APPENDICES

APPENDIX A	Figure 1 – Site Location
	Figure 2 – Boring Locations
APPENDIX B	Soil Boring Logs
APPENDIX C	Infiltration Test Results
	Environmental Test Results
	Field and Laboratory Procedures

1.0 INTRODUCTION

1.1 LOCATION

This report presents the results of the geotechnical investigation completed for the proposed Milham Park Improvements. The site is located at 607 East Kilgore Road, Kalamazoo, Michigan as shown on Figure 1 – Site Location (Appendix A).

1.2 PURPOSE

The purpose of this investigation was to determine the subsurface profile, the engineering characteristics of the subsurface soils, and to provide recommendations in regard to the proposed design and construction based on our interpretation of the test results. This report was prepared in general accordance with our proposal dated March 26, 2025, as authorized by Ms. Rachel Hughes-Nilsson of OCBA on April 29, 2025.

1.3 SCOPE

The field exploration to estimate engineering characteristics of the site soils included performing a site reconnaissance, advancing the soil borings, performing standard penetration tests, and recovering split-spoon samples. Soil boring locations were determined in the field by measuring from existing site features. Existing ground surface elevations were not provided and obtaining them was beyond the scope of this investigation.

Five (5) soil borings, designated SB-1 to SB-5, were advanced in the vicinity of the proposed improvements on May 12, 2025, at the approximate locations shown on Figure 2 - Boring Locations (Appendix A). The soil borings were advanced with hollow-stem augers to a depth of fifteen (15) feet below the ground surface. During drilling, soil samples were collected from split-spoon sampling via standard penetration testing (ASTM method D 1586) at intervals of 2.5 feet to

a depth of 10 feet, and intervals of 5 feet from a depth of 10 feet to the end of each boring. The soil boring logs are contained in Appendix B. The field and laboratory procedures are described in Appendix C.

Four (4) double-ring infiltrometer tests following SEMCOG LID Manual for Michigan, Appendix E (Modified) procedures were completed at an approximate depth of 4-feet below existing grades. A composite soil sample was collected from each of the four (4) boring locations for submittal to our laboratory for environmental testing of MI 10 metals, VOC's and PNA's. The test results of the testing is attached in Appendix C.

1.4 DESIGN INFORMATION

It is understood the proposed bathroom is to be a one-story wood framed structure with poured concrete footings. The new construction will also include a new parking area and driveway. The soil borings were performed as follows:

- SB-1 to SB-3: Asphalt parking lot
- SB-4: New restroom building (similar to the existing structure)
- SB-5: Wooden overlook deck behind the top of the embankment slope to the Creek.

Structural load information was not available as of the time of this report, but should be provided to Driesenga & Associates, Inc. for review in light of the recommendations contained herein as soon as available. For calculation purposes, maximum loads of 2,000 pounds per lineal foot of wall and 20 kips per column were assumed for the bathroom building. Understanding that the new bathroom building will not include any basement areas, exterior footing depths are assumed to be a minimum of 3.5 feet below the final ground surface elevation. At the deck area, individual support posts are anticipated to have a maximum load of approximately 10 kips. We have assumed maximum tolerable settlements of 1 inch total and ½ inch differential. We anticipate cuts and fills on the order of 2.0 feet or less will be required to establish site grades. Any significant deviation

from these assumptions should be brought to the attention of Driesenga & Associates, Inc. as soon as possible.

2.0 SITE CONDITIONS

2.1 GENERAL

The stratification of the soils, as shown on the soil boring logs in Appendix B, represents the soil conditions at the actual soil boring locations. Variations may occur away from or between the soil borings. Stratigraphic lines shown on the soil boring logs represent the approximate boundary between the soil types, but the transition may be gradual. They are not intended to show exact depths of change from one soil type to another. In addition, changes in soil type may occur between the sample intervals that are consequently not observed by the driller.

The soil boring logs in Appendix B include the drilling method, materials encountered, penetration resistances, and pertinent field observations made during the drilling operations along with the results of the laboratory testing.

2.2 SURFACE CONDITIONS

The subject property is currently occupied by maintained lawn, wooded and asphalt areas, pathways, with a river surrounding the park area. The site is relatively flat with some irregular sloping. The site is surrounded by a golf course, wooded and maintained lawn areas, asphalt parking, and driveway areas associated with residential and commercial uses.

2.3 DESCRIPTION OF SUBSURFACE SOILS

Surface materials encountered at the site generally consist of 4 to 6 inches of topsoil, or 1.5 to 4 inches of asphalt with 4 to 6 inches of aggregate base in the paved areas. At all of the borings except SB-1, the surface materials were underlain by 3 to 5 of fill sand with organics. The native soils consisted of very loose to medium dense, brown and gray sands to the explored depth of the soil borings. **A 3 feet thick layer of buried organics was encountered in the area of soil boring**

SB-5 at a depth of approximately 5 to 8 feet below the ground surface. At a depth of 14 feet at SB-3, a very stiff, gray, sandy clay was encountered to the explored depth of that boring.

The estimated group symbol, according to the USCS, is shown in the USCS column just before the textural description of the various strata on the soil boring logs in Appendix B.

2.4 GROUNDWATER OBSERVATIONS

Groundwater was initially encountered at depths ranging from 2.5 feet to 13.5 feet below the existing ground surface. Upon completion of the borings, groundwater was measured at depths ranging from 3 to 12 feet. Hydrostatic groundwater levels and the elevations and volumes of groundwater should be expected to fluctuate throughout the year, based on variations in precipitation, evaporation, run-off, and other factors. The groundwater levels (or lack thereof) indicated by the soil borings and presented in this section represent conditions at the time the readings were taken. The actual groundwater levels at the time of construction may vary.

Groundwater measurements were collected during drilling and attempted shortly after completion of the drilling operations. After drilling and collection of groundwater readings, the boreholes were backfilled with auger cuttings and the surface was repaired approximating previous conditions. Since the boreholes were backfilled shortly after drilling, long-term groundwater level information is not available from the soil borings. To obtain long-term groundwater levels, groundwater observation wells would be required.

2.5 SEISMIC SITE CLASS

The proposed building's seismic class was determined for use in the structural design of the proposed project. Soils information was obtained from the soil borings completed on-site, as well as information obtained from the "Soil Survey of Kalamazoo County" by the United States Department of Agriculture, the "Quaternary Geology of Michigan" completed by W.R. Farrand,

the USGS Topographic Quadrangle and the Hydrogeologic Atlas of Michigan. It is assumed that the proposed structure falls under Building Class II according to the 2015 Michigan Building Code (MBC) Table 1604.5. Based on this information it is our determination that seismic site class D be used according to the ASCE 7 – Table 20.3-1 for structural calculations.

2.6 LIMITATIONS

Soil and groundwater conditions have been observed and interpreted at the soil boring locations only. This information has been used as the basis for our analyses and the recommendations that follow. Although we have allowed for minor variations in subsurface conditions in the development of our recommendations, conditions can vary away from and between soil boring locations. Should this become evident during construction, we should be contacted to review our recommendations. This geotechnical evaluation and report were prepared for geotechnical purposes only. We did not perform environmental related borings or analytical tests.

3.0 RECOMMENDATIONS

3.1 SITE PREPARATION

To increase the likelihood that the recommended allowable soil bearing capacities are achieved and tolerable settlements are not exceeded, the recommendations contained herein should be followed. Within the building footprint and any areas to receive fill, all existing building material, topsoil, old fill, organic-containing material, frozen soil and other unsuitable material should be removed. The clearing should extend a minimum of 5 feet beyond the limits of proposed building and pavement areas and areas to receive structural fill. The buried organics in the vicinity of soil boring SB-5 must be removed before construction if it is planned to have on grade structures relying on near surface soils for support. Removal of the buried organics is not required for the deck post supports which we are recommending helical pile support in section 3.2. The exact horizontal and vertical extent of the buried topsoil/organics is not known and should be field verified to ensure its complete removal. We recommend a test pit evaluation be performed to better delineate the areas of buried topsoil. We recommend including a contingency in the project budget to account for the unknown amount of topsoil.

It is strongly recommended that the building pad and pavement subgrade areas be evaluated by Driesenga & Associates, Inc. after the area has been cleared and stripped. This evaluation may be performed by proofrolling with a loaded tandem axle dump truck or another method selected by the geotechnical engineer to identify any areas of soft subgrade soil. Where soft subgrade soils are encountered, remedial actions as recommended by the geotechnical engineer will be required.

Any existing foundations, floor slabs, utilities, and other below-grade structures from previous construction should be completely removed from the footprint of the proposed building. In proposed pavement areas, existing utilities and other below-grade structures should be removed to at least 2.5 feet below the final subgrade level. Alternatively, utilities can be left in place below pavement areas if the void space of the utility is completely grouted. Depressions or excavations

from the demolition and removal operations should be backfilled with granular structural fill meeting the requirements of MDOT Class II sand compacted in accordance with the recommendations below.

Existing fill was encountered in all of the soil borings except SB-1, extending to about 3 to 5 feet below the existing ground surface. Without documentation of the placement of the fill, we consider it to be "uncontrolled fill." If documentation of the existing fill is available, we would be pleased to review it to determine its suitability of slab, pavement, and/or structural fill support.

Deeper and/or looser uncontrolled fill may be encountered at the site, particularly adjacent to existing or former structures, or in the vicinity of existing utilities. The existing fill ***may*** be suitable for support of slabs, pavements, and/or structural fill after additional evaluation and special preparation and only where it is not underlain by buried topsoil or other organic, deleterious or otherwise unsuitable soils and the owner accepts the risks in doing so. Some of the soil samples in the existing fill contained organics. Existing fill with excessive organics (over 4%), voids or debris should be removed and replaced with structural fill. Test pits should be performed to identify unsuitable fill. The test pits could be performed prior to construction. However, suitability of the existing fill will need to be determined on a case-by-case basis during construction. The remaining fill, after removing unsuitable fill, is anticipated to be suitable to support floor slabs, pavements and structural fill, provided an increased risk of unsatisfactory performance is acceptable. We believe the risk of unsatisfactory performance such as cracking and settlement associated with the construction of slabs-on-grade and pavements on or above the existing fill is relatively low after preparation.

Ultimately, if the risk of poor slab and/or pavement performance is not acceptable, complete removal of the existing fill and replacement with structural fill should be performed. Based on the soil borings, the existing fill could extend 5 feet or more below the existing ground surface. If performed, the removal of the existing fill should extend a minimum of 10 feet beyond the edges of the proposed building, or laterally on a two vertical to one horizontal slope from the bottom outside

edge of the foundation, whichever is greater. This action should reduce the amount and depth of undercutting during foundation construction since the unsuitable fill and any unsuitable soils directly beneath fill would be removed. For this case, the test pit evaluation would not be necessary. However, a test pit evaluation could be performed to provide a better estimate of the nature, depth and extent of the existing fill.

Trees were located within the project area(s) when this investigation was conducted. Large trees may have relatively widespread root structures and related organic veins. The earthwork activities within the building and pavement areas should include complete removal of the tree roots and organic veins.

In all general fill areas, the exposed granular soil surface should be scarified to a depth of 12 inches and compacted to a minimum of 95% of Modified Proctor maximum dry density (MDD) per ASTM D 1557 method, or 98% of MDD as determined by the Michigan Cone Method. In any areas of backfill below the groundwater elevations, the use of a clean (less than 7% passing the No. 200 sieve), 1-inch to 3-inch open-graded crushed aggregate is recommended. Sand soils were encountered at or near the final subgrade level in some of the soil borings in the proposed building area. Within the proposed building area the native sand should be proof-compacted by at least six (6) passes of a 10-ton vibratory roller.

The contractor should remove standing water from the subgrade and prevent surface water from reaching the footing excavations and the prepared subgrade. In addition, construction traffic should use haul roads and should not haphazardly traffic the site. Subgrade soils that become disturbed should be removed and replaced with structural fill or crushed aggregate. Under wet weather conditions, the subgrade may be protected by placing crushed aggregate on the exposed subgrade.

It is recommended that any fill materials be placed in or near horizontal maximum 8-inch-thick loose lifts and compacted to a minimum of 95% of Modified Proctor MDD, or 98% of Michigan

Cone MDD. If a vibratory roller is used for compaction, the loose lift thickness may be increased to 12 inches. Soils used for structural fill should consist of clean sand meeting SW or SP classification in accordance with USCS criteria. Where granular soils are placed within clay soil profile, a drainage outlet should be provided to prevent the collection of water due to creating a "bathtub" effect.

3.2 FOUNDATIONS

Helical Piles (SB-5 / Deck Area)

Based on the soils encountered, we do not recommend supporting the proposed deck on traditional, shallow footings without first removing the existing unsuitable soils. Considering the depth of old fill soils, potential contamination and groundwater levels, we do not anticipate that removal of the unsuitable soils and replacement with engineered fill will be practical in the **deck footprint**. Therefore, using helical piles is anticipated to be the most suitable foundation support systems.

Helical piers involve a round, helically formed plate welded onto a steel shaft. Additional capacity is gained by adding additional helices to each shaft (i.e., double helix and triple helix piers). The lead section is drilled through the unsuitable upper soils until a designed torque resistance is reached in the denser, underlying strata. The upper section of the drilled shaft is then incorporated into the structure's concrete foundation. The pier essentially carries the load of the structure through each installed pier.

Each pier should extend at least five (5) feet into the medium dense sand and at a minimum installed depth of 15 feet below ground surface. We have calculated the allowable capacities below, provided the piers are extended to a depth of at least 15 feet below existing grade, and assuming the encountered sand layer will continue beyond the 15-feet explored depth and that the relative densities remain similar or improve with depth.

Helical Pile Recommendations				
Minimum Depth (ft)	Number of Helix (Size)	Shaft Size (inches)	Torque Resistance (ft-lb)	Allowable Capacity (kips)
15	2 (10 & 12 Inches)	2.875 (0.203" Wall Thickness)	2,478	11

Full-time inspection should be provided to ensure proper installation, depth, and verify the calculated torque resistance shown on the table above at a minimum depth of 15 feet. The helical piles should be incorporated into a poured concrete pile cap column foundation to support the proposed structure (as designed by the collaborating structural engineer of record). **Due to the low strength soils observed at the boring location - pile buckling analysis may be warranted.**

These calculations, as well as the appropriate pier shaft diameter, should be verified by the helical pier supplier and the structural engineer of record once the final design is complete and manufacturer selected.

Shallow Foundations (SB-4 / Restroom Building)

Considering the subsurface conditions on this site, the assumed proposed construction and the recommended site preparation activities, it is acceptable for the proposed facility to be supported on conventional spread footings. Footings bearing on newly placed structural fill placed over suitable native soils or directly on the native sand may be designed for a maximum net allowable soil bearing pressure of 2,000 psf. The allowable bearing pressure may be increased by one-third for seismic or wind loads. ***The footings should not be placed on the existing fill material.***

At some locations, the native sand soils may be in relatively loose condition and not suitable for support of foundations at the recommended design soil bearing pressure. In addition, these soils may become loosened below the bottom of footing level from the excavation activities or from construction traffic, especially if allowed to dry out. Therefore, the excavated footing bearing surfaces should be compacted to a minimum of 95% of Modified Proctor MDD, or 98% of MDD as determined by the Michigan Cone Method, just prior to concrete placement. A hand-operated

plate compactor may be used for loose or disturbed soil that is less than 6 inches in thickness. For deeper compaction, we recommend using a hoe-pac mounted on a backhoe. Water may need to be added to achieve the desired compaction for the allowable bearing capacity.

If it is not possible to improve the sands by densification, the unsuitable soils may need to be removed and the foundations placed on suitable native soils encountered at lower levels. Alternatively, the undercut may be backfilled with crushed aggregate to the bottom of footing level. In addition, wet or easily disturbed foundation bearing soils could be encountered at some locations. If wet soils are encountered, we recommend a layer of crushed aggregate be placed on the subgrade. The thickness of this layer will depend on the conditions encountered at the time of construction. In areas where undercutting is required, the undercut should extend laterally on a two vertical to one horizontal slope from the edge of the footing.

All perimeter footings and footings in unheated areas should bear at least 42 inches below finished grade for protection from frost action. To reduce the likelihood of frost heave, trench footings should be formed vertically and should not be allowed to widen near the top. If interior footings are to bear on compacted fill, the fill should be placed in accordance with the recommendations of Section 3.1. Interior foundations can be constructed on suitable natural soils or on structural fill overlying suitable natural subgrade just below the floor slab. However, the footings and proposed bearing soils should be protected from freezing during construction if work is conducted in the cold winter months. Due to the sands encountered at the site, construction of trench footings is probably not feasible. Therefore, we anticipate footing excavations will need to be sloped back and the foundations formed. The placement of footing concrete should be done as soon as footing excavations have been completed and approved to reduce the potential for disturbance or freezing of the footing subgrade.

Prior to concrete placement, the bearing surface should be free of loose soil and standing water. The contractor should avoid stockpiling excavated materials immediately adjacent to the

excavation walls. It is recommended that stockpiled materials be kept back from the excavation a minimum distance equal to half the excavation depth to prevent surcharging the excavation walls.

Total and differential settlement of foundations properly designed and constructed based on our recommendations are not expected to exceed 1 inch and ½ inch, respectively.

3.3 FLOORS

The soil below the floor slab should be prepared in accordance with the recommendations in Section 3.1. A noncohesive soils mat such as MDOT Class II sand should be provided directly below the floor slabs. The mat should be a minimum of 8 inches in thickness and compacted to a minimum of 95% of Modified Proctor MDD.

The floor slab should be suitably reinforced and proper joints should be provided at the junctions of the slab and foundation system so that a small amount of independent movement can occur without causing damage. A minimum of 6 inches of structural fill should be provided between the bottom of the slab and the top of the shallow spread footing below. Otherwise, other arrangements should be made to allow for potential relative settlements, such as grade beams, thickened slabs with appropriate reinforcing steel or other appropriate details. A modulus of subgrade reaction of 180 pci should be used in the design of slabs-on-grade.

3.4 PAVEMENTS

Specific traffic information was not available in developing these pavement recommendations. For design purposes, we have assumed that passenger vehicles and light trucks will traffic all light/medium duty pavement areas. Heavy duty pavement areas will include entrances, service drives and bus parking areas, and will be trafficked by buses, refuse trucks, and fire engines.

The following Design Inputs were used in our evaluation:

- Estimated Native Subgrade CBR = 2 to 4 percent
- Design Subgrade Resilient Modulus (MR) =3,100 to 5,000 psi
- Reliability = 85% flexible
- Standard Deviation = 0.49 flexible
- Initial Serviceability Index = 4.2
- Terminal Serviceability Index = 2.0
- New HMA Layer Coefficient = 0.42
- New Aggregate Base Layer Coefficient = 0.14

The following pavement sections are provided based on subgrade soil conditions and the design inputs The ESAL design values noted below should be confirmed by the design engineers and, if different, D&A should be consulted to revise the provided pavement section accordingly.

Light to Medium Duty (60,000 ESAL's)					
Layer	Material	Thickness (inches)	Structural Layer Coefficient	Drainage Coefficient	Structural Number
Surface Course	MDOT 13A/4EML or Similar	1.5	0.42	1	0.63
Leveling Course	MDOT 13A/4EML or Similar	1.5	0.42	1	0.63
Aggregate Base	MDOT 21AA (Limestone)	6	0.14	0.75	0.63
Granular Base	Class II	12	0.08	0.75	0.72
			Total Structural Number (SN)		**2.61**

Heavy Duty (250,000 ESAL's)					
Layer	Material	Thickness (inches)	Structural Layer Coefficient	Drainage Coefficient	Structural Number
Surface Course	MDOT 13A/4EML or Similar	2	0.42	1	0.84
Leveling Course	MDOT 13A/4EML or Similar	2	0.42	1	0.84
Aggregate Base	MDOT 21AA (Limestone)	8	0.14	0.75	1.12
Granular Base	MDOT Class II	12	0.08	0.75	0.72
			Total Structural Number (SN)		**3.52**

Compaction of asphalt courses should range between 92% and 96% of the Theoretical Maximum Density (TMD).

The pavement subgrade should be prepared as described in Section 3.1. Above the subgrade, the sand subbase should be constructed in accordance with the tables above using Michigan Department of Transportation (MDOT) Class II Fine Aggregate fill (MDOT Division 3, Section 301 "2012 Standard Specifications for Construction", April 1, 2011) compacted to a minimum of 95% of the material's MDD as determined by Modified Proctor.

Due to the clayey soils encountered at the site, site grading and stormwater controls will be important to protect paved drives and parking areas. To further protect new paved areas, perimeter underdrains should be placed beneath pavement edges within the bottom portion of the pavement sand subbase. Four (4) inch-diameter sock-tube backfilled with at least 6 inches of peastone cover should be used. The drains should flow via gravity to a common low point and into the off-site storm sewer system.

The aggregate base for pavement areas should follow MDOT Dense-Graded Aggregate Base Course Materials – Division 3, Section 302 and Division 9, Section 902, using a 21AA (Grading Requirements per MDOT Table 902-1) Limestone Dense-Graded Aggregate material in accordance

with the tables above. This gravel base may be placed in one (1) lift and should be compacted to a minimum of 95% of the material's MDD as determined by Modified Proctor.

Construction traffic should be minimized on the new pavement. If excessive construction traffic is anticipated on the pavement structure, the initial asphalt lift thickness could be increased and placement of the final lift could be delayed until the majority of the construction activities have been completed. This action will allow repair of localized failure, if any does occur, as well as reduce load damage on the pavement system.

A bond coat of emulsion should be used between the base course and wearing course when more than 48 hours have elapsed between placement of the courses, or the surface of the base course has been contaminated by soil or dust. Performance grade asphalt cement should be used in the production of all bituminous mixtures. Reclaimed Asphalt Pavement (RAP) may be permitted in percentages in accordance with MDOT guidelines and specifications for use in the surface course mix design. We recommend following MDOT Tier 1 or Tier 2 criteria.

After the pavement is complete, we recommend instituting a regular maintenance program that includes sealing of cracks and patching of distressed areas. This should reduce the effect of water infiltration and associated frost action.

In areas where the durability of Portland cement concrete (PCC) is desired over bituminous pavement (i.e., loading areas, dumpster pads) a rigid pavement is recommended. Concrete pavement should be constructed on a base layer of at least 6 inches of Michigan Department of Transportation (MDOT) Class II sand subbase (Division 9, Section 902, Grading Requirements per Table 902-3). The concrete slab should consist of a minimum of 6 inches of 4,000 psi, air entrained concrete (MDOT Division 6, Section 601 – PCC Pavement and Division 9, Section 901 – Cement and Lime); however, actual design of the slab including reinforcement type and spacing should be performed by the Project Structural Engineer.

These recommendations assume typical conditions during the June through September construction season. Any substitution of materials or deviation from these stated assumptions should be reviewed to assess potential impact on the recommended design.

3.5 GROUNDWATER CONTROL

Given that groundwater was initially encountered at depths ranging from 2.5 feet to 13.5 feet below the existing ground surface around the site and at a depth of 13.5 feet in the area of the restroom building where the conventional shallow foundations will be constructed. Assuming footings will be placed at least 42 inches below existing grade, dewatering will likely not be necessary during footing excavation or over-excavation of old fill soils. An gravity drainage system, sumps or other minor dewatering procedures may be required depending on the volume of groundwater encountered.

Perimeter foundation drains should be installed along foundations where interior finished floor elevations are lower than perimeter grades, or where exterior grades slope toward the building. In addition, all roof drains should be diverted to downspouts which carry water away from foundations and supporting walls.

3.6 TEMPORARY EXCAVATION STABILITY

If excavations are anticipated for the proposed structure and/or utilities, shoring and bracing or flattening (laying back) of the slopes may be required to obtain a safe working environment. Excavations should be sloped or shored in accordance with local, state and federal regulations, including OSHA (CFR Part 1926) excavation trench safety standards. We recommend that all excavated soils be placed away from the edges of the excavation at a distance equaling or exceeding the depth of the excavation. In addition, surface runoff water should be diverted away from the crest of the excavated slopes to prevent erosion and sloughing.

Localized areas of soft or unsuitable soils not detected by our borings or in unexplored areas may be encountered once construction begins. Vertical cuts in these soils may be unstable and may present a significant hazard because they can fail without warning. Therefore, temporary construction slopes greater than 5 feet high should not be steeper than one horizontal to one vertical (1H: 1V) and excavated material should not be placed within 10 feet of the crest of any excavated slope.

Unbraced excavations may experience some minor localized instability (i.e., sloughing). To reduce potential sloughing, excavated slopes should be covered with plastic for protection from rainfall and moisture changes. It should be emphasized that continuous observations by personnel from our office are important during trenching or excavation operations at the site.

4.0 GENERAL COMMENTS

If significant changes are made in the plans and specifications, the location of the proposed structures, or the loading conditions outlined in Section 1.4 are exceeded, a consultation should be arranged to review such changes with respect to the prevailing soil conditions. It may then be necessary to submit supplementary recommendations. If deviations from the noted subsurface conditions are encountered during construction, they should also be brought to the attention of Driesenga & Associates, Inc.

Driesenga & Associates, Inc. should be afforded the opportunity to review the project design drawings and specifications to verify the factors affecting subgrade and foundation performance comply with our recommendations.

It is recommended that the services of Driesenga & Associates, Inc. be engaged to observe excavation for the footings and to test and evaluate the soils in the footing excavations prior to placement of foundations in order to determine that the soils have the required bearing capacities. Monitoring and testing should also be performed to verify that suitable materials are used for controlled fills and that they are properly placed and compacted.

This report and any future reports or addenda performed for this site should be supplied to potential bidders prior to them submitting their proposals. We also recommend the construction contract include provisions for dealing with differing conditions. Contingency funds should be reserved for potential problems during earthwork and foundation construction.

This report was for geotechnical purposes only. We did not sample for environmental purposes or perform any analytical testing. However, the contractor should be prepared to handle environmental conditions encountered at this site that may affect the excavation, removal, or disposal of soil; dewatering of excavations; and health and safety of workers. Any Environmental

Assessment reports prepared for this property should be made available for review by bidders and the successful contractor.

This report has been prepared solely for the use of the client for the project specifically described in this report. This report cannot be relied upon by other parties not involved in this project, unless written permission is granted by Driesenga & Associates, Inc. If this report or any of its contents are utilized by parties other than our original client and the project team members, Driesenga & Associates, Inc. can not be held responsible for the suitability of the field exploration, scope of services, or recommendations made for the new project. Driesenga & Associates, Inc. also is not responsible for the interpretation of our soil boring logs and the recommendations provided herein by other parties.

Driesenga & Associates, Inc. will evaluate this report for other parties and developments at this site, provided our original Client agrees to release this information in writing. However, before this report can be relied upon by other parties. Driesenga & Associates, Inc. must review the proposed development since the new project will likely require additional field exploration, laboratory tests, analysis, and modifications to our recommendations to adequately address the needs of the new project.

APPENDIX A

·FIGURE NUMBER 1 – SITE LOCATION·

·FIGURE NUMBER 2 – BORING LOCATIONS·

Scale: NTS

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

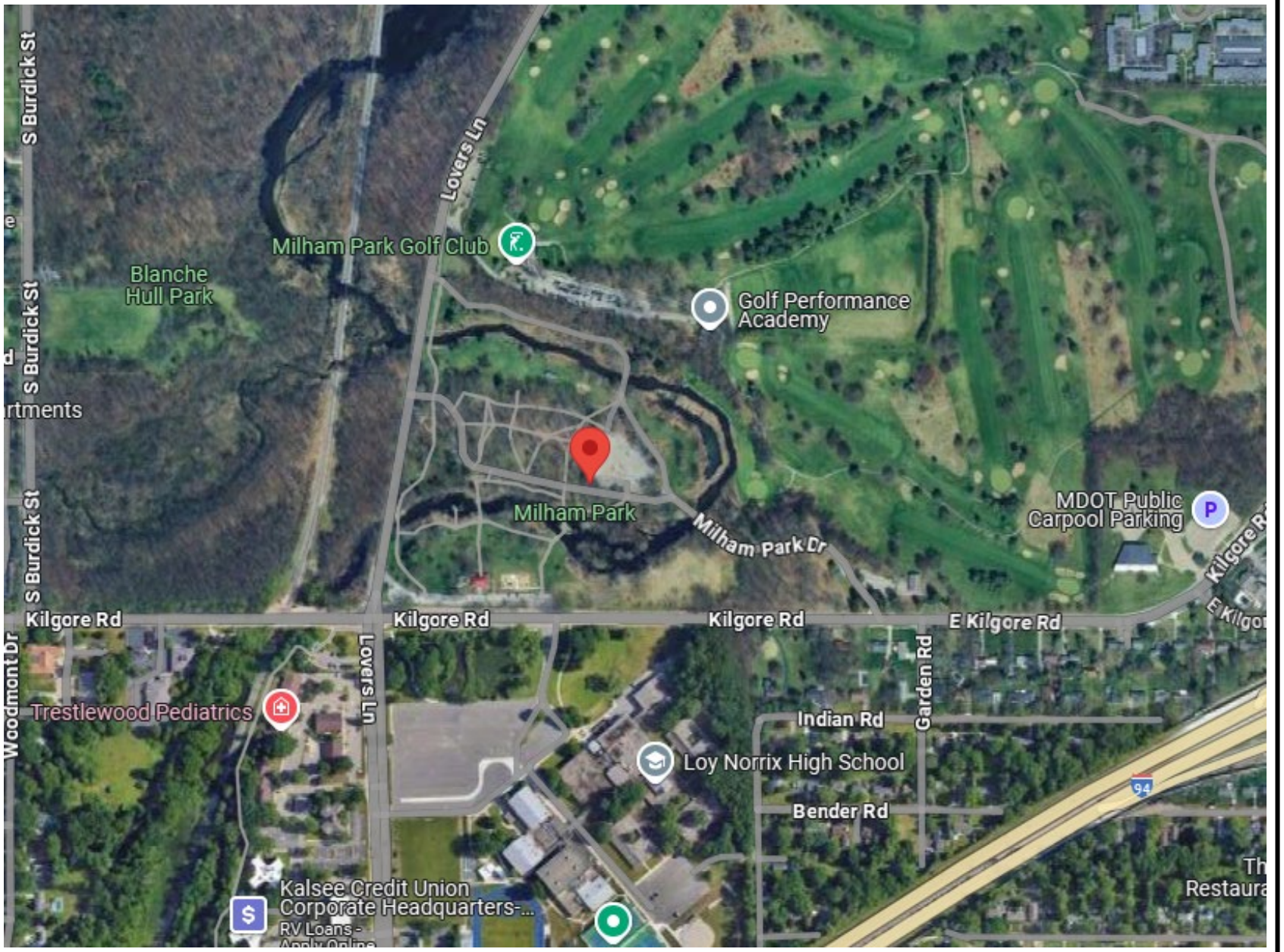
Figure Number: 1
Site Location

Project Name:
Milham Park Improvements

Project Number:
2550400.3A

Project Location:
607 East Kilgore Road
Kalamazoo, Michigan

Date: 5/1/2025
Sheet: 1 of 1
Modified by: SBE



Scale: NTS

Boring Location

DRIESENGA & ASSOCIATES, INC.

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Figure Number: 2

Boring Locations

Project Name:

Milham Park Improvements

Project Number:

2550400.3A

Project Location:

607 East Kilgore Road

Kalamazoo, Michigan

Date: 5/1/2025

Sheet: 1 of 1

Modified by: SBE

APPENDIX B

·SOIL BORING LOGS·

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

SB-1

Project Name: Milham Park Improvements
607 East Kilgore Road
Kalamazoo, Michigan

Project No. 2550400.3A

Client Name: OCBA

Date Started	: May 12, 2025	Drilling Company	: Midwest Envirotech
Date Completed	: May 12, 2025	Field Sampling	: J. Spaans
Hole Diameter	: 6-inches	Reviewed By	: S. Ellison
Drilling Method	: Hollow-Stem Auger	GW Encountered	: 6.5'
Sampling Method	: Split-Spoon Sampler	GW Completed	: 8'

Water Levels
▼ During Drilling
▽ After Completion

Auto-Hammer Used for SPT

Depth in Feet	Elev.	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	N Value	Pocket Pen (tsf)	Water Level	Moisture Content %
0				ASPHALT - 1.5 inches						
				AGGREGATE BASE - 5 inches						
		SC		Clayey SAND, very loose, brown, fine to medium grained, trace gravel, moist.	1	1 1 2	3			
		SW		SAND, loose, brown, fine to medium grained, trace gravel, trace clay, moist.	2	2 2 3	5			
5		SC		Clayey SAND, loose, brown, fine to medium grained, trace gravel, moist to wet.	3	3 2 3	5		▼	
		CL		Sandy CLAY, medium stiff, brown, trace gravel, moist.					▽	
		SW		SAND, medium dense, brown, fine to coarse grained, trace gravel, wet.	4	3 6 9	15	0.5		
10					5	6 8 13	21			
15										

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DRIESENGA & ASSOCIATES, INC.

Engineering · Surveying · Testing

SB-2

Project Name: Milham Park Improvements
607 East Kilgore Road
Kalamazoo, Michigan

Project No. 2550400.3A

Client Name: OCBA

Date Started	: May 12, 2025	Drilling Company	: Midwest Envirotech
Date Completed	: May 12, 2025	Field Sampling	: J. Spaans
Hole Diameter	: 6-inches	Reviewed By	: S. Ellison
Drilling Method	: Hollow-Stem Auger	GW Encountered	: 3.5'
Sampling Method	: Split-Spoon Sampler	GW Completed	: 3'

Water Levels
▼ During Drilling
▽ After Completion

Auto-Hammer Used for SPT

Depth in Feet	Elev.	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	N Value	Pocket Pen (tsf)	Water Level	Moisture Content %
0				ASPHALT - 4 inches						
				AGGREGATE BASE - 4 inches						
		SC/Fill		Fill - Clayey SAND, very loose, brown to black, fine to medium grained, trace gravel, a little organic material, moist.	1	3 1 1	2		▽	
		SW		SAND, dense, gray, fine to coarse grained, a little gravel, moist to wet.	2	3 8 18	26		▼	
5		SW		SAND, medium dense, gray, fine to medium grained, trace silt, trace clay, wet.	3	3 8 10	18			
		SW		SAND, medium dense, gray, fine to coarse grained, some gravel, wet.	4	3 8 8	16			
10					5	3 4 8	12			
15										

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DRIESENGA & ASSOCIATES, INC.

Engineering · Surveying · Testing

SB-3

Project Name: Milham Park Improvements
607 East Kilgore Road
Kalamazoo, Michigan

Project No. 2550400.3A

Client Name: OCBA

Date Started	: May 12, 2025	Drilling Company	: Midwest Envirotech
Date Completed	: May 12, 2025	Field Sampling	: J. Spaans
Hole Diameter	: 6-inches	Reviewed By	: S. Ellison
Drilling Method	: Hollow-Stem Auger	GW Encountered	: 3.5'
Sampling Method	: Split-Spoon Sampler	GW Completed	: 3.5'

Water Levels
▼ During Drilling
▽ After Completion

Auto-Hammer Used for SPT

Depth in Feet	Elev.	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	N Value	Pocket Pen (tsf)	Water Level	Moisture Content %
0				ASPHALT - 2.5 inches						
				AGGREGATE BASE - 6 inches						
		SW/Fill		Fill - SAND, loose, brown to black, fine to medium grained, trace gravel, trace silt, trace clay, and organic material, moist.	1	5 3 2	5			
		SW		SAND, medium dense, gray, fine to medium grained, moist to wet.	2	3 6 9	15		▼	
5		SC		Clayey SAND, loose to medium dense, gray, fine to medium grained, trace gravel, wet.	3	4 6 8	14			
					4	3 4 3	7			
10		SP		SAND, medium dense, gray, fine grained, wet.						
		CL		Sandy CLAY, very stiff, gray, trace gravel, moist.	5	3 6 12	18	3.5		
15										

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DRIESENGA & ASSOCIATES, INC.

Engineering · Surveying · Testing

SB-4

Project Name: Milham Park Improvements
607 East Kilgore Road
Kalamazoo, Michigan

Project No. 2550400.3A

Client Name: OCBA

Date Started	: May 12, 2025	Drilling Company	: Midwest Envirotech
Date Completed	: May 12, 2025	Field Sampling	: J. Spaans
Hole Diameter	: 6-inches	Reviewed By	: S. Ellison
Drilling Method	: Hollow-Stem Auger	GW Encountered	: 13.5'
Sampling Method	: Split-Spoon Sampler	GW Completed	: 12'

Water Levels
▼ During Drilling
▽ After Completion

Auto-Hammer Used for SPT

Depth in Feet	Elev.	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	N Value	Pocket Pen (tsf)	Water Level	Moisture Content %
0				TOPSOIL - 6 inches						
		SC/Fill		Fill - Clayey SAND, very loose to loose, dark brown, fine grained, trace gravel, moist.	1	2 1 1	2			
		SC/Fill		Fill - Clayey SAND, very loose to loose, dark brown, fine grained, trace gravel, moist.	2	2 2 2	4			
5		SW		SAND, loose, brown, fine to medium grained, trace clay, moist.	3	2 4 2	6			
					4	2 3 2	5			
10		SP		SAND, loose, brown, fine grained, moist to wet.	5	2 2 5	7		▽ ▼	
15										

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DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

SB-5

Project Name: Milham Park Improvements
607 East Kilgore Road
Kalamazoo, Michigan

Project No. 2550400.3A

Client Name: OCBA

Date Started	: May 12, 2025	Drilling Company	: Midwest Envirotech
Date Completed	: May 12, 2025	Field Sampling	: J. Spaans
Hole Diameter	: 6-inches	Reviewed By	: S. Ellison
Drilling Method	: Hollow-Stem Auger	GW Encountered	: 2.5'
Sampling Method	: Split-Spoon Sampler	GW Completed	: 4'

Water Levels
▼ During Drilling
▽ After Completion

Auto-Hammer Used for SPT

Depth in Feet	Elev.	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	N Value	Pocket Pen (tsf)	Water Level	Moisture Content %
0				TOPSOIL - 4 inches						
		SW/Fill		Fill - SAND, medium dense, brown, fine to coarse grained, trace gravel, moist to wet.	1	31 10 9	19		▼	
		SW/Fill		Fill - SAND, medium dense, brown to black, fine to medium grained, trace gravel, trace silt, trace clay, some organic material, wet.	2	8 6 3	9		▽	
5		PT		ORGANICS, trace gravel - 36 inches	3	5 6 11	17			
		SM		Silty SAND, medium dense, gray, fine to coarse grained, trace gravel, wet.	4	10 8 9	17			
10		SC		Clayey SAND, medium dense, brown, fine to medium grained, trace gravel, wet.	5	10 9 9	18			
15										

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APPENDIX C

·INFILTRATION TESTING RESULTS·

·ENVIRONMENTAL TESTING RESULTS·

·FIELD AND LABORATORY PROCEDURES·

SAMPLE SUMMARY

Client: Driesenga & Associates, Inc.
Project: Milham Park 2550400.3A
Workorder: HN2506373

Laboratory Sample ID	Client Sample ID	Sample Matrix	Collection Date	Date Received
HN2506373-001	SB-2 -1' to -3'	SOIL/SOLID	05/12/25 07:57	05/14/25 08:41
HN2506373-002	SB-4 -3 to -4'	SOIL/SOLID	05/12/25 09:30	05/14/25 08:41
HN2506373-003	SB-1 -3' to -4'	SOIL/SOLID	05/12/25 11:11	05/14/25 08:41
HN2506373-004	SB-3 -3.5' to 4'	SOIL/SOLID	05/12/25 13:23	05/14/25 08:41

SAMPLE DETECTION SUMMARY

This form includes only detections above the limits as presented.

For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: SB-2 -1' to -3'	Lab ID: HN2506373-001				
Analyte	**Results**	**Flag**	**MRL**	**Units**	**Method**
Arsenic	3.49		0.303	mg/kg	EPA 6020B
Barium	45.1		0.303	mg/kg	EPA 6020B
Chromium	6.85		0.303	mg/kg	EPA 6020B
Copper	6.91		0.303	mg/kg	EPA 6020B
Lead	7.93		0.303	mg/kg	EPA 6020B
Percent Moisture	12.8		0.1	%	EPA 3550C
Zinc	25.7		6.07	mg/kg	EPA 6020B

CLIENT ID: SB-4 -3 to -4'	Lab ID: HN2506373-002				
Analyte	**Results**	**Flag**	**MRL**	**Units**	**Method**
Arsenic	1.35		0.320	mg/kg	EPA 6020B
Barium	38.9		0.320	mg/kg	EPA 6020B
Chromium	3.86		0.320	mg/kg	EPA 6020B
Copper	2.01		0.320	mg/kg	EPA 6020B
Lead	2.92		0.320	mg/kg	EPA 6020B
Percent Moisture	8.9		0.1	%	EPA 3550C
Zinc	10.1		0.639	mg/kg	EPA 6020B

CLIENT ID: SB-1 -3' to -4'	Lab ID: HN2506373-003				
Analyte	**Results**	**Flag**	**MRL**	**Units**	**Method**
Arsenic	3.14		0.316	mg/kg	EPA 6020B
Barium	39.9		0.316	mg/kg	EPA 6020B
Chromium	7.62		0.316	mg/kg	EPA 6020B
Copper	5.68		0.316	mg/kg	EPA 6020B
Lead	5.81		0.316	mg/kg	EPA 6020B
Mercury	0.0264		0.0199	mg/kg	EPA 7471B
Percent Moisture	8.5		0.1	%	EPA 3550C
Zinc	19.6		6.32	mg/kg	EPA 6020B

CLIENT ID: SB-3 -3.5' to 4'	Lab ID: HN2506373-004				
Analyte	**Results**	**Flag**	**MRL**	**Units**	**Method**
Arsenic	0.688		0.354	mg/kg	EPA 6020B
Barium	39.6		0.354	mg/kg	EPA 6020B
Chromium	4.32		0.354	mg/kg	EPA 6020B
Copper	0.670		0.354	mg/kg	EPA 6020B
Lead	2.52		0.354	mg/kg	EPA 6020B
Percent Moisture	16.4		0.1	%	EPA 3550C
Zinc	22.5		7.08	mg/kg	EPA 6020B

REPORT QUALIFIERS AND DEFINITIONS

*	Value exceeds Regulatory Limit (if MCL displayed)
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
NC	Not Calculated
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
V	The Continuing Calibration Verification was outside of control criteria
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Holland Laboratory Certifications[1]

Agency	Type	ID	Issued	Expires
Alabama	Drinking Water (Secondary)	42500	12/17/2024	12/31/2025
Colorado	UST		06/21/2024	06/30/2025
Connecticut	Drinking Water (Secondary)	PH-0155	12/10/2024	12/31/2026
Florida	NELAP (Primary)	E871106	07/01/2024	06/30/2025
Illinois	NELAP (Secondary)	200076	11/14/2024	12/31/2025
Indiana	Drinking Water (Secondary)	C-MI-08	12/31/2024	09/04/2026
Iowa	State Specific	403	09/18/2023	09/01/2025
Kansas	NELAP (Secondary)	E-10411	07/09/2024	07/31/2025
Kentucky	Waste Water	KY98004	12/20/2024	12/31/2025
Kentucky	UST	120474	06/24/2024	06/30/2025
Michigan	Drinking Water (Primary)	0022	12/19/2023	09/04/2026
Minnesota	NELAP (Secondary)	026-999-449	12/17/2024	12/31/2025
Missouri	Drinking Water (Secondary)	01262	11/14/2024	12/30/2027
New Jersey	NELAP (Secondary)	MI015	07/01/2024	6/30/2025
New York	NELAP (Secondary)	12128	04/01/2024	04/01/2025
North Dakota	State Specific	R-192	11/18/2024	06/30/2025
Ohio	Drinking Water (Secondary)	87783	06/25/2024	6/30/2025
Pennsylvania	NELAP (Secondary)	68-03827	06/14/2024	07/31/2025
Texas	NELAP (Secondary)	T104704494	02/12/2025	01/31/2026
USDA	Domestic CA	Soil-MI-007	02/06/2025	08/07/2026
USDA	Soil Import	525-23-62-77572	03/03/2023	03/03/2026
West Virginia	State Specific	355	02/04/2025	08/31/2025
Wisconsin	State Specific	399084510	08/15/2024	08/31/2025

1 - Scope available upon request

ANALYST SUMMARY

Client: Driesenga & Associates, Inc. **Work Order:** HN2506373
Project: Milham Park 2550400.3A

Sample Name: SB-2 -1' to -3' **Date Collected:** 05/12/25
Laboratory Code: HN2506373-001 **Date Received:** 05/14/25
Sample Matrix: SOIL/SOLID

Analysis Method	Preparation Lot	Prepared By	Analysis Lot	Analyzed By
EPA 3550C	2002179		3141676	Ethan Cramer
EPA 6020B	2003629	Chloe Patrick	3144067	Hunter Johnson
EPA 6020B	2003629	Chloe Patrick	3146007	Hunter Johnson
EPA 7471B	2003867	Maxx Richey	3147571	Denise Coffey
EPA 8260D	1996349	Jonathan Vazquez	3147408	Nathan Jenkins
EPA 8270E SIM	1995410	Gwen Pickering	3133072	Sam Bruzan

Sample Name: SB-4 -3 to -4' **Date Collected:** 05/12/25
Laboratory Code: HN2506373-002 **Date Received:** 05/14/25
Sample Matrix: SOIL/SOLID

Analysis Method	Preparation Lot	Prepared By	Analysis Lot	Analyzed By
EPA 3550C	2002179		3141676	Ethan Cramer
EPA 6020B	2003629	Chloe Patrick	3144067	Hunter Johnson
EPA 7471B	2003867	Maxx Richey	3147571	Denise Coffey
EPA 8260D	1996349	Jonathan Vazquez	3147408	Nathan Jenkins
EPA 8270E SIM	1995410	Gwen Pickering	3133072	Sam Bruzan

Sample Name: SB-1 -3' to -4' **Date Collected:** 05/12/25
Laboratory Code: HN2506373-003 **Date Received:** 05/14/25
Sample Matrix: SOIL/SOLID

Analysis Method	Preparation Lot	Prepared By	Analysis Lot	Analyzed By
EPA 3550C	2002179		3141676	Ethan Cramer
EPA 6020B	2003629	Chloe Patrick	3144067	Hunter Johnson
EPA 6020B	2003629	Chloe Patrick	3146007	Hunter Johnson
EPA 7471B	2003867	Maxx Richey	3147571	Denise Coffey
EPA 8260D	1996349	Jonathan Vazquez	3147593	Caroline Cox
EPA 8270E SIM	1995410	Gwen Pickering	3133072	Sam Bruzan

ANALYST SUMMARY

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A		

Sample Name:	SB-3 -3.5' to 4'	**Date Collected:**	05/12/25
Laboratory Code:	HN2506373-004	**Date Received:**	05/14/25
Sample Matrix:	SOIL/SOLID		

Analysis Method	Preparation Lot	Prepared By	Analysis Lot	Analyzed By
EPA 3550C	2002179		3141676	Ethan Cramer
EPA 6020B	2003629	Chloe Patrick	3144067	Hunter Johnson
EPA 6020B	2003629	Chloe Patrick	3146007	Hunter Johnson
EPA 7471B	2003867	Maxx Richey	3147571	Denise Coffey
EPA 8260D	1996349	Jonathan Vazquez	3147593	Caroline Cox
EPA 8270E SIM	1995410	Gwen Pickering	3133072	Sam Bruzan

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 07:57
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-2 -1' to -3' **Lab ID: HN2506373-001**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
General Chemistry Parameters								
Percent Moisture	EPA 3550C	**12.8**		%	0.1	1	05/17/25 10:30	NA
Metals								
Arsenic	EPA 6020B	**3.49**		mg/kg	0.303	1	05/19/25 22:19	05/19/25 08:38
Barium	EPA 6020B	**45.1**		mg/kg	0.303	1	05/19/25 22:19	05/19/25 08:38
Cadmium	EPA 6020B	ND		mg/kg	0.121	1	05/19/25 22:19	05/19/25 08:38
Chromium	EPA 6020B	**6.85**		mg/kg	0.303	1	05/19/25 22:19	05/19/25 08:38
Copper	EPA 6020B	**6.91**		mg/kg	0.303	1	05/19/25 22:19	05/19/25 08:38
Lead	EPA 6020B	**7.93**		mg/kg	0.303	1	05/19/25 22:19	05/19/25 08:38
Selenium	EPA 6020B	ND		mg/kg	0.303	1	05/19/25 22:19	05/19/25 08:38
Silver	EPA 6020B	ND		mg/kg	0.303	1	05/19/25 22:19	05/19/25 08:38
Zinc	EPA 6020B	**25.7**		mg/kg	6.07	10	05/20/25 20:11	05/19/25 08:38
Mercury	EPA 7471B	ND		mg/kg	0.0215	1	05/21/25 10:19	05/21/25 09:33
Semivolatile Organic Compounds by GC-MS								
2-Methylnaphthalene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Acenaphthene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Acenaphthylene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Anthracene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Benzo(a)anthracene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Benzo(a)pyrene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Benzo(b)fluoranthene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Benzo(g,h,i)perylene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Benzo(k)fluoranthene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Chrysene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Dibenz(a,h)anthracene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Fluoranthene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Fluorene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Indeno(1,2,3-cd) pyrene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Naphthalene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Phenanthrene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Pyrene	EPA 8270E SIM	ND		µg/kg	4.73	1	05/14/25 23:09	05/14/25 12:16
Surr: 2-Fluorobiphenyl	*EPA 8270E SIM*	***107***		*%REC*	*44-132*	*1*	*05/14/25 23:09*	*05/14/25 12:16*

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 07:57
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-2 -1' to -3' **Lab ID: HN2506373-001**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Surr: 4-Terphenyl-d14	*EPA 8270E SIM*	***108***		*%REC*	*35-133*	*1*	*05/14/25 23:09*	*05/14/25 12:16*
Surr: Nitrobenzene-d5	*EPA 8270E SIM*	***101***		*%REC*	*30-133*	*1*	*05/14/25 23:09*	*05/14/25 12:16*
Volatile Organic Compounds by GC-MS								
1,1,1-Trichloroethane	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,1,2,2-Tetrachloroethane	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,1,2-Trichloroethane	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,1-Dichloroethane	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,1-Dichloroethylene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,2,3-Trichlorobenzene	EPA 8260D	ND		µg/kg	186	1	05/20/25 16:59	05/14/25 14:50
1,2,3-Trichloropropane	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,2,4-Trichlorobenzene	EPA 8260D	ND		µg/kg	186	1	05/20/25 16:59	05/14/25 14:50
1,2,4-Trimethylbenzene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,2-Dichlorobenzene (o-Dichlorobenzene)	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,2-Dichloroethane (Ethylene dichloride)	EPA 8260D	ND		µg/kg	186	1	05/20/25 16:59	05/14/25 14:50
1,2-Dichloropropane	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,3,5-Trimethylbenzene	EPA 8260D	ND		µg/kg	186	1	05/20/25 16:59	05/14/25 14:50
1,3-Dichlorobenzene (m-Dichlorobenzene)	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
1,3-Dichloropropene	EPA 8260D	ND		µg/kg	111	1	05/20/25 16:59	05/14/25 14:50
1,4-Dichlorobenzene (p-Dichlorobenzene)	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
2-Butanone (Methyl ethyl ketone, MEK)	EPA 8260D	ND		µg/kg	371	1	05/20/25 16:59	05/14/25 14:50
2-Hexanone	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
4-Methyl-2-pentanone (MIBK)	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Acetone	EPA 8260D	ND		µg/kg	186	1	05/20/25 16:59	05/14/25 14:50
Benzene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Bromochloromethane	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Bromodichloromethane	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Bromoform	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Carbon disulfide	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 07:57
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-2 -1' to -3' **Lab ID: HN2506373-001**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Carbon tetrachloride	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Chlorobenzene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Chlorodibromomethane	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Chloroethane (Ethyl chloride)	EPA 8260D	ND		µg/kg	186	1	05/20/25 16:59	05/14/25 14:50
Chloroform	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
cis & trans-1,2-Dichloroethene	EPA 8260D	ND		µg/kg	111	1	05/20/25 16:59	05/14/25 14:50
cis-1,2-Dichloroethylene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
cis-1,3-Dichloropropene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Cyclohexane	EPA 8260D	ND		µg/kg	186	1	05/20/25 16:59	05/14/25 14:50
Dichlorodifluoromethane (Freon-12)	EPA 8260D	ND		µg/kg	186	1	05/20/25 16:59	05/14/25 14:50
Ethylbenzene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Isopropylbenzene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Methyl acetate	EPA 8260D	ND		µg/kg	464	1	05/20/25 16:59	05/14/25 14:50
Methyl bromide (Bromomethane)	EPA 8260D	ND		µg/kg	186	1	05/20/25 16:59	05/14/25 14:50
Methyl chloride (Chloromethane)	EPA 8260D	ND		µg/kg	186	1	05/20/25 16:59	05/14/25 14:50
Methyl tert-butyl ether (MTBE)	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Methylcyclohexane	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Methylene chloride (Dichloromethane)	EPA 8260D	ND		µg/kg	464	1	05/20/25 16:59	05/14/25 14:50
o-Xylene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Styrene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Tetrachloroethylene (Perchloroethylene)	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Toluene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Total Xylene	EPA 8260D	ND		µg/kg	167	1	05/20/25 16:59	05/14/25 14:50
trans-1,2-Dichloroethylene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
trans-1,3-Dichloropropylene	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Trichloroethene (Trichloroethylene)	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50
Vinyl chloride (Chloroethene)	EPA 8260D	ND		µg/kg	55.6	1	05/20/25 16:59	05/14/25 14:50

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 07:57
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-2 -1' to -3' **Lab ID: HN2506373-001**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Surr: 1,2-Dichloroethane-d4	*EPA 8260D*	***102***		*%REC*	*80-120*	*1*	*05/20/25 16:59*	*05/14/25 14:50*
Surr: 4-Bromofluorobenzene	*EPA 8260D*	***93.8***		*%REC*	*80-120*	*1*	*05/20/25 16:59*	*05/14/25 14:50*
Surr: Dibromofluoromethane	*EPA 8260D*	***94.0***		*%REC*	*80-120*	*1*	*05/20/25 16:59*	*05/14/25 14:50*
Surr: Toluene-d8	*EPA 8260D*	***106***		*%REC*	*80-120*	*1*	*05/20/25 16:59*	*05/14/25 14:50*

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 09:30
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-4 -3 to -4' **Lab ID: HN2506373-002**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
General Chemistry Parameters								
Percent Moisture	EPA 3550C	**8.9**		%	0.1	1	05/17/25 10:30	NA
Metals								
Arsenic	EPA 6020B	**1.35**		mg/kg	0.320	1	05/19/25 22:21	05/19/25 08:38
Barium	EPA 6020B	**38.9**		mg/kg	0.320	1	05/19/25 22:21	05/19/25 08:38
Cadmium	EPA 6020B	ND		mg/kg	0.128	1	05/19/25 22:21	05/19/25 08:38
Chromium	EPA 6020B	**3.86**		mg/kg	0.320	1	05/19/25 22:21	05/19/25 08:38
Copper	EPA 6020B	**2.01**		mg/kg	0.320	1	05/19/25 22:21	05/19/25 08:38
Lead	EPA 6020B	**2.92**		mg/kg	0.320	1	05/19/25 22:21	05/19/25 08:38
Selenium	EPA 6020B	ND		mg/kg	0.320	1	05/19/25 22:21	05/19/25 08:38
Silver	EPA 6020B	ND		mg/kg	0.320	1	05/19/25 22:21	05/19/25 08:38
Zinc	EPA 6020B	**10.1**		mg/kg	0.639	1	05/19/25 22:21	05/19/25 08:38
Mercury	EPA 7471B	ND		mg/kg	0.0175	1	05/21/25 10:20	05/21/25 09:33
Semivolatile Organic Compounds by GC-MS								
2-Methylnaphthalene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Acenaphthene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Acenaphthylene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Anthracene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Benzo(a)anthracene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Benzo(a)pyrene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Benzo(b)fluoranthene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Benzo(g,h,i)perylene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Benzo(k)fluoranthene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Chrysene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Dibenz(a,h)anthracene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Fluoranthene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Fluorene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Indeno(1,2,3-cd) pyrene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Naphthalene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Phenanthrene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Pyrene	EPA 8270E SIM	ND		µg/kg	4.49	1	05/14/25 23:25	05/14/25 12:16
Surr: 2-Fluorobiphenyl	*EPA 8270E SIM*	***116***		*%REC*	*44-132*	*1*	*05/14/25 23:25*	*05/14/25 12:16*

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 09:30
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-4 -3 to -4' **Lab ID: HN2506373-002**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Surr: 4-Terphenyl-d14	*EPA 8270E SIM*	***118***		*%REC*	*35-133*	*1*	*05/14/25 23:25*	*05/14/25 12:16*
Surr: Nitrobenzene-d5	*EPA 8270E SIM*	***112***		*%REC*	*30-133*	*1*	*05/14/25 23:25*	*05/14/25 12:16*
Volatile Organic Compounds by GC-MS								
1,1,1-Trichloroethane	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,1,2,2-Tetrachloroethane	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,1,2-Trichloroethane	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,1-Dichloroethane	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,1-Dichloroethylene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,2,3-Trichlorobenzene	EPA 8260D	ND		µg/kg	236	1	05/20/25 17:15	05/14/25 14:50
1,2,3-Trichloropropane	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,2,4-Trichlorobenzene	EPA 8260D	ND		µg/kg	236	1	05/20/25 17:15	05/14/25 14:50
1,2,4-Trimethylbenzene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,2-Dichlorobenzene (o-Dichlorobenzene)	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,2-Dichloroethane (Ethylene dichloride)	EPA 8260D	ND		µg/kg	236	1	05/20/25 17:15	05/14/25 14:50
1,2-Dichloropropane	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,3,5-Trimethylbenzene	EPA 8260D	ND		µg/kg	236	1	05/20/25 17:15	05/14/25 14:50
1,3-Dichlorobenzene (m-Dichlorobenzene)	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
1,3-Dichloropropene	EPA 8260D	ND		µg/kg	141	1	05/20/25 17:15	05/14/25 14:50
1,4-Dichlorobenzene (p-Dichlorobenzene)	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
2-Butanone (Methyl ethyl ketone, MEK)	EPA 8260D	ND		µg/kg	471	1	05/20/25 17:15	05/14/25 14:50
2-Hexanone	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
4-Methyl-2-pentanone (MIBK)	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Acetone	EPA 8260D	ND		µg/kg	236	1	05/20/25 17:15	05/14/25 14:50
Benzene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Bromochloromethane	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Bromodichloromethane	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Bromoform	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Carbon disulfide	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 09:30
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-4 -3 to -4' **Lab ID: HN2506373-002**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Carbon tetrachloride	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Chlorobenzene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Chlorodibromomethane	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Chloroethane (Ethyl chloride)	EPA 8260D	ND		µg/kg	236	1	05/20/25 17:15	05/14/25 14:50
Chloroform	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
cis & trans-1,2-Dichloroethene	EPA 8260D	ND		µg/kg	141	1	05/20/25 17:15	05/14/25 14:50
cis-1,2-Dichloroethylene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
cis-1,3-Dichloropropene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Cyclohexane	EPA 8260D	ND		µg/kg	236	1	05/20/25 17:15	05/14/25 14:50
Dichlorodifluoromethane (Freon-12)	EPA 8260D	ND		µg/kg	236	1	05/20/25 17:15	05/14/25 14:50
Ethylbenzene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Isopropylbenzene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Methyl acetate	EPA 8260D	ND	S	µg/kg	589	1	05/20/25 17:15	05/14/25 14:50
Methyl bromide (Bromomethane)	EPA 8260D	ND		µg/kg	236	1	05/20/25 17:15	05/14/25 14:50
Methyl chloride (Chloromethane)	EPA 8260D	ND	S	µg/kg	236	1	05/20/25 17:15	05/14/25 14:50
Methyl tert-butyl ether (MTBE)	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Methylcyclohexane	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Methylene chloride (Dichloromethane)	EPA 8260D	ND		µg/kg	589	1	05/20/25 17:15	05/14/25 14:50
o-Xylene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Styrene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Tetrachloroethylene (Perchloroethylene)	EPA 8260D	ND	S	µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Toluene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Total Xylene	EPA 8260D	ND		µg/kg	212	1	05/20/25 17:15	05/14/25 14:50
trans-1,2-Dichloroethylene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
trans-1,3-Dichloropropylene	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Trichloroethene (Trichloroethylene)	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	EPA 8260D	ND	S	µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50
Vinyl chloride (Chloroethene)	EPA 8260D	ND		µg/kg	70.6	1	05/20/25 17:15	05/14/25 14:50

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 09:30
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-4 -3 to -4' **Lab ID: HN2506373-002**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Surr: 1,2-Dichloroethane-d4	*EPA 8260D*	***97.2***		*%REC*	*80-120*	*1*	*05/20/25 17:15*	*05/14/25 14:50*
Surr: 4-Bromofluorobenzene	*EPA 8260D*	***93.7***		*%REC*	*80-120*	*1*	*05/20/25 17:15*	*05/14/25 14:50*
Surr: Dibromofluoromethane	*EPA 8260D*	***87.8***		*%REC*	*80-120*	*1*	*05/20/25 17:15*	*05/14/25 14:50*
Surr: Toluene-d8	*EPA 8260D*	***101***		*%REC*	*80-120*	*1*	*05/20/25 17:15*	*05/14/25 14:50*

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 11:11
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-1 -3' to -4' **Lab ID: HN2506373-003**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
General Chemistry Parameters								
Percent Moisture	EPA 3550C	**8.5**		%	0.1	1	05/17/25 10:30	NA
Metals								
Arsenic	EPA 6020B	**3.14**		mg/kg	0.316	1	05/19/25 22:23	05/19/25 08:38
Barium	EPA 6020B	**39.9**		mg/kg	0.316	1	05/19/25 22:23	05/19/25 08:38
Cadmium	EPA 6020B	ND		mg/kg	0.126	1	05/19/25 22:23	05/19/25 08:38
Chromium	EPA 6020B	**7.62**		mg/kg	0.316	1	05/19/25 22:23	05/19/25 08:38
Copper	EPA 6020B	**5.68**		mg/kg	0.316	1	05/19/25 22:23	05/19/25 08:38
Lead	EPA 6020B	**5.81**		mg/kg	0.316	1	05/19/25 22:23	05/19/25 08:38
Selenium	EPA 6020B	ND		mg/kg	0.316	1	05/19/25 22:23	05/19/25 08:38
Silver	EPA 6020B	ND		mg/kg	0.316	1	05/19/25 22:23	05/19/25 08:38
Zinc	EPA 6020B	**19.6**		mg/kg	6.32	10	05/20/25 20:16	05/19/25 08:38
Mercury	EPA 7471B	**0.0264**		mg/kg	0.0199	1	05/21/25 10:22	05/21/25 09:33
Semivolatile Organic Compounds by GC-MS								
2-Methylnaphthalene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Acenaphthene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Acenaphthylene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Anthracene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Benzo(a)anthracene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Benzo(a)pyrene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Benzo(b)fluoranthene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Benzo(g,h,i)perylene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Benzo(k)fluoranthene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Chrysene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Dibenz(a,h)anthracene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Fluoranthene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Fluorene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Indeno(1,2,3-cd) pyrene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Naphthalene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Phenanthrene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Pyrene	EPA 8270E SIM	ND		µg/kg	4.40	1	05/14/25 23:41	05/14/25 12:16
Surr: 2-Fluorobiphenyl	*EPA 8270E SIM*	***114***		*%REC*	*44-132*	*1*	*05/14/25 23:41*	*05/14/25 12:16*

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 11:11
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-1 -3' to -4' **Lab ID: HN2506373-003**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Surr: 4-Terphenyl-d14	*EPA 8270E SIM*	***116***		*%REC*	*35-133*	*1*	*05/14/25 23:41*	*05/14/25 12:16*
Surr: Nitrobenzene-d5	*EPA 8270E SIM*	***103***		*%REC*	*30-133*	*1*	*05/14/25 23:41*	*05/14/25 12:16*
Volatile Organic Compounds by GC-MS								
1,1,1-Trichloroethane	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,1,2,2-Tetrachloroethane	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,1,2-Trichloroethane	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,1-Dichloroethane	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,1-Dichloroethylene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,2,3-Trichlorobenzene	EPA 8260D	ND		µg/kg	306	1	05/21/25 05:12	05/14/25 14:50
1,2,3-Trichloropropane	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,2,4-Trichlorobenzene	EPA 8260D	ND		µg/kg	306	1	05/21/25 05:12	05/14/25 14:50
1,2,4-Trimethylbenzene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,2-Dichlorobenzene (o-Dichlorobenzene)	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,2-Dichloroethane (Ethylene dichloride)	EPA 8260D	ND		µg/kg	306	1	05/21/25 05:12	05/14/25 14:50
1,2-Dichloropropane	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,3,5-Trimethylbenzene	EPA 8260D	ND		µg/kg	306	1	05/21/25 05:12	05/14/25 14:50
1,3-Dichlorobenzene (m-Dichlorobenzene)	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
1,3-Dichloropropene	EPA 8260D	ND		µg/kg	184	1	05/21/25 05:12	05/14/25 14:50
1,4-Dichlorobenzene (p-Dichlorobenzene)	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
2-Butanone (Methyl ethyl ketone, MEK)	EPA 8260D	ND		µg/kg	613	1	05/21/25 05:12	05/14/25 14:50
2-Hexanone	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
4-Methyl-2-pentanone (MIBK)	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Acetone	EPA 8260D	ND		µg/kg	306	1	05/21/25 05:12	05/14/25 14:50
Benzene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Bromochloromethane	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Bromodichloromethane	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Bromoform	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Carbon disulfide	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 11:11
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-1 -3' to -4' **Lab ID: HN2506373-003**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Carbon tetrachloride	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Chlorobenzene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Chlorodibromomethane	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Chloroethane (Ethyl chloride)	EPA 8260D	ND		µg/kg	306	1	05/21/25 05:12	05/14/25 14:50
Chloroform	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
cis & trans-1,2-Dichloroethene	EPA 8260D	ND		µg/kg	184	1	05/21/25 05:12	05/14/25 14:50
cis-1,2-Dichloroethylene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
cis-1,3-Dichloropropene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Cyclohexane	EPA 8260D	ND		µg/kg	306	1	05/21/25 05:12	05/14/25 14:50
Dichlorodifluoromethane (Freon-12)	EPA 8260D	ND		µg/kg	306	1	05/21/25 05:12	05/14/25 14:50
Ethylbenzene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Isopropylbenzene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Methyl acetate	EPA 8260D	ND		µg/kg	766	1	05/21/25 05:12	05/14/25 14:50
Methyl bromide (Bromomethane)	EPA 8260D	ND		µg/kg	306	1	05/21/25 05:12	05/14/25 14:50
Methyl chloride (Chloromethane)	EPA 8260D	ND		µg/kg	306	1	05/21/25 05:12	05/14/25 14:50
Methyl tert-butyl ether (MTBE)	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Methylcyclohexane	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Methylene chloride (Dichloromethane)	EPA 8260D	ND		µg/kg	766	1	05/21/25 05:12	05/14/25 14:50
o-Xylene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Styrene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Tetrachloroethylene (Perchloroethylene)	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Toluene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Total Xylene	EPA 8260D	ND		µg/kg	276	1	05/21/25 05:12	05/14/25 14:50
trans-1,2-Dichloroethylene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
trans-1,3-Dichloropropylene	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Trichloroethene (Trichloroethylene)	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50
Vinyl chloride (Chloroethene)	EPA 8260D	ND		µg/kg	91.9	1	05/21/25 05:12	05/14/25 14:50

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 11:11
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-1 -3' to -4' **Lab ID: HN2506373-003**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Surr: 1,2-Dichloroethane-d4	*EPA 8260D*	***96.9***		*%REC*	*80-120*	*1*	*05/21/25 05:12*	*05/14/25 14:50*
Surr: 4-Bromofluorobenzene	*EPA 8260D*	***92.2***		*%REC*	*80-120*	*1*	*05/21/25 05:12*	*05/14/25 14:50*
Surr: Dibromofluoromethane	*EPA 8260D*	***103***		*%REC*	*80-120*	*1*	*05/21/25 05:12*	*05/14/25 14:50*
Surr: Toluene-d8	*EPA 8260D*	***99.5***		*%REC*	*80-120*	*1*	*05/21/25 05:12*	*05/14/25 14:50*

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 13:23
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-3 -3.5' to 4' **Lab ID: HN2506373-004**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
General Chemistry Parameters								
Percent Moisture	EPA 3550C	**16.4**		%	0.1	1	05/17/25 10:30	NA
Metals								
Arsenic	EPA 6020B	**0.688**		mg/kg	0.354	1	05/19/25 22:25	05/19/25 08:38
Barium	EPA 6020B	**39.6**		mg/kg	0.354	1	05/19/25 22:25	05/19/25 08:38
Cadmium	EPA 6020B	ND		mg/kg	0.142	1	05/19/25 22:25	05/19/25 08:38
Chromium	EPA 6020B	**4.32**		mg/kg	0.354	1	05/19/25 22:25	05/19/25 08:38
Copper	EPA 6020B	**0.670**		mg/kg	0.354	1	05/19/25 22:25	05/19/25 08:38
Lead	EPA 6020B	**2.52**		mg/kg	0.354	1	05/19/25 22:25	05/19/25 08:38
Selenium	EPA 6020B	ND		mg/kg	0.354	1	05/19/25 22:25	05/19/25 08:38
Silver	EPA 6020B	ND		mg/kg	0.354	1	05/19/25 22:25	05/19/25 08:38
Zinc	EPA 6020B	**22.5**		mg/kg	7.08	10	05/20/25 20:17	05/19/25 08:38
Mercury	EPA 7471B	ND		mg/kg	0.0203	1	05/21/25 10:24	05/21/25 09:33
Semivolatile Organic Compounds by GC-MS								
2-Methylnaphthalene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Acenaphthene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Acenaphthylene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Anthracene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Benzo(a)anthracene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Benzo(a)pyrene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Benzo(b)fluoranthene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Benzo(g,h,i)perylene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Benzo(k)fluoranthene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Chrysene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Dibenz(a,h)anthracene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Fluoranthene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Fluorene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Indeno(1,2,3-cd) pyrene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Naphthalene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Phenanthrene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Pyrene	EPA 8270E SIM	ND		µg/kg	11.6	1	05/14/25 23:57	05/14/25 12:16
Surr: 2-Fluorobiphenyl	*EPA 8270E SIM*	***115***		*%REC*	*44-132*	*1*	*05/14/25 23:57*	*05/14/25 12:16*

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 13:23
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-3 -3.5' to 4' **Lab ID: HN2506373-004**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Surr: 4-Terphenyl-d14	*EPA 8270E SIM*	***118***		*%REC*	*35-133*	*1*	*05/14/25 23:57*	*05/14/25 12:16*
Surr: Nitrobenzene-d5	*EPA 8270E SIM*	***108***		*%REC*	*30-133*	*1*	*05/14/25 23:57*	*05/14/25 12:16*
Volatile Organic Compounds by GC-MS								
1,1,1-Trichloroethane	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,1,2,2-Tetrachloroethane	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,1,2-Trichloroethane	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,1-Dichloroethane	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,1-Dichloroethylene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,2,3-Trichlorobenzene	EPA 8260D	ND		µg/kg	222	1	05/21/25 05:28	05/14/25 14:50
1,2,3-Trichloropropane	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,2,4-Trichlorobenzene	EPA 8260D	ND		µg/kg	222	1	05/21/25 05:28	05/14/25 14:50
1,2,4-Trimethylbenzene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,2-Dichlorobenzene (o-Dichlorobenzene)	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,2-Dichloroethane (Ethylene dichloride)	EPA 8260D	ND		µg/kg	222	1	05/21/25 05:28	05/14/25 14:50
1,2-Dichloropropane	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,3,5-Trimethylbenzene	EPA 8260D	ND		µg/kg	222	1	05/21/25 05:28	05/14/25 14:50
1,3-Dichlorobenzene (m-Dichlorobenzene)	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
1,3-Dichloropropene	EPA 8260D	ND		µg/kg	133	1	05/21/25 05:28	05/14/25 14:50
1,4-Dichlorobenzene (p-Dichlorobenzene)	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
2-Butanone (Methyl ethyl ketone, MEK)	EPA 8260D	ND		µg/kg	444	1	05/21/25 05:28	05/14/25 14:50
2-Hexanone	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
4-Methyl-2-pentanone (MIBK)	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Acetone	EPA 8260D	ND		µg/kg	222	1	05/21/25 05:28	05/14/25 14:50
Benzene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Bromochloromethane	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Bromodichloromethane	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Bromoform	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Carbon disulfide	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 13:23
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-3 -3.5' to 4' **Lab ID: HN2506373-004**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Carbon tetrachloride	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Chlorobenzene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Chlorodibromomethane	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Chloroethane (Ethyl chloride)	EPA 8260D	ND		µg/kg	222	1	05/21/25 05:28	05/14/25 14:50
Chloroform	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
cis & trans-1,2-Dichloroethene	EPA 8260D	ND		µg/kg	133	1	05/21/25 05:28	05/14/25 14:50
cis-1,2-Dichloroethylene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
cis-1,3-Dichloropropene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Cyclohexane	EPA 8260D	ND		µg/kg	222	1	05/21/25 05:28	05/14/25 14:50
Dichlorodifluoromethane (Freon-12)	EPA 8260D	ND		µg/kg	222	1	05/21/25 05:28	05/14/25 14:50
Ethylbenzene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Isopropylbenzene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Methyl acetate	EPA 8260D	ND		µg/kg	555	1	05/21/25 05:28	05/14/25 14:50
Methyl bromide (Bromomethane)	EPA 8260D	ND		µg/kg	222	1	05/21/25 05:28	05/14/25 14:50
Methyl chloride (Chloromethane)	EPA 8260D	ND		µg/kg	222	1	05/21/25 05:28	05/14/25 14:50
Methyl tert-butyl ether (MTBE)	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Methylcyclohexane	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Methylene chloride (Dichloromethane)	EPA 8260D	ND		µg/kg	555	1	05/21/25 05:28	05/14/25 14:50
o-Xylene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Styrene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Tetrachloroethylene (Perchloroethylene)	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Toluene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Total Xylene	EPA 8260D	ND		µg/kg	200	1	05/21/25 05:28	05/14/25 14:50
trans-1,2-Dichloroethylene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
trans-1,3-Dichloropropylene	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Trichloroethene (Trichloroethylene)	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50
Vinyl chloride (Chloroethene)	EPA 8260D	ND		µg/kg	66.6	1	05/21/25 05:28	05/14/25 14:50

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	05/12/25 13:23
Matrix:	SOIL/SOLID	**Date Received:**	05/14/25 08:41

CLIENT ID: SB-3 -3.5' to 4' **Lab ID: HN2506373-004**

Analyte	Method	Results	Qual	Units	MRL	Dilution Factor	Date Analyzed	Date Extracted
Surr: 1,2-Dichloroethane-d4	*EPA 8260D*	***99.6***		*%REC*	*80-120*	*1*	*05/21/25 05:28*	*05/14/25 14:50*
Surr: 4-Bromofluorobenzene	*EPA 8260D*	***94.6***		*%REC*	*80-120*	*1*	*05/21/25 05:28*	*05/14/25 14:50*
Surr: Dibromofluoromethane	*EPA 8260D*	***99.0***		*%REC*	*80-120*	*1*	*05/21/25 05:28*	*05/14/25 14:50*
Surr: Toluene-d8	*EPA 8260D*	***99.6***		*%REC*	*80-120*	*1*	*05/21/25 05:28*	*05/14/25 14:50*

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	NA
Matrix:	SOIL/SOLID	**Date Received:**	NA
Batch:	2002179		

General Chemistry Parameters

MB | **CLIENT ID: Method Blank** | **Lab ID: QC-2002179-001**

Method: EPA 3550C | **Dilution:** 1 | **Analysis Date:** 05/17/25 10:30 | **Prep Date:** NA

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Percent Moisture	ND	%	0.1							

LCS | **CLIENT ID: Laboratory Control Sample** | **Lab ID: QC-2002179-002**

Method: EPA 3550C | **Dilution:** 1 | **Analysis Date:** 05/17/25 10:30 | **Prep Date:** NA

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Percent Moisture	100	%	0.1	100		100	98-102			

DUP | **CLIENT ID: Batch QC** | **Lab ID: QC-2002179-004**

Method: EPA 3550C | **Dilution:** 1 | **Analysis Date:** 05/17/25 10:30 | **Prep Date:** NA

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Percent Moisture	16.4	%	0.1		14.9			9.46	10	

DUP | **CLIENT ID: SB-2 -1' to -3'** | **Lab ID: QC-2002179-015**

Method: EPA 3550C | **Dilution:** 1 | **Analysis Date:** 05/17/25 10:30 | **Prep Date:** NA

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Percent Moisture	12.4	%	0.1		12.8			3.10	10	

The following samples were analyzed in this batch: HN2506373-001, HN2506373-002, HN2506373-003, HN2506373-004

QA/QC Report

Client: Driesenga & Associates, Inc.
Project: Milham Park 2550400.3A
Matrix: SOIL/SOLID
Batch: 2003629

Work Order: HN2506373
Date Collected: NA
Date Received: NA

Metals

MB | **CLIENT ID: Method Blank** | **Lab ID: QC-2003629-001**

Method: EPA 6020B | **Dilution:** 1 | **Analysis Date:** 05/19/25 21:05 | **Prep Date:** 05/19/25 08:39

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Arsenic	ND	mg/kg	0.250							
Barium	ND	mg/kg	0.250							
Cadmium	ND	mg/kg	0.100							
Chromium	ND	mg/kg	0.250							
Copper	ND	mg/kg	0.250							
Lead	ND	mg/kg	0.250							
Silver	ND	mg/kg	0.250							
Zinc	ND	mg/kg	0.500							

LCS | **CLIENT ID: Laboratory Control Sample** | **Lab ID: QC-2003629-002**

Method: EPA 6020B | **Dilution:** 1 | **Analysis Date:** 05/19/25 21:07 | **Prep Date:** 05/19/25 08:39

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Arsenic	4.97	mg/kg	0.250	5		99.5	80-120			
Barium	4.99	mg/kg	0.250	5		99.9	80-120			
Cadmium	4.74	mg/kg	0.100	5		94.8	80-120			
Chromium	5.05	mg/kg	0.250	5		101	80-120			
Copper	4.88	mg/kg	0.250	5		97.7	80-120			
Lead	5.25	mg/kg	0.250	5		105	80-120			
Selenium	5.10	mg/kg	0.250	5		102	80-120			
Silver	4.66	mg/kg	0.250	5		93.3	80-120			
Zinc	4.86	mg/kg	0.500	5		97.2	80-120			

The following samples were analyzed in this batch: HN2506373-001, HN2506373-002, HN2506373-003, HN2506373-004

QA/QC Report

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	NA
Matrix:	SOIL/SOLID	**Date Received:**	NA
Batch:	2003629		

Metals

MB | **CLIENT ID: Method Blank** | **Lab ID: QC-2003629-001**

Method: EPA 6020B | **Dilution:** 1 | **Analysis Date:** 05/20/25 19:35 | **Prep Date:** 05/19/25 08:39

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Selenium	ND	mg/kg	0.250							

The following samples were analyzed in this batch: HN2506373-001, HN2506373-002, HN2506373-003, HN2506373-004

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	NA
Matrix:	SOIL/SOLID	**Date Received:**	NA
Batch:	2003867		

Metals

MB | **CLIENT ID: Method Blank** | **Lab ID: QC-2003867-001**

Method: EPA 7471B | **Dilution:** 1 | **Analysis Date:** 05/21/25 09:50 | **Prep Date:** 05/21/25 09:34

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Mercury	ND	mg/kg	0.0200							

LCS | **CLIENT ID: Laboratory Control Sample** | **Lab ID: QC-2003867-002**

Method: EPA 7471B | **Dilution:** 1 | **Analysis Date:** 05/21/25 09:51 | **Prep Date:** 05/21/25 09:34

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Mercury	0.160	mg/kg	0.0200	0.1665		96.1	80-120			

MS | **CLIENT ID: Batch QC** | **Lab ID: QC-2003867-004**

Method: EPA 7471B | **Dilution:** 1 | **Analysis Date:** 05/21/25 09:55 | **Prep Date:** 05/21/25 09:34

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Mercury	0.140	mg/kg	0.0207	0.14843	ND	91.8	75-125			

MSD | **CLIENT ID: Batch QC** | **Lab ID: QC-2003867-005**

Method: EPA 7471B | **Dilution:** 1 | **Analysis Date:** 05/21/25 09:57 | **Prep Date:** 05/21/25 09:34

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Mercury	0.160	mg/kg	0.0230	0.16512	ND	94.1	75-125	12.7	35	

The following samples were analyzed in this batch: HN2506373-001, HN2506373-002, HN2506373-003, HN2506373-004

Client: Driesenga & Associates, Inc.
Project: Milham Park 2550400.3A
Matrix: SOIL/SOLID
Batch: 1995410

Work Order: HN2506373
Date Collected: NA
Date Received: NA

Semivolatile Organic Compounds by GC-MS

MB | **CLIENT ID: Method Blank** | **Lab ID: QC-1995410-001**

Method: EPA 8270E SIM | **Dilution:** 1 | **Analysis Date:** 05/14/25 21:15 | **Prep Date:** 05/14/25 12:17

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
2-Methylnaphthalene	ND	µg/kg	4.17							
Acenaphthene	ND	µg/kg	4.17							
Acenaphthylene	ND	µg/kg	4.17							
Anthracene	ND	µg/kg	4.17							
Benzo(a)anthracene	ND	µg/kg	4.17							
Benzo(a)pyrene	ND	µg/kg	4.17							
Benzo(b)fluoranthene	ND	µg/kg	4.17							
Benzo(g,h,i)perylene	ND	µg/kg	4.17							
Benzo(k)fluoranthene	ND	µg/kg	4.17							
Chrysene	ND	µg/kg	4.17							
Dibenz(a,h)anthracene	ND	µg/kg	4.17							
Fluoranthene	ND	µg/kg	4.17							
Fluorene	ND	µg/kg	4.17							
Indeno(1,2,3-cd) pyrene	ND	µg/kg	4.17							
Naphthalene	ND	µg/kg	4.17							
Phenanthrene	ND	µg/kg	4.17							
Pyrene	ND	µg/kg	4.17							
Surr: 2-Fluorobiphenyl	***746***	*µg/kg*		666.6		112	*44-132*			
Surr: 4-Terphenyl-d14	***760***	*µg/kg*		666.6		114	*35-133*			
Surr: Nitrobenzene-d5	***724***	*µg/kg*		666.6		108	*30-133*			

LCS | **CLIENT ID: Laboratory Control Sample** | **Lab ID: QC-1995410-002**

Method: EPA 8270E SIM | **Dilution:** 1 | **Analysis Date:** 05/14/25 21:31 | **Prep Date:** 05/14/25 12:17

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
2-Methylnaphthalene	580	µg/kg	4.17	666.6		87.1	32-158			
Acenaphthene	702	µg/kg	4.17	666.6		105	42-155			
Acenaphthylene	680	µg/kg	4.17	666.6		102	39-149			
Anthracene	659	µg/kg	4.17	666.6		98.9	41-155			
Benzo(a)anthracene	611	µg/kg	4.17	666.6		91.7	39-155			
Benzo(a)pyrene	658	µg/kg	4.17	666.6		98.7	36-158			
Benzo(b)fluoranthene	604	µg/kg	4.17	666.6		90.6	36-146			
Benzo(g,h,i)perylene	610	µg/kg	4.17	666.6		91.4	26-166			
Benzo(k)fluoranthene	695	µg/kg	4.17	666.6		104	36-150			
Chrysene	640	µg/kg	4.17	666.6		96.0	41-162			
Dibenz(a,h)anthracene	643	µg/kg	4.17	666.6		96.5	27-167			
Fluoranthene	624	µg/kg	4.17	666.6		93.5	39-156			
Fluorene	671	µg/kg	4.17	666.6		101	37-153			
Indeno(1,2,3-cd) pyrene	615	µg/kg	4.17	666.6		92.2	24-171			
Naphthalene	656	µg/kg	4.17	666.6		98.5	43-156			
Phenanthrene	661	µg/kg	4.17	666.6		99.2	39-152			
Pyrene	665	µg/kg	4.17	666.6		99.7	32-147			

Client: Driesenga & Associates, Inc.
Project: Milham Park 2550400.3A
Matrix: SOIL/SOLID
Batch: 1995410

Work Order: HN2506373
Date Collected: NA
Date Received: NA

LCS | **CLIENT ID: Laboratory Control Sample** | **Lab ID: QC-1995410-002**

Method: EPA 8270E SIM | **Dilution:** 1 | **Analysis Date:** 05/14/25 21:31 | **Prep Date:** 05/14/25 12:17

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Surr: 2-Fluorobiphenyl	***695***	*µg/kg*		666.6		104	*44-132*			
Surr: 4-Terphenyl-d14	***714***	*µg/kg*		666.6		107	*35-133*			
Surr: Nitrobenzene-d5	***595***	*µg/kg*		666.6		89.3	*30-133*			

MS | **CLIENT ID: Batch QC** | **Lab ID: QC-1995410-005**

Method: EPA 8270E SIM | **Dilution:** 1 | **Analysis Date:** 05/14/25 21:48 | **Prep Date:** 05/14/25 12:17

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
2-Methylnaphthalene	643	µg/kg	4.25	650.6	ND	98.8	32-158			
Acenaphthene	755	µg/kg	4.25	650.6	4.45	115	42-155			
Acenaphthylene	770	µg/kg	4.25	650.6	ND	118	39-149			
Anthracene	747	µg/kg	4.25	650.6	ND	115	41-155			
Benzo(a)anthracene	696	µg/kg	4.25	650.6	ND	107	39-155			
Benzo(a)pyrene	761	µg/kg	4.25	650.6	ND	117	36-158			
Benzo(b)fluoranthene	725	µg/kg	4.25	650.6	ND	111	36-146			
Benzo(g,h,i)perylene	706	µg/kg	4.25	650.6	ND	108	26-166			
Benzo(k)fluoranthene	777	µg/kg	4.25	650.6	ND	119	36-150			
Chrysene	721	µg/kg	4.25	650.6	ND	111	41-162			
Dibenz(a,h)anthracene	746	µg/kg	4.25	650.6	ND	115	27-167			
Fluoranthene	712	µg/kg	4.25	650.6	ND	109	39-156			
Fluorene	758	µg/kg	4.25	650.6	ND	116	37-153			
Indeno(1,2,3-cd) pyrene	710	µg/kg	4.25	650.6	ND	109	24-171			
Naphthalene	742	µg/kg	4.25	650.6	ND	114	43-156			
Phenanthrene	750	µg/kg	4.25	650.6	6.33	114	39-152			
Pyrene	748	µg/kg	4.25	650.6	ND	115	32-147			
Surr: 2-Fluorobiphenyl	***699***	*µg/kg*		650.6		108	*44-132*			
Surr: 4-Terphenyl-d14	***716***	*µg/kg*		650.6		110	*35-133*			
Surr: Nitrobenzene-d5	***631***	*µg/kg*		650.6		97.0	*30-133*			

MSD | **CLIENT ID: Batch QC** | **Lab ID: QC-1995410-006**

Method: EPA 8270E SIM | **Dilution:** 1 | **Analysis Date:** 05/14/25 22:04 | **Prep Date:** 05/14/25 12:17

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
2-Methylnaphthalene	641	µg/kg	4.33	663.02	ND	96.7	32-158	0.262	30	
Acenaphthene	734	µg/kg	4.33	663.02	4.45	110	42-155	2.84	30	
Acenaphthylene	742	µg/kg	4.33	663.02	ND	112	39-149	3.71	30	
Anthracene	730	µg/kg	4.33	663.02	ND	110	41-155	2.34	30	
Benzo(a)anthracene	676	µg/kg	4.33	663.02	ND	102	39-155	2.88	30	
Benzo(a)pyrene	758	µg/kg	4.33	663.02	ND	114	36-158	0.339	30	
Benzo(b)fluoranthene	727	µg/kg	4.33	663.02	ND	110	36-146	0.290	30	
Benzo(g,h,i)perylene	697	µg/kg	4.33	663.02	ND	105	26-166	1.30	30	
Benzo(k)fluoranthene	803	µg/kg	4.33	663.02	ND	121	36-150	3.37	30	

Client: Driesenga & Associates, Inc.
Project: Milham Park 2550400.3A
Matrix: SOIL/SOLID
Batch: 1995410

Work Order: HN2506373
Date Collected: NA
Date Received: NA

MSD | **CLIENT ID: Batch QC** | **Lab ID: QC-1995410-006**

Method: EPA 8270E SIM
Dilution: 1
Analysis Date: 05/14/25 22:04
Prep Date: 05/14/25 12:17

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Chrysene	693	µg/kg	4.33	663.02	ND	104	41-162	3.96	30	
Dibenz(a,h)anthracene	709	µg/kg	4.33	663.02	ND	107	27-167	5.10	30	
Fluoranthene	685	µg/kg	4.33	663.02	ND	103	39-156	3.80	30	
Fluorene	734	µg/kg	4.33	663.02	ND	111	37-153	3.30	30	
Indeno(1,2,3-cd) pyrene	669	µg/kg	4.33	663.02	ND	101	24-171	5.97	30	
Naphthalene	720	µg/kg	4.33	663.02	ND	109	43-156	2.96	30	
Phenanthrene	747	µg/kg	4.33	663.02	6.33	112	39-152	0.306	30	
Pyrene	710	µg/kg	4.33	663.02	ND	107	32-147	5.32	30	
Surr: 2-Fluorobiphenyl	***693***	*µg/kg*		663.02		104	*44-132*	0.883	30	
Surr: 4-Terphenyl-d14	***708***	*µg/kg*		663.02		107	*35-133*	1.17	30	
Surr: Nitrobenzene-d5	***607***	*µg/kg*		663.02		91.6	*30-133*	3.92	30	

The following samples were analyzed in this batch: HN2506373-001, HN2506373-002, HN2506373-003, HN2506373-004

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	NA
Matrix:	SOIL/SOLID	**Date Received:**	NA
Batch:	1996349		

Volatile Organic Compounds by GC-MS

MB | **CLIENT ID: Method Blank** | **Lab ID: QC-1996349-001**

Method: EPA 8260D | **Dilution:** 1 | **Analysis Date:** 05/20/25 12:36 | **Prep Date:** 05/14/25 14:51

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	µg/kg	30.0							
1,1,2,2-Tetrachloroethane	ND	µg/kg	30.0							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	µg/kg	30.0							
1,1,2-Trichloroethane	ND	µg/kg	30.0							
1,1-Dichloroethane	ND	µg/kg	30.0							
1,1-Dichloroethylene	ND	µg/kg	30.0							
1,2,3-Trichlorobenzene	ND	µg/kg	100							
1,2,3-Trichloropropane	ND	µg/kg	30.0							
1,2,4-Trichlorobenzene	ND	µg/kg	100							
1,2,4-Trimethylbenzene	ND	µg/kg	30.0							
1,2-Dibromoethane (EDB, Ethylene dibromide)	ND	µg/kg	30.0							
1,2-Dichlorobenzene (o-Dichlorobenzene)	ND	µg/kg	30.0							
1,2-Dichloroethane (Ethylene dichloride)	ND	µg/kg	100							
1,2-Dichloropropane	ND	µg/kg	30.0							
1,3,5-Trimethylbenzene	ND	µg/kg	100							
1,3-Dichlorobenzene (m-Dichlorobenzene)	ND	µg/kg	30.0							
1,3-Dichloropropene	ND	µg/kg	60.0							
1,4-Dichlorobenzene (p-Dichlorobenzene)	ND	µg/kg	30.0							
2-Butanone (Methyl ethyl ketone, MEK)	ND	µg/kg	200							
2-Hexanone	ND	µg/kg	30.0							
4-Methyl-2-pentanone (MIBK)	ND	µg/kg	30.0							
Acetone	ND	µg/kg	100							
Benzene	ND	µg/kg	30.0							
Bromochloromethane	ND	µg/kg	30.0							
Bromodichloromethane	ND	µg/kg	30.0							
Bromoform	ND	µg/kg	30.0							
Carbon disulfide	ND	µg/kg	30.0							
Carbon tetrachloride	ND	µg/kg	30.0							
Chlorobenzene	ND	µg/kg	30.0							
Chlorodibromomethane	ND	µg/kg	30.0							
Chloroethane (Ethyl chloride)	ND	µg/kg	100							
Chloroform	ND	µg/kg	30.0							
cis & trans-1,2-Dichloroethene	ND	µg/kg	60.0							
cis-1,2-Dichloroethylene	ND	µg/kg	30.0							
cis-1,3-Dichloropropene	ND	µg/kg	30.0							
Cyclohexane	ND	µg/kg	100							
Dichlorodifluoromethane (Freon-12)	ND	µg/kg	100							
Ethylbenzene	ND	µg/kg	30.0							

Client: Driesenga & Associates, Inc.
Project: Milham Park 2550400.3A
Matrix: SOIL/SOLID
Batch: 1996349

Work Order: HN2506373
Date Collected: NA
Date Received: NA

MB | **CLIENT ID: Method Blank** | **Lab ID: QC-1996349-001**

Method: EPA 8260D | **Dilution:** 1 | **Analysis Date:** 05/20/25 12:36 | **Prep Date:** 05/14/25 14:51

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Isopropylbenzene	ND	µg/kg	30.0							
Methyl acetate	ND	µg/kg	250							
Methyl bromide (Bromomethane)	ND	µg/kg	100							
Methyl chloride (Chloromethane)	ND	µg/kg	100							
Methyl tert-butyl ether (MTBE)	ND	µg/kg	30.0							
Methylcyclohexane	ND	µg/kg	30.0							
Methylene chloride (Dichloromethane)	ND	µg/kg	250							
o-Xylene	ND	µg/kg	30.0							
Styrene	ND	µg/kg	30.0							
Tetrachloroethylene (Perchloroethylene)	ND	µg/kg	30.0							
Toluene	ND	µg/kg	30.0							
Total Xylene	ND	µg/kg	90.0							
trans-1,2-Dichloroethylene	ND	µg/kg	30.0							
trans-1,3-Dichloropropylene	ND	µg/kg	30.0							
Trichloroethene (Trichloroethylene)	ND	µg/kg	30.0							
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	ND	µg/kg	30.0							
Vinyl chloride (Chloroethene)	ND	µg/kg	30.0							
Surr: 1,2-Dichloroethane-d4	***992***	*µg/kg*		1000		99.2	*80-120*			
Surr: 4-Bromofluorobenzene	***929***	*µg/kg*		1000		92.9	*80-120*			
Surr: Dibromofluoromethane	***906***	*µg/kg*		1000		90.6	*80-120*			
Surr: Toluene-d8	***1050***	*µg/kg*		1000		105	*80-120*			

LCS | **CLIENT ID: Laboratory Control Sample** | **Lab ID: QC-1996349-002**

Method: EPA 8260D | **Dilution:** 1 | **Analysis Date:** 05/20/25 11:47 | **Prep Date:** 05/14/25 14:51

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1020	µg/kg	30.0	1000		102	75-121			
1,1,2,2-Tetrachloroethane	966	µg/kg	30.0	1000		96.6	79-125			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	896	µg/kg	30.0	1000		89.6	62-129			
1,1,2-Trichloroethane	936	µg/kg	30.0	1000		93.6	80-123			
1,1-Dichloroethane	926	µg/kg	30.0	1000		92.6	74-124			
1,1-Dichloroethylene	892	µg/kg	30.0	1000		89.2	68-131			
1,2,3-Trichlorobenzene	943	µg/kg	100	1000		94.3	60-135			
1,2,3-Trichloropropane	924	µg/kg	30.0	1000		92.4	77-121			
1,2,4-Trichlorobenzene	946	µg/kg	100	1000		94.6	63-130			
1,2,4-Trimethylbenzene	895	µg/kg	30.0	1000		89.5	64-126			
1,2-Dibromoethane (EDB, Ethylene dibromide)	844	µg/kg	30.0	1000		84.4	63-155			
1,2-Dichlorobenzene (o-Dichlorobenzene)	944	µg/kg	30.0	1000		94.4	77-122			
1,2-Dichloroethane (Ethylene dichloride)	873	µg/kg	100	1000		87.3	70-130			

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	NA
Matrix:	SOIL/SOLID	**Date Received:**	NA
Batch:	1996349		

LCS | **CLIENT ID: Laboratory Control Sample** | **Lab ID: QC-1996349-002**

Method: EPA 8260D | **Dilution:** 1 | **Analysis Date:** 05/20/25 11:47 | **Prep Date:** 05/14/25 14:51

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
1,2-Dichloropropane	922	µg/kg	30.0	1000		92.2	71-130			
1,3,5-Trimethylbenzene	963	µg/kg	100	1000		96.3	66-130			
1,3-Dichlorobenzene (m-Dichlorobenzene)	952	µg/kg	30.0	1000		95.2	78-121			
1,3-Dichloropropene	1810	µg/kg	60.0	2000		90.4	62-124			
1,4-Dichlorobenzene (p-Dichlorobenzene)	950	µg/kg	30.0	1000		95.0	78-122			
2-Butanone (Methyl ethyl ketone, MEK)	866	µg/kg	200	1000		86.6	47-164			
2-Hexanone	937	µg/kg	30.0	1000		93.7	70-137			
4-Methyl-2-pentanone (MIBK)	1970	µg/kg	30.0	1000		197	57-200			
Acetone	950	µg/kg	100	1000		95.0	52-190			
Benzene	952	µg/kg	30.0	1000		95.2	78-122			
Bromochloromethane	936	µg/kg	30.0	1000		93.6	68-130			
Bromodichloromethane	938	µg/kg	30.0	1000		93.8	75-125			
Bromoform	890	µg/kg	30.0	1000		89.0	59-120			
Carbon disulfide	1030	µg/kg	30.0	1000		103	60-163			
Carbon tetrachloride	977	µg/kg	30.0	1000		97.7	69-123			
Chlorobenzene	977	µg/kg	30.0	1000		97.7	79-120			
Chlorodibromomethane	824	µg/kg	30.0	1000		82.4	57-123			
Chloroethane (Ethyl chloride)	1050	µg/kg	100	1000		105	38-132			
Chloroform	906	µg/kg	30.0	1000		90.6	72-122			
cis & trans-1,2-Dichloroethene	1770	µg/kg	60.0	2000		88.4	72-127			
cis-1,2-Dichloroethylene	903	µg/kg	30.0	1000		90.3	74-125			
cis-1,3-Dichloropropene	999	µg/kg	30.0	1000		99.9	62-124			
Dichlorodifluoromethane (Freon-12)	1150	µg/kg	100	1000		115	28-137			
Ethylbenzene	990	µg/kg	30.0	1000		99.0	75-121			
Isopropylbenzene	968	µg/kg	30.0	1000		96.8	74-121			
Methyl acetate	847	µg/kg	250	1000		84.7	61-125			
Methyl bromide (Bromomethane)	852	µg/kg	100	1000		85.2	31-169			
Methyl chloride (Chloromethane)	988	µg/kg	100	1000		98.8	24-119			
Methyl tert-butyl ether (MTBE)	1140	µg/kg	30.0	1000		114	79-139			
Methylene chloride (Dichloromethane)	947	µg/kg	250	1000		94.7	62-135			
o-Xylene	952	µg/kg	30.0	1000		95.2	75-120			
Styrene	888	µg/kg	30.0	1000		88.8	74-126			
Tetrachloroethylene (Perchloroethylene)	958	µg/kg	30.0	1000		95.8	76-128			
Toluene	958	µg/kg	30.0	1000		95.8	76-120			
Total Xylene	2870	µg/kg	90.0	3000		95.6	67-129			
trans-1,2-Dichloroethylene	866	µg/kg	30.0	1000		86.6	72-127			
trans-1,3-Dichloropropylene	808	µg/kg	30.0	1000		80.8	66-120			
Trichloroethene (Trichloroethylene)	876	µg/kg	30.0	1000		87.6	75-122			
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	946	µg/kg	30.0	1000		94.6	51-115			
Vinyl chloride (Chloroethene)	1020	µg/kg	30.0	1000		102	43-128			
Surr: 1,2-Dichloroethane-d4	***956***	*µg/kg*		1000		95.6	*80-120*			

Client: Driesenga & Associates, Inc.
Project: Milham Park 2550400.3A
Matrix: SOIL/SOLID
Batch: 1996349

Work Order: HN2506373
Date Collected: NA
Date Received: NA

LCS | **CLIENT ID: Laboratory Control Sample** | **Lab ID: QC-1996349-002**

Method: EPA 8260D | **Dilution:** 1 | **Analysis Date:** 05/20/25 11:47 | **Prep Date:** 05/14/25 14:51

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Surr: 4-Bromofluorobenzene	***1060***	*µg/kg*		1000		106	*80-120*			
Surr: Dibromofluoromethane	***1000***	*µg/kg*		1000		100	*80-120*			
Surr: Toluene-d8	***998***	*µg/kg*		1000		99.8	*80-120*			

MS | **CLIENT ID: SB-4 -3 to -4'** | **Lab ID: QC-1996349-005**

Method: EPA 8260D | **Dilution:** 1 | **Analysis Date:** 05/20/25 19:25 | **Prep Date:** 05/14/25 14:51

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
1,1,1-Trichloroethane	2180	µg/kg	70.6	2057.6	ND	106	75-121			
1,1,2,2-Tetrachloroethane	1700	µg/kg	70.6	2057.6	ND	82.8	79-125			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	2030	µg/kg	70.6	2057.6	ND	98.6	62-129			
1,1,2-Trichloroethane	1940	µg/kg	70.6	2057.6	ND	94.3	80-123			
1,1-Dichloroethane	2070	µg/kg	70.6	2057.6	ND	101	74-124			
1,1-Dichloroethylene	2070	µg/kg	70.6	2057.6	ND	101	68-131			
1,2,3-Trichlorobenzene	2010	µg/kg	236	2057.6	ND	97.8	60-135			
1,2,3-Trichloropropane	1940	µg/kg	70.6	2057.6	ND	94.5	77-121			
1,2,4-Trichlorobenzene	1810	µg/kg	236	2057.6	ND	88.2	63-130			
1,2,4-Trimethylbenzene	1900	µg/kg	70.6	2057.6	ND	92.2	64-126			
1,2-Dibromoethane (EDB, Ethylene dibromide)	1730	µg/kg	70.6	2057.6	ND	84.0	63-155			
1,2-Dichlorobenzene (o-Dichlorobenzene)	1990	µg/kg	70.6	2057.6	ND	96.8	77-122			
1,2-Dichloroethane (Ethylene dichloride)	1850	µg/kg	236	2057.6	ND	89.8	70-130			
1,2-Dichloropropane	1940	µg/kg	70.6	2057.6	ND	94.1	71-130			
1,3,5-Trimethylbenzene	1940	µg/kg	236	2057.6	ND	94.4	66-130			
1,3-Dichlorobenzene (m-Dichlorobenzene)	1920	µg/kg	70.6	2057.6	ND	93.4	78-121			
1,3-Dichloropropene	3280	µg/kg	141	4115.2	ND	79.6	62-124			
1,4-Dichlorobenzene (p-Dichlorobenzene)	1980	µg/kg	70.6	2057.6	ND	96.2	78-122			
2-Butanone (Methyl ethyl ketone, MEK)	1830	µg/kg	471	2057.6	ND	89.0	47-164			
2-Hexanone	2050	µg/kg	70.6	2057.6	ND	99.8	70-137			
4-Methyl-2-pentanone (MIBK)	2880	µg/kg	70.6	2057.6	ND	140	57-200			
Acetone	3110	µg/kg	236	2057.6	ND	151	52-190			
Benzene	2140	µg/kg	70.6	2057.6	ND	104	78-122			
Bromochloromethane	1850	µg/kg	70.6	2057.6	ND	90.2	68-130			
Bromodichloromethane	1920	µg/kg	70.6	2057.6	ND	93.6	75-125			
Bromoform	1750	µg/kg	70.6	2057.6	ND	85.0	59-120			
Carbon disulfide	2070	µg/kg	70.6	2057.6	ND	101	60-163			
Carbon tetrachloride	2080	µg/kg	70.6	2057.6	ND	101	69-123			
Chlorobenzene	2000	µg/kg	70.6	2057.6	ND	97.0	79-120			
Chlorodibromomethane	1600	µg/kg	70.6	2057.6	ND	77.6	57-123			

Client: Driesenga & Associates, Inc.
Project: Milham Park 2550400.3A
Matrix: SOIL/SOLID
Batch: 1996349

Work Order: HN2506373
Date Collected: NA
Date Received: NA

MS | **CLIENT ID: SB-4 -3 to -4'** | **Lab ID: QC-1996349-005**

Method: EPA 8260D | **Dilution:** 1 | **Analysis Date:** 05/20/25 19:25 | **Prep Date:** 05/14/25 14:51

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
Chloroethane (Ethyl chloride)	1840	µg/kg	236	2057.6	ND	89.4	38-132			
Chloroform	1920	µg/kg	70.6	2057.6	ND	93.4	72-122			
cis & trans-1,2-Dichloroethene	3930	µg/kg	141	4115.2	ND	95.6	72-127			
cis-1,2-Dichloroethylene	2020	µg/kg	70.6	2057.6	ND	98.0	74-125			
cis-1,3-Dichloropropene	1850	µg/kg	70.6	2057.6	ND	89.9	62-124			
Dichlorodifluoromethane (Freon-12)	2620	µg/kg	236	2057.6	ND	127	28-137			
Ethylbenzene	1980	µg/kg	70.6	2057.6	ND	96.4	75-121			
Isopropylbenzene	2030	µg/kg	70.6	2057.6	ND	98.8	74-121			
Methyl acetate	2790	µg/kg	589	2057.6	ND	136	61-125			S
Methyl bromide (Bromomethane)	1970	µg/kg	236	2057.6	ND	95.8	31-169			
Methyl chloride (Chloromethane)	2450	µg/kg	236	2057.6	ND	119	24-119			
Methyl tert-butyl ether (MTBE)	2240	µg/kg	70.6	2057.6	ND	109	79-139			
Methylene chloride (Dichloromethane)	2140	µg/kg	589	2057.6	ND	104	62-135			
o-Xylene	1980	µg/kg	70.6	2057.6	ND	96.3	75-120			
Styrene	1890	µg/kg	70.6	2057.6	ND	91.8	74-126			
Tetrachloroethylene (Perchloroethylene)	3700	µg/kg	70.6	2057.6	ND	180	76-128			S
Toluene	2060	µg/kg	70.6	2057.6	ND	100	76-120			
Total Xylene	5950	µg/kg	212	6172.8	ND	96.5	67-129			
trans-1,2-Dichloroethylene	1920	µg/kg	70.6	2057.6	ND	93.2	72-127			
trans-1,3-Dichloropropylene	1430	µg/kg	70.6	2057.6	ND	69.4	66-120			
Trichloroethene (Trichloroethylene)	2180	µg/kg	70.6	2057.6	ND	106	75-122			
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	2220	µg/kg	70.6	2057.6	ND	108	51-115			
Vinyl chloride (Chloroethene)	2520	µg/kg	70.6	2057.6	ND	122	43-128			
Surr: 1,2-Dichloroethane-d4	***1960***	*µg/kg*		2057.6		95.4	*80-120*			
Surr: 4-Bromofluorobenzene	***2090***	*µg/kg*		2057.6		102	*80-120*			
Surr: Dibromofluoromethane	***1970***	*µg/kg*		2057.6		95.8	*80-120*			
Surr: Toluene-d8	***2080***	*µg/kg*		2057.6		101	*80-120*			

MSD | **CLIENT ID: SB-4 -3 to -4'** | **Lab ID: QC-1996349-006**

Method: EPA 8260D | **Dilution:** 1 | **Analysis Date:** 05/20/25 19:41 | **Prep Date:** 05/14/25 14:51

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
1,1,1-Trichloroethane	2320	µg/kg	70.6	2057.6	ND	112	75-121	6.09	30	
1,1,2,2-Tetrachloroethane	1900	µg/kg	70.6	2057.6	ND	92.4	79-125	10.8	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	2140	µg/kg	70.6	2057.6	ND	104	62-129	5.18	30	
1,1,2-Trichloroethane	1970	µg/kg	70.6	2057.6	ND	95.8	80-123	1.52	30	
1,1-Dichloroethane	2140	µg/kg	70.6	2057.6	ND	104	74-124	3.03	30	
1,1-Dichloroethylene	2130	µg/kg	70.6	2057.6	ND	104	68-131	2.99	30	
1,2,3-Trichlorobenzene	2000	µg/kg	236	2057.6	ND	97.2	60-135	0.718	30	
1,2,3-Trichloropropane	2000	µg/kg	70.6	2057.6	ND	97.0	77-121	2.66	30	
1,2,4-Trichlorobenzene	1900	µg/kg	236	2057.6	ND	92.1	63-130	4.38	30	

Client: Driesenga & Associates, Inc.
Project: Milham Park 2550400.3A
Matrix: SOIL/SOLID
Batch: 1996349

Work Order: HN2506373
Date Collected: NA
Date Received: NA

MSD | **CLIENT ID: SB-4 -3 to -4'** | **Lab ID: QC-1996349-006**

Method: EPA 8260D **Dilution:** 1 **Analysis Date:** 05/20/25 19:41
Prep Date: 05/14/25 14:51

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	1960	µg/kg	70.6	2057.6	ND	95.4	64-126	3.41	30	
1,2-Dibromoethane (EDB, Ethylene dibromide)	1840	µg/kg	70.6	2057.6	ND	89.4	63-155	6.28	30	
1,2-Dichlorobenzene (o-Dichlorobenzene)	2050	µg/kg	70.6	2057.6	ND	99.8	77-122	3.10	30	
1,2-Dichloroethane (Ethylene dichloride)	1970	µg/kg	236	2057.6	ND	95.6	70-130	6.20	30	
1,2-Dichloropropane	2000	µg/kg	70.6	2057.6	ND	97.3	71-130	3.34	30	
1,3,5-Trimethylbenzene	2040	µg/kg	236	2057.6	ND	99.0	66-130	4.76	30	
1,3-Dichlorobenzene (m-Dichlorobenzene)	1940	µg/kg	70.6	2057.6	ND	94.6	78-121	1.22	30	
1,3-Dichloropropene	3430	µg/kg	141	4115.2	ND	83.4	62-124	4.66	30	
1,4-Dichlorobenzene (p-Dichlorobenzene)	2040	µg/kg	70.6	2057.6	ND	99.3	78-122	3.12	30	
2-Butanone (Methyl ethyl ketone, MEK)	2110	µg/kg	471	2057.6	ND	103	47-164	14.4	30	
2-Hexanone	2330	µg/kg	70.6	2057.6	ND	113	70-137	12.5	30	
4-Methyl-2-pentanone (MIBK)	3500	µg/kg	70.6	2057.6	ND	170	57-200	19.6	30	
Acetone	3870	µg/kg	236	2057.6	ND	188	52-190	22.0	30	
Benzene	2260	µg/kg	70.6	2057.6	ND	110	78-122	5.24	30	
Bromochloromethane	2090	µg/kg	70.6	2057.6	ND	102	68-130	12.1	30	
Bromodichloromethane	2030	µg/kg	70.6	2057.6	ND	98.8	75-125	5.40	30	
Bromoform	1800	µg/kg	70.6	2057.6	ND	87.5	59-120	2.90	30	
Carbon disulfide	2200	µg/kg	70.6	2057.6	ND	107	60-163	6.07	30	
Carbon tetrachloride	2230	µg/kg	70.6	2057.6	ND	108	69-123	6.59	30	
Chlorobenzene	2050	µg/kg	70.6	2057.6	ND	99.6	79-120	2.59	30	
Chlorodibromomethane	1670	µg/kg	70.6	2057.6	ND	81.0	57-123	4.22	30	
Chloroethane (Ethyl chloride)	2070	µg/kg	236	2057.6	ND	101	38-132	11.8	30	
Chloroform	2060	µg/kg	70.6	2057.6	ND	100	72-122	7.12	30	
cis & trans-1,2-Dichloroethene	4110	µg/kg	141	4115.2	ND	99.8	72-127	4.35	30	
cis-1,2-Dichloroethylene	2080	µg/kg	70.6	2057.6	ND	101	74-125	2.96	30	
cis-1,3-Dichloropropene	1930	µg/kg	70.6	2057.6	ND	94.0	62-124	4.40	30	
Dichlorodifluoromethane (Freon-12)	2700	µg/kg	236	2057.6	ND	131	28-137	3.10	30	
Ethylbenzene	2090	µg/kg	70.6	2057.6	ND	102	75-121	5.35	30	
Isopropylbenzene	2100	µg/kg	70.6	2057.6	ND	102	74-121	3.58	30	
Methyl acetate	2370	µg/kg	589	2057.6	ND	115	61-125	16.2	30	
Methyl bromide (Bromomethane)	2060	µg/kg	236	2057.6	ND	100	31-169	4.54	30	
Methyl chloride (Chloromethane)	2760	µg/kg	236	2057.6	ND	134	24-119	11.9	30	S
Methyl tert-butyl ether (MTBE)	2400	µg/kg	70.6	2057.6	ND	116	79-139	6.47	30	
Methylene chloride (Dichloromethane)	2310	µg/kg	589	2057.6	ND	112	62-135	7.44	30	
o-Xylene	2100	µg/kg	70.6	2057.6	ND	102	75-120	5.60	30	
Styrene	1890	µg/kg	70.6	2057.6	ND	91.7	74-126	0.0545	30	
Tetrachloroethylene (Perchloroethylene)	3710	µg/kg	70.6	2057.6	ND	180	76-128	0.389	30	S
Toluene	2120	µg/kg	70.6	2057.6	ND	103	76-120	2.85	30	
Total Xylene	6150	µg/kg	212	6172.8	ND	99.7	67-129	3.28	30	
trans-1,2-Dichloroethylene	2030	µg/kg	70.6	2057.6	ND	98.8	72-127	5.78	30	

Client:	Driesenga & Associates, Inc.	**Work Order:**	HN2506373
Project:	Milham Park 2550400.3A	**Date Collected:**	NA
Matrix:	SOIL/SOLID	**Date Received:**	NA
Batch:	1996349		

MSD | **CLIENT ID: SB-4 -3 to -4'** | **Lab ID: QC-1996349-006**

Method: EPA 8260D **Dilution:** 1 **Analysis Date:** 05/20/25 19:41

Prep Date: 05/14/25 14:51

Analyte	Result	Units	MRL	Spike Amount	Spike Ref. Amount	% Rec	% Rec Limits	RPD	RPD Limit	Qual
trans-1,3-Dichloropropylene	1500	µg/kg	70.6	2057.6	ND	72.9	66-120	4.99	30	
Trichloroethene (Trichloroethylene)	2080	µg/kg	70.6	2057.6	ND	101	75-122	4.64	30	
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	2570	µg/kg	70.6	2057.6	ND	125	51-115	14.4	30	S
Vinyl chloride (Chloroethene)	2620	µg/kg	70.6	2057.6	ND	128	43-128	4.08	30	
Surr: 1,2-Dichloroethane-d4	***1970***	*µg/kg*		2057.6		95.7	*80-120*	0.262	30	
Surr: 4-Bromofluorobenzene	***2190***	*µg/kg*		2057.6		106	*80-120*	4.33	30	
Surr: Dibromofluoromethane	***2040***	*µg/kg*		2057.6		99.1	*80-120*	3.33	30	
Surr: Toluene-d8	***2060***	*µg/kg*		2057.6		100	*80-120*	0.944	30	

The following samples were analyzed in this batch: HN2506373-001, HN2506373-002, HN2506373-003, HN2506373-004

Dept	Test Name	Analyte	CAS
GC/MS Semivolatile Orga	Semivolatile Organic com	2-Fluorobiphenyl	321-60-8
GC/MS Semivolatile Orga	Semivolatile Organic com	2-Methylnaphthalene	91-57-6
GC/MS Semivolatile Orga	Semivolatile Organic com	4-Terphenyl-d14	1718-51-0
GC/MS Semivolatile Orga	Semivolatile Organic com	Acenaphthene	83-32-9
GC/MS Semivolatile Orga	Semivolatile Organic com	Acenaphthene-d10	15067-26-2
GC/MS Semivolatile Orga	Semivolatile Organic com	Acenaphthylene	208-96-8
GC/MS Semivolatile Orga	Semivolatile Organic com	Anthracene	120-12-7
GC/MS Semivolatile Orga	Semivolatile Organic com	Benzo(a)anthracene	56-55-3
GC/MS Semivolatile Orga	Semivolatile Organic com	Benzo(a)pyrene	50-32-8
GC/MS Semivolatile Orga	Semivolatile Organic com	Benzo(b)fluoranthene	205-99-2
GC/MS Semivolatile Orga	Semivolatile Organic com	Benzo(g,h,i)perylene	191-24-2
GC/MS Semivolatile Orga	Semivolatile Organic com	Benzo(k)fluoranthene	207-08-9
GC/MS Semivolatile Orga	Semivolatile Organic com	Chrysene	218-01-9
GC/MS Semivolatile Orga	Semivolatile Organic com	Chrysene-d12	1719-03-5
GC/MS Semivolatile Orga	Semivolatile Organic com	Dibenz(a,h)anthracene	53-70-3
GC/MS Semivolatile Orga	Semivolatile Organic com	Fluoranthene	206-44-0
GC/MS Semivolatile Orga	Semivolatile Organic com	Fluorene	86-73-7
GC/MS Semivolatile Orga	Semivolatile Organic com	Indeno(1,2,3-cd) pyrene	193-39-5
GC/MS Semivolatile Orga	Semivolatile Organic com	Naphthalene	91-20-3
GC/MS Semivolatile Orga	Semivolatile Organic com	Naphthalene-d8	1146-65-2
GC/MS Semivolatile Orga	Semivolatile Organic com	Nitrobenzene-d5	4165-60-0
GC/MS Semivolatile Orga	Semivolatile Organic com	Perylene-d12	1520-96-3
GC/MS Semivolatile Orga	Semivolatile Organic com	Phenanthrene	85-01-8
GC/MS Semivolatile Orga	Semivolatile Organic com	Phenanthrene-d10	1517-22-2
GC/MS Semivolatile Orga	Semivolatile Organic com	Pyrene	129-00-0
GC/MS Volatile Organics	Volatile Organic Compou	1,1,1-Trichloroethane	71-55-6
GC/MS Volatile Organics	Volatile Organic Compou	1,1,2,2-Tetrachloroethan	79-34-5
GC/MS Volatile Organics	Volatile Organic Compou	1,1,2-Trichloro-1,2,2-triflu	76-13-1
GC/MS Volatile Organics	Volatile Organic Compou	1,1,2-Trichloroethane	79-00-5
GC/MS Volatile Organics	Volatile Organic Compou	1,1-Dichloroethane	75-34-3
GC/MS Volatile Organics	Volatile Organic Compou	1,1-Dichloroethylene	75-35-4
GC/MS Volatile Organics	Volatile Organic Compou	1,2,3-Trichlorobenzene	87-61-6
GC/MS Volatile Organics	Volatile Organic Compou	1,2,3-Trichloropropane	96-18-4
GC/MS Volatile Organics	Volatile Organic Compou	1,2,4-Trichlorobenzene	120-82-1
GC/MS Volatile Organics	Volatile Organic Compou	1,2,4-Trimethylbenzene	95-63-6
GC/MS Volatile Organics	Volatile Organic Compou	1,2-Dibromoethane (EDB	106-93-4
GC/MS Volatile Organics	Volatile Organic Compou	1,2-Dichlorobenzene (o-D	95-50-1
GC/MS Volatile Organics	Volatile Organic Compou	1,2-Dichloroethane (Ethyl	107-06-2
GC/MS Volatile Organics	Volatile Organic Compou	1,2-Dichloroethane-d4	17060-07-0
GC/MS Volatile Organics	Volatile Organic Compou	1,2-Dichloropropane	78-87-5
GC/MS Volatile Organics	Volatile Organic Compou	1,3,5-Trimethylbenzene	108-67-8
GC/MS Volatile Organics	Volatile Organic Compou	1,3-Dichlorobenzene (m-	541-73-1
GC/MS Volatile Organics	Volatile Organic Compou	1,3-Dichloropropene	542-75-6
GC/MS Volatile Organics	Volatile Organic Compou	1,4-Dichlorobenzene (p-D	106-46-7
GC/MS Volatile Organics	Volatile Organic Compou	1,4-Dichlorobenzene-d4	3855-82-1
GC/MS Volatile Organics	Volatile Organic Compou	1,4-Difluorobenzene	540-36-3

GC/MS Volatile Organics	Volatile Organic Compou	2-Butanone (Methyl ethyl	78-93-3
GC/MS Volatile Organics	Volatile Organic Compou	2-Hexanone	591-78-6
GC/MS Volatile Organics	Volatile Organic Compou	4-Bromofluorobenzene	460-00-4
GC/MS Volatile Organics	Volatile Organic Compou	4-Methyl-2-pentanone (M	108-10-1
GC/MS Volatile Organics	Volatile Organic Compou	Acetone	67-64-1
GC/MS Volatile Organics	Volatile Organic Compou	Benzene	71-43-2
GC/MS Volatile Organics	Volatile Organic Compou	Bromochloromethane	74-97-5
GC/MS Volatile Organics	Volatile Organic Compou	Bromodichloromethane	75-27-4
GC/MS Volatile Organics	Volatile Organic Compou	Bromoform	75-25-2
GC/MS Volatile Organics	Volatile Organic Compou	Carbon disulfide	75-15-0
GC/MS Volatile Organics	Volatile Organic Compou	Carbon tetrachloride	56-23-5
GC/MS Volatile Organics	Volatile Organic Compou	Chlorobenzene	108-90-7
GC/MS Volatile Organics	Volatile Organic Compou	Chlorobenzene-d5	3114-55-4
GC/MS Volatile Organics	Volatile Organic Compou	Chlorodibromomethane	124-48-1
GC/MS Volatile Organics	Volatile Organic Compou	Chloroethane (Ethyl chlor	75-00-3
GC/MS Volatile Organics	Volatile Organic Compou	Chloroform	67-66-3
GC/MS Volatile Organics	Volatile Organic Compou	Cyclohexane	110-82-7
GC/MS Volatile Organics	Volatile Organic Compou	Dibromofluoromethane	1868-53-7
GC/MS Volatile Organics	Volatile Organic Compou	Dichlorodifluoromethane	75-71-8
GC/MS Volatile Organics	Volatile Organic Compou	Ethylbenzene	100-41-4
GC/MS Volatile Organics	Volatile Organic Compou	Isopropylbenzene	98-82-8
GC/MS Volatile Organics	Volatile Organic Compou	Methyl acetate	79-20-9
GC/MS Volatile Organics	Volatile Organic Compou	Methyl bromide (Bromom	74-83-9
GC/MS Volatile Organics	Volatile Organic Compou	Methyl chloride (Chlorom	74-87-3
GC/MS Volatile Organics	Volatile Organic Compou	Methyl tert-butyl ether (M	1634-04-4
GC/MS Volatile Organics	Volatile Organic Compou	Methylcyclohexane	108-87-2
GC/MS Volatile Organics	Volatile Organic Compou	Methylene chloride (Dichl	75-09-2
GC/MS Volatile Organics	Volatile Organic Compou	Pentafluorobenzene	363-72-4
GC/MS Volatile Organics	Volatile Organic Compou	Styrene	100-42-5
GC/MS Volatile Organics	Volatile Organic Compou	Tetrachloroethylene (Per	127-18-4
GC/MS Volatile Organics	Volatile Organic Compou	Toluene	108-88-3
GC/MS Volatile Organics	Volatile Organic Compou	Toluene-d8	2037-26-5
GC/MS Volatile Organics	Volatile Organic Compou	Total Xylene	1330-20-7
GC/MS Volatile Organics	Volatile Organic Compou	Trichloroethene (Trichlor	79-01-6
GC/MS Volatile Organics	Volatile Organic Compou	Trichlorofluoromethane (I	75-69-4
GC/MS Volatile Organics	Volatile Organic Compou	Vinyl chloride (Chloroethe	75-01-4
GC/MS Volatile Organics	Volatile Organic Compou	cis & trans-1,2-Dichloroet	540-59-0
GC/MS Volatile Organics	Volatile Organic Compou	cis-1,2-Dichloroethylene	156-59-2
GC/MS Volatile Organics	Volatile Organic Compou	cis-1,3-Dichloropropene	10061-01-5
GC/MS Volatile Organics	Volatile Organic Compou	o-Xylene	95-47-6
GC/MS Volatile Organics	Volatile Organic Compou	trans-1,2-Dichloroethylen	156-60-5
GC/MS Volatile Organics	Volatile Organic Compou	trans-1,3-Dichloropropyle	10061-02-6
Inorganics Analysis	Percent Moisture	Percent Moisture	*8641
Metals Analysis	Trace Elements in Soil/S	Arsenic	7440-38-2
Metals Analysis	Trace Elements in Soil/S	Barium	7440-39-3
Metals Analysis	Trace Elements in Soil/S	Cadmium	7440-43-9
Metals Analysis	Trace Elements in Soil/S	Chromium	7440-47-3

Metals Analysis	Trace Elements in Soil/S	Copper	7440-50-8
Metals Analysis	Trace Elements in Soil/S	Lead	7439-92-1
Metals Analysis	Trace Elements in Soil/S	Selenium	7782-49-2
Metals Analysis	Trace Elements in Soil/S	Silver	7440-22-4
Metals Analysis	Trace Elements in Soil/S	Zinc	7440-66-6
Metals Analysis	Mercury in Solid or Semi	Mercury	7439-97-6

Matrix	Units	HN2506373-001 SB-2 -1'	HN2506373-002 SB-4 -3
Soil/Solid	%	107	116
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	%	108	118
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	1890	1800
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	1890	1800
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	1890	1800
Soil/Solid	%	101	112
Soil/Solid	µg/kg	1890	1800
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	1890	1800
Soil/Solid	µg/kg	<4.73	<4.49
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<186	<236
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<186	<236
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<186	<236
Soil/Solid	%	102	97.2
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<186	<236
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<111	<141
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	1860	2360
Soil/Solid	µg/kg	1860	2360

Soil/Solid	µg/kg	<371	<471
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	%	93.8	93.7
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<186	<236
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	1860	2360
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<186	<236
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<186	<236
Soil/Solid	%	94.0	87.8
Soil/Solid	µg/kg	<186	<236
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<464	<589
Soil/Solid	µg/kg	<186	<236
Soil/Solid	µg/kg	<186	<236
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<464	<589
Soil/Solid	µg/kg	1860	2360
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	%	106	101
Soil/Solid	µg/kg	<167	<212
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<111	<141
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	µg/kg	<55.6	<70.6
Soil/Solid	%	12.8	8.9
Soil/Solid	mg/kg	3.49	1.35
Soil/Solid	mg/kg	45.1	38.9
Soil/Solid	mg/kg	<0.121	<0.128
Soil/Solid	mg/kg	6.85	3.86

Soil/Solid	mg/kg	6.91	2.01
Soil/Solid	mg/kg	7.93	2.92
Soil/Solid	mg/kg	<0.303	<0.320
Soil/Solid	mg/kg	<0.303	<0.320
Soil/Solid	mg/kg	25.7	10.1
Soil/Solid	mg/kg	<0.0215	<0.0175

HN2506373-003 SB-1 -3'	HN2506373-004 SB-3 -3.5' to 4'
114	115
<4.40	<11.6
116	118
<4.40	<11.6
1760	4660
<4.40	<11.6
<4.40	<11.6
<4.40	<11.6
<4.40	<11.6
<4.40	<11.6
<4.40	<11.6
<4.40	<11.6
<4.40	<11.6
1760	4660
<4.40	<11.6
<4.40	<11.6
<4.40	<11.6
<4.40	<11.6
<4.40	<11.6
1760	4660
103	108
1760	4660
<4.40	<11.6
1760	4660
<4.40	<11.6
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<306	<222
<91.9	<66.6
<306	<222
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<306	<222
96.9	99.6
<91.9	<66.6
<306	<222
<91.9	<66.6
<184	<133
<91.9	<66.6
3060	2220
3060	2220

<613	<444
<91.9	<66.6
92.2	94.6
<91.9	<66.6
<306	<222
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
3060	2220
<91.9	<66.6
<306	<222
<91.9	<66.6
<306	<222
103	99.0
<306	<222
<91.9	<66.6
<91.9	<66.6
<766	<555
<306	<222
<306	<222
<91.9	<66.6
<91.9	<66.6
<766	<555
3060	2220
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
99.5	99.6
<276	<200
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<184	<133
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
<91.9	<66.6
8.5	16.4
3.14	0.688
39.9	39.6
<0.126	<0.142
7.62	4.32

5.68	0.670
5.81	2.52
<0.316	<0.354
<0.316	<0.354
19.6	22.5
0.0264	<0.0203

FIELD PROCEDURES

The soil borings were performed using a truck-mounted drill rig equipped with an auto-hammer. Split-barrel samples were obtained in the soil below the bottom of the augers in general accordance with the Standard Method for Penetration and Split-Barrel Sampling of Soils. Samples were collected at 2.5 feet intervals to 10 feet below grade, and every 5 feet thereafter. After recovery, the samples were removed from the split-spoon sampler, visually reviewed and classified, placed in glass jars and transported to our laboratory for additional review.

Soil samples stored for extended periods are susceptible to moisture loss and are no longer indicative of the conditions originally encountered in the soil borings. Therefore, soil samples are usually stored in our laboratory for a period of 60 days, unless instructed otherwise.

Soil boring logs were prepared based on field notes and visual classification of the samples in the laboratory. Indicated on each soil boring log is the description of each stratum observed, the approximate depth and/or elevation of each stratum change observed, Standard Penetration Test resistance values, and the observed groundwater levels. The soil boring logs are presented in Appendix B.

LABORATORY PROCEDURES

The laboratory testing program included supplementary visual classification of the samples in general accordance with the Unified Soil Classification System. The following two pages describe the soils classification procedure.

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

Per ASTM D 2487—00
(Based on Unified Soil Classification System)

Soil Description: Secondary Soil Type BASIC SOIL TYPE, Consistency/Relative Density, Color, Supplemental Soil Type, Moisture, Miscellaneous comments.

Ex. Silty SAND, loose, brown, fine to medium, trace gravel, moist.

Secondary Soil Type – adjective for the BASIC SOIL TYPE describing material making up greater than 12% but less than 50% of the primary soil type by weight. For sands this also includes a description of grain size (fine, medium or coarse).

BASIC SOIL TYPE – primary constituent of sample; material making up greater than 50% of the sample by weight. Material is classified by grain size and material properties.

Consistency/Relative Density – a measurement of in-situ consistency or density of cohesive or cohesionless soils, respectively, based upon Standard Penetration Testing blow counts (N) per ASTM D 1586.

Color – visual inspection of soil appearance.

Supplementary Soil Type – a description of any other material that may be mixed with the BASIC SOIL TYPE. Qualifying terms are based on the percentage of the supplementary soil type in the sample by weight.

Moisture – description of the in-situ moisture content of the sample (dry, moist or wet).

Miscellaneous Comments – anything observed in the sample or in the field that does not fit into the above categories but should be noted (odor, etc.).

CALIBRATED AUTO HAMMER CONSISTENCY/RELATIVE DENSITY				
COHESIONLESS SOILS		COHESIVE SOILS		
SPT N-VALUES	IN-SITU RELATIVE DENSITY	SPT N-VALUES	SHEAR STRENGTH (PSF)	IN-SITU CONSISTENCY
0-3	VERY LOOSE	0-1	BELOW 250	VERY SOFT
4-8	LOOSE	2-3	250 - 500	SOFT
9-23	MEDIUM DENSE	4-6	500 - 1,000	MEDIUM STIFF
24-38	DENSE	7-12	1,000 - 2,000	STIFF
>38	VERY DENSE	13-25	2,000 - 4,000	VERY STIFF
		>26	OVER 4,000	HARD

STANDARD HAMMER CONSISTENCY/RELATIVE DENSITY				
COHESIONLESS SOILS		COHESIVE SOILS		
SPT N-VALUES	IN-SITU RELATIVE DENSITY	SPT N-VALUES	SHEAR STRENGTH (PSF)	IN-SITU CONSISTENCY
0-4	VERY LOOSE	0-2	BELOW 250	VERY SOFT
5-10	LOOSE	3-4	250 - 500	SOFT
11-30	MEDIUM DENSE	5-8	500 - 1,000	MEDIUM STIFF
31-50	DENSE	9-16	1,000 - 2,000	STIFF
>50	VERY DENSE	17-32	2,000 - 4,000	VERY STIFF
		>32	OVER 4,000	HARD

SUPPLEMENTAL TEXTURE QUALIFYING TERMS	
DESCRIPTOR	PERCENTAGE BY WEIGHT
TRACE	1-10%
LITTLE	10-20%
SOME	20-35%
AND	35-50%

SOIL CLASSIFICATION CHART (Per ASTM D2487)

Criteria for Assigning Symbols and Group Names Using Laboratory Tests[A]				Soil Classification	
				Group Symbol	Group Name
COHESIONLESS SOILS More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 Sieve	Clean Gravels Less than 5% fines[C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3[E]	GW	Well-graded gravel[F]
			Cu < 4 and/or 1 > Cc > 3[E]	GP	Poorly graded gravel[F]
		Gravels with Fines More than 12% fines[C]	Fines classify as ML or MH	GM	Silty gravel[F,G,H]
			Fines classify as CL or CH	GC	Clayey gravel[F,G,H]
	Sands More than 50% of coarse fraction retained on No. 4 Sieve	Clean Sands Less than 5% fines[D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3[E]	SW	Well-graded sand[F]
			Cu < 6 and/or 1 > Cc > 3[E]	SP	Poorly graded sand[F]
		Sands with Fines More than 12% fines[D]	Fines classify as ML or MH	SM	Silty sand[G,H,I]
			Fines classify as CL or CH	SC	Clayey sand[G,H,I]
COHESIVE SOILS 50% or more passes the No. 200 Sieve	Silts and Clays Liquid limit less than 50	Inorganic	PI ≥ 7 and plots on or above 'A' line[J]	CL	Lean clay[K,L,M]
			PI < 4 or plots below 'A' line[J]	ML	Silt[K,L,M]
		Organic	Liquid limit - oven dried < 0.75	OL	Organic clay[K,L,M,N]
			Liquid limit - not dried < 0.75		Organic silt[K,L,M,0]
	Silts and Clays Liquid limit 50 or more	Inorganic	PI plots on or above 'A' line	CH	Fat clay[K,L,M]
			PI plots below 'A' line	MH	Elastic Silt[K,L,M]
		Organic	Liquid limit - oven dried < 0.75	OH	Organic Clay[K,L,M,P]
			Liquid limit - not dried < 0.75		Organic silt[K,L,M,0]
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor			PT	Peat

A Based on the material passing the 3-in. sieve

B If field sample contained cobbles or builders, or both, add "with cobbles or boulders or both" to group name

C Gravels with 5 to 12% fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay

D Sands with 5 to 12% fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay

E $Cu = D_{60}/D_{10}$ $Cc = (D_{30})^2/(D_{10}*D_{60})$

F If soil contains ≥ 15% sand, add "with sand" to group name.

G If fines classify as CL-ML, use dual symbol GC-GM or SC-SM

H If fines are organic, add "with organic fines" to group name.

I If soil contains ≥ 15% gravel, add "with gravel" to group name.

J If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.

K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel" whichever is predominant

L If soil contains ≥ 30% plus No. 200, predominantly sand, add "sandy" to group name.

M If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name

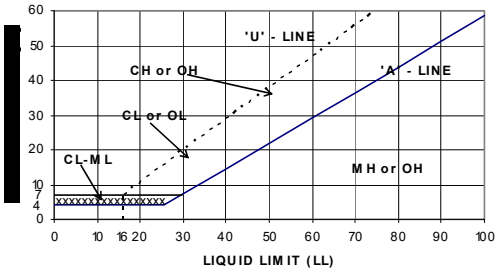
N PI ≥ 4 and plots on or above 'A' line.

O PI < 4 or plots below 'A' line.

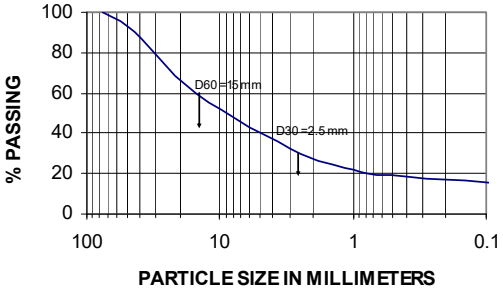
P PI plots on or above 'A' line.

Q PI plots below 'A' line.

For classification of fine-grained soils and fine-grained fraction of coarse-grained soils



SIEVE ANALYSIS



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NOTICE OF UPCOMING PROJECT

City of Kalamazoo Milham Park Phase 1 Improvements

Project Information:

This project consists of new construction of park amenities at Milham Park located at 607 East Kilgore Road, Kalamazoo, Michigan 49001. Currently the park has walking paths, playgrounds, and picnic areas on the Portage Creek. The Parks and Recreation Department would like to repair/install additional amenities such barrier free parking and overlook decks for viewing wildlife and fishing. The City has received a State of Michigan Land and Water Conservation Fund grant to assist with the budget for this project.

Plan Information:

Plans can be viewed online here: https://www.kzooparks.org/Home Click on the "News" tab in the middle of the page and look for the Milham Park Phase 1 Improvements new.

Public Review Meeting:

Plans and staff will be available for review and questions on Thursday, April 23rd at Milham Park, 607 Kilgore Road (main shelter), from 4:00 pm – 6:00 pm.

Project Questions/Comments:

Any project related questions or comments can be emailed to Patrick McVerry, Parks and Recreation Director at mcverryp@kalamazoocity.org

Project Schedule:

City of Kalamazoo Natural Features Protection Zoning Overlay Review Submittal: Approximately May 2026

- NFP Board Meeting: Approximately June 2026
- NFP Standards to be reviewed: Wetlands, Water Resources, Trees, Woodlands, and Natural Features Inventory

City of Kalamazoo Site Plan Review Submittal: Approximately May 2026

EGLE Joint Permit Application: Approximately May 2026

Construction Timeline: May 2027 – October 2027

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