AGENDA

CHARTER TOWNSHIP OF MERIDIAN

ENVIRONMENTAL COMMISSION – REGULAR MEETING

March 4th 2026 6:30 PM

1. CALL MEETING TO ORDER
2. ROLL CALL
3. PRESENTATIONS
4. CITIZENS ADDRESS AGENDA ITEMS AND NON-AGENDA ITEMS
5. COMMENTS FROM THE PUBLIC
6. COMMUNICATIONS
7. APPROVAL OF AGENDA
8. APPROVAL OF THE MINUTES –Jan 7th, 2026 REGULAR MEETING
9. NEW BUSINESS
   A. Wetland Special Use Permit – Hoskins Drain
   B. Resolution of Support for Meridian Township's FY27 CDS Grant Application
   C. Marshall Park Bioswale Update
   D. Commission Roster and Applications to join the Environmental Commission
10. UNFINSHED BUSINESS
11. REPORTS AND ANNOUNCEMENTS
    A. Staff
       - Green Grant Program 2026
    B. Liaisons:
       - Township Board
       - Planning Commission
       - Land Preservation Advisory Board
       - Brownfield Redevelopment Authority
       - Parks Commission
    C. Teams:
       - Energy Team
       - Green Team
       - ~~Food & Composting Team~~
       - Green Burial Team
    D. Haslett/Okemos High School
12. OTHER MATTERS AND COMMISSIONER COMMENTS
13. ADJOURNMENT

Individuals with disabilities requiring auxiliary aids or services should contact the Meridian Township Board by contacting: Township Manager Tim Dempsey, 5151 Marsh Road, Okemos, MI 48864 or 517.853.4258 - Ten Day Notice is Required.

Meeting Location: 5151 Marsh Road, Okemos, Ml 48864 Township Hall
Providing a safe and welcoming, sustainable, prime community.

CHARTER TOWNSHIP OF MERIDIAN
REGULAR MEETING ENVIRONMENTAL COMMISSION **–DRAFT-**
5151 Marsh Road, Okemos MI 48864-1198
517.853.4000, Township Hall Room
WEDNESDAY, JANUARY 7th , 2026, 7:00PM

PRESENT:	Chair Bill McConnell, Vice Chair Yu Man Lee Commissioners Richard Miksicek, Laura Belisle, Harrison Batten and Trustee Nickolas Lentz
ABSENT:	Commissioner Tom Frazier
STAFF:	Project Engineer Jack Hughes

1. CALL MEETING TO ORDER

   Chair McConnell called the January 7th, 2026, Township Environmental Commission meeting to order at 7:00 pm.

2. ROLL CALL

   Staff Engineer Hughes called the roll of the Commission.

3. PRESENTATION

   A. Wetland Education Signage – Emma Campbell

4. CITIZENS ADDRESS AGENDA ITEMS AND NON-AGENDA ITEMS

   None at this time.

5. COMMENTS FROM THE PUBLIC

   None at this time.

6. COMMUNICATIONS

   None at this time.

7. APPROVAL OF AGENDA

   Commissioner McConnell moved to approve the Agenda of the January 7th, 2025 Environmental Commission Regular meeting. Motion passed unanimously.

8. APPROVAL OF MINUTES

   Commissioner McConnell moved to approve the Minutes of the November 5th, 2025 Environmental Commission Regular Meeting, as Amended. Motion passed unanimously.

9. NEW BUSINESS

A. Bird City Discussion and Resolution

Commissioner Miksicek read a resolution in support of the Bird City Initiative. Commissioner Miksicek initiated the discussion by outlining the program's history, noting that it was launched by the National Audubon Society in early 2025 to promote bird-friendly municipal practices. He highlighted that five other Michigan communities have already achieved this status and noted that a local coalition (including representatives from Michigan Audubon, the Harris Nature Center, and township staff) has already begun the preliminary work.

Commissioner Miksicek emphasized that Meridian Township is an ideal candidate because many bird-friendly initiatives are already in place. These include the township's extensive nature preserves, the Land Stewardship Program, invasive species management, and an existing Dark Sky ordinance. Beyond conservation, the designation is expected to boost eco-tourism by attracting birdwatchers and fostering a community-wide mindset of environmental stewardship.

The Commission then focused on the logistics of the application fee and the formal motion. While there was discussion regarding whether the $200 fee should come from the Climate Sustainability Fund or Land Preservation Funds, Trustee Lentz assured the group that the township's leadership does not view the cost as an obstacle. Chair McConnell proposed an amendment to the resolution to clarify that the Environmental Commission is officially recommending that the Township Board adopt the resolution.

Chair McConnell moved to approve the Resolution of Support for the Bird City Initiative. Seconded by Commissioner Miksicek. Motion passed unanimously.

B. Resolution of Appreciation was read by Commissioner Batten commemorating Commissioner Peterson's service.

Commissioner Batten moved to approve the Resolution of Appreciation to Environmental Commissioner Cynthia Peterson as presented. Motion passed unanimously.

C. Approval of Meeting Dates for 2026

Staff Engineer Hughes proposed altering the meeting time from 7pm to 6:30pm. This was accepted for 2026.

Chair McConnell moved to approve the 2026 Meeting Dates for the Environmental Commission, as amended. Seconded by Commissioner Miksicek. Motion passed unanimously.

D. Commission Roster and Elections

Commissioner Batten clarified his reappointment date to be corrected on the presented Roster. There are two vacancies on current roster. Staff Engineer Hughes will look into previously submitted applications for these positions and bring them to the next meeting.

Chair McConnell then opened the floor for nominations for the roles of Chair and Vice Chair. He described the duties of Chair for those interested and gave an overview of the Environmental Commission's evolving role, noting that while the administrative duties are light and the public-facing aspects are generally positive, the group's core purpose has shifted significantly. Historically, the Commission spent much of its time on intensive wetland use permit applications involving complex engineering and public hearings. However, these applications have dropped off "precipitously" as the township has become more built out and developers have learned that avoiding wetlands altogether is a much faster path than navigating the "red tape" of multiple committee reviews.

Because the current ordinance is working so effectively that developers are self-regulating, Chair McConnell observes that recent agendas have become light and focus more on information sharing than actual deliberation. He suggested that the Commission's authority over wetland permits could either devolve to an administrative-staff level or return to a "Wetland Preservation Board" model that, like the Brownfield Redevelopment Authority, only meets when an active application exists. He urged the commissioners to think critically about how to best serve the township and ensure their time is spent on purposeful, high-impact work rather than meeting out of habit.

After some discussion about Chair support and meeting logistics, Vice Chair Lee and Chair McConnell decided to swap positions, electing Commissioner Lee as Chair and Commissioner McConnell as Vice Chair.

Chair McConnell moved to approve the slate appointment of new Chair and Vice Chair positions. Motion passed unanimously.

10. UNFINISHED BUSINESS

A. Brownfield Redevelopment Authority – Vacant Position available.

Vice Chair McConnell noted there was an email from Commissioner Frazier accepting the vacant position on the B.R.A.

Vice Chair McConnell moved to approve the Appointment of Commissioner Frazier to the Brownfield Redevelopment Authority. Seconded by Chair Lee. Motion passed unanimously.

11. REPORTS AND ANNOUNCMENTS

A. Staff

Staff Engineer Jack Hughes provided an update on the Climate Sustainability Fund, clarifying that while unspent funds at the end of the year liquidate back into the general fund, they remain "earmarked" and accessible for formulated proposals. He reported that of the approximately $47,000 remaining at the end of 2025, $22,000 has been allocated to the Marshall Park Bioswales project. This initiative aims to address severe residential flooding through a holistic, "green" approach, using a series of shallow basins and emergent wetlands, rather than traditional concrete drainage systems. Hughes noted that the funding is critical for maintaining this natural approach, as it allows the township to avoid the standard concrete-heavy solutions typically favored by the Drain Commission.

Looking ahead, Hughes shared a "sneak preview" of the engineering designs for Marshall Park, which include three tiered basins that function like a mountain lake system to filter and transpire stormwater before it reaches Lake Lansing. While some aspects, such as paved pathways, are still being debated due to maintenance concerns, the project will prioritize native plantings and educational signage to explain the transition from a flood zone to a functional wetland. Hughes concluded by clarifying that it is the staff's responsibility to develop project proposals for the Environmental Commission's review, and he expects to present a more comprehensive list of cost-estimated sustainability projects at future meetings.

The commission discussed the Bioswale Project, focusing on the technical design, funding, and community outreach for it, as well as the status of the township's Green Grants program. Staff Engineer Jack Hughes clarified that the $22,150 currently listed in the budget is a dedicated expense for the project's design and engineering phase, rather than a construction earmark. The design utilizes a tiered basin system where the upper areas are intended to dry out relatively quickly for semi-usable green space, while the lower southeast basin will remain a perpetual emergent wetland. Commissioner Lee raised an important ecological concern regarding the new habitat potentially attracting wildlife like turtles and amphibians to a high-traffic road area; in response, Hughes agreed to investigate "eco-passages" or specialized culvert designs to mitigate road mortality.

The committee also addressed the need for proactive community engagement. Commissioners McConnell and Miksicek suggested that the Lake Lansing Advisory Board (LLAB) be used as a platform to notify residents about the project before construction begins, even though a formal public comment period is not legally required for these specific park improvements. Regarding the project's total cost, Hughes noted that a final estimate is still pending as the design is finalized, but the township expects to combine Climate Sustainability Funds with Local Road Program funds to cover the construction.

Finally, Staff reviewed the Green Grants program, noting that the $15,000 allocated for 2026 is a separate budget item from the climate fund. Several 2025 grants are currently being finalized and paid out. To prepare for the 2026 cycle, Staff has prepared an upcoming advertisement in the *Prime Meridian* magazine and township Website. Applications will be taken to the Environmental Commission for review and approval.

B. Liaisons

Trustee Lentz provided an update from the Township Board.

Trustee Lentz provided an update on the recent Township Board meeting, which focused primarily on the ongoing challenges of securing a new location for the Senior Center. Despite various attempts to partner with private building owners, a suitable facility has yet to be found. The situation is increasingly urgent because a $5 million state grant (funded via federal ARPA dollars) is set to expire at the end of September 2026. The township is currently exploring whether this timeline can be extended or if alternative facilities can be utilized, especially since the current Senior Center will only remain available for another two and a half years. Lentz noted that a previous millage failure has limited the township's ability to construct a new building from scratch, leaving staff to search for existing spaces that meet the center's specific size requirements.

In addition to the Senior Center, the Board is refining its Township Board Goals and Values. Lentz

explained that the Board is distinguishing between "Values", broad principles like environmental protection, and "Goals," which are reserved for active, measurable projects. Finally, Lentz touched on the potential new housing development on Central Park Drive. While the project remains a major topic of local interest, it is currently in a "back-and-forth" stage between township staff and developers and has not yet returned to the Board for formal action.

Vice Chair McConnell provided an update from the Planning Commission.
He reported that the Planning Commission's November 17th meeting focused heavily on the proposed housing development along Central Park Drive. Following significant deliberation, the Commission ultimately passed a resolution recommending that the Township Board approve the project. This recommendation, however, comes with a substantial list of approximately twelve conditions offered by the applicant to mitigate local impact. These concessions include building height and unit count limitations, as well as enhancements to walkability and North-West directional connections to create a better buffer for the adjacent single-family homes. McConnell noted that the proposal drew some of the most "voluminous" public feedback the Planning Commission has received in recent memory, and the final decision now rests with the Township Board.

Chair Lee provided an update on the Land Preservation Advisory Board's November 12th meeting, highlighting several key infrastructure and conservation efforts. The board is currently reviewing a proposed township pathway through the Pike Crossing Preserve near Lake Lansing, as well as a potential parking lot at the ecologically sensitive Green Road entrance to Lake Lansing North; the board plans to relay its environmental concerns regarding the parking lot to Ingham County. Additionally, Stewardship Coordinator Emma Campbell provided a report on the local deer harvest, which had reached 82 by mid-November, and discussed a new initiative born from her talk with the Capital Area Audubon. This initiative focuses on replacing invasive shrubs like Autumn Olive with native species to ensure that local bird populations maintain a consistent food source as invasive species are removed throughout the township's preserves.

There was no update available from the Brownfield Redevelopment Authority.

Commissioner Miksicek provided an update on the Parks Commission's recent activities, highlighted by several community-driven projects and long-term planning efforts. Notably, residents have requested a small shelter at the Nancy Moore small dog park to protect elderly users and those with mobility issues from the elements, a request Director Wisinski is currently investigating. The Commission is also exploring the feasibility of a regulation-sized cricket field; however, finding the necessary six and a half acres has proven difficult, as the leading site at Meridian North Park is only half the required size and contains two emergent wetlands. Looking toward the future, the Commission is working with a consultant to develop a five-year Parks and Recreation Master Plan, which is a prerequisite for securing Michigan DNR grants.

In a move that aligns with the township's "Bird City" goals, the Commission approved an Eagle Scout project by Nicholas Lydick from Haslett Troop 97. The project involves installing full-size wing profile cutouts of indigenous raptors along a pathway at the Harris Nature Center. This installation is slated for completion in Spring 2026 and may be dedicated in conjunction with World Migratory Bird Day events. Aside from these highlights, the Commission's remaining time was spent on routine budget discussions and general event planning.

C. Teams

Commissioner Miksicek provided an update on the Energy Team's recent focus, noting that the Ingham County Office of Sustainability is currently finalizing listening sessions to develop a County Sustainability Action Plan, which is expected to be completed in 2026. A significant portion of the discussion centered on a proposed $10 billion, 1.4GW AI data center in Saline Township. Despite strong local opposition and an initial rejection of rezoning, the township has settled with developers, and the Michigan Public Service Commission approved the facility in late December. Miksicek highlighted concerns regarding the project's impact on electrical rateplayers, particularly Detroit Edison customers, and noted that while construction is slated for early 2026, reports from Axios suggest potential funding uncertainties for the massive undertaking. He suggested that the Environmental Commission should remain attentive to the complex issues surrounding large-scale data centers in case similar projects are ever proposed for the Greater Lansing area.

Staff Engineer Hughes provided a brief update from the Green Team as they meet to finalize their schedule of events for the 2026 season.

D. Haslett/Okemos High School

Commissioner Batten reported on recent student-led environmental initiatives, highlighting a highly successful Sustainability Club field trip to the Kent County Waste and Energy Facility and Recycling Education Center in Grand Rapids. Batten noted that the experience was particularly educational, offering a first-hand look at how trash incineration reduces landfill volume and generates usable heat energy. On the elementary level, the student-run "Earth Club" has launched effectively with hands-on activities, such as a simulation demonstrating the difficulty of cleaning up oil spills. Future plans for the younger students include creating "wetlands in a bottle" and conducting invasive species walks on local school grounds.

Looking ahead, the District Sustainability Team is meeting to coordinate the Green School Certification process through the Michigan Department of Environment, Great Lakes, and Energy (EGLE). To overcome past administrative hurdles like time constraints and deadlines, the team plans to assign student liaisons to help each school complete their applications. Additionally, efforts are underway to build a stronger web presence to showcase and promote the various environmental activities occurring across the school district.

E. Other

No reports.

12. OTHER MATTERS AND COMMISSIONER COMMENTS

None at this time.

13. ADJOURNMENT

The meeting adjourned at 9:02pm.

WETLAND SPECIAL USE PERMIT - HOSKINS DRAIN

Table of Contents

1. Project Description – ICDC Permit Application

Project Description

Project Summary (Purpose and Use): Provide a summary of all proposed activities including the intended use and reason for the proposed project

The Hoskins Drain was legally established in 1886. A petition was filed by the homeowners of Champion Woods Condominiums which was found necessary by an independent Board of Determination on November 18, 2020. While numerous flooding complaints were received and verified by the Ingham County Drain Commissioner (ICDC), the focus of the complaints was associated with the duration of flooding during larger storms which has negatively impacted the natural area surrounding the subdivision, specifically the loss of trees within the surrounding forested wetlands.

In order to address these concerns, the ICDC has reviewed numerous options that has led to a project design that provides the flooding relief necessary while maintaining wetland hydrology. Much of the proposed project includes culvert installation and replacement. Specifically, the ICDC is proposing the following:

Area A

- Excavate a total of 1171 cubic yards of material from 0.586 acre of reed canary grass wetlands to create four ponds adjacent to the route and course of the Hoskins Drain. All spoil material will be removed from wetlands and placed on adjacent uplands.

Area B:

- Remove existing 186-foot long, 12-inch diameter vitrified clay pipe (VCP) culvert and replace with 61-feet of 12-inch and 125-feet of 24-inch diameter smooth lined corrugated polyethylene pipe (SLCPP). Removal and replacement will be accomplished from upland with placement of a total of 11.6 cubic yards of fieldstone riprap within 0.007 acre of wetland.
- Place a control structure (within uplands) that maintains the same wetland hydrology that currently exists, but provides an overflow at the 10-year storm event and higher.

Area C

- Remove existing 163-foot long, 12-inch diameter SLCPP and replace with 17 feet of 12-inch and 146 feet of 18-inch diameter SLCPP. Removal and replacement will be accomplished from upland with excavation of 2.2 cubic yards of material from 0.004 acre of wetland to set culvert and place a total of 7 cubic yards of fieldstone riprap within 0.004 acre of wetland. Note the area of impact is included in area of riprap placement.
- Place a control structure (within uplands) that maintains the same wetland hydrology that currently exists, but provides an overflow at 10-year storm event and higher.

Area D

- Install a new 68 foot long, 48-inch diameter CMP under Bennett Road as an emergency overflow spillway. Installation requires excavation of 0.554 cubic yards of material from 0.0005 acre and wetland to set the pipe. Approximately ½ of the pipe will be buried to provide a natural bottom for animal movement.

- Install two culverts, one 12-inch diameter, 120 feet long SLCPP, and the other includes 92 feet of 12-inch RCP and 178.5 feet of 15-inch diameter SLCPP. The culverts are located within upland lacking any part 301 or 303 impacts. The purpose of the culverts is to restore a flow path of the Hoskin's Drain during storm events.

Area A involves re-construction of the Drain at the same location, width and depth of the original drain constructed Circa 1900. The drain is proposed to be maintained within Area A up to Herron Creek. This activity is considered exempt from EGLE permitting. However, given the unstable soils in this area (organics under a large monotypic stand of reed canary grass), additional excavations are proposed to relieve pressure on the banks of the drain, and minimize slumping of the drain banks. For this reason, we have shown portions of the Drain in relation to the proposed ponds for EGLE review.

While pipe diameter and inverts may vary in Areas B and C, both structures are designed to maintain wetland hydrology and move water from larger storm events to reduce duration above the 10-year storm event. The 12-inch diameter invert at both Areas A and B will be replaced with a 12-inch diameter pipe at the same inverts that currently exist. Each control structure is fitted with an internal weir plate featuring an orifice opening. The orifice is designed so that during the 10-year event the maximum water surface elevation and the maximum rate of discharge match existing conditions. Existing conditions were analyzed using UASCE's HEC-HMS and standard orifice calculations were employed to correctly size the openings. The top of the weir is set at the maximum water surface for the 10-year event. Beyond that, water can spill over the top of the plate and through the grated cover if it overtops the control structure during extreme events. The larger diameter discharge pipes downstream of the control structures are larger to accommodate flows from events greater than the 10-year recurrence interval. They will not, however, cause an increase of flow between the inlet and the control structure – they only expedite flow after it has passed the weir plate and its restriction orifice.

Area D encompasses the area from Bennett Road to Sophiea Drive where the Drain route and course travels through a series of ponds and wetlands. One overflow culvert is proposed beneath Bennett Road near the existing Hoskin's Drain culvert (replacement under exemptions). The proposed culvert has been sized a large as possibly (given cover requirements) to serve a dual purpose; as an emergency overflow during storm events and a corridor for animals, primarily amphibians and reptiles, to access the north and south ponds (as well as creating a corridor for movement throughout the Hoskins Drainage District).

From Bennett Road, the Drain route and course travels through three (3) wetland/pond complexes. Within this area, the ICDC proposes to construct two culverts, creating a drain flow path during storm events. The invert of each culvert is set above existing water and wetland elevations maintaining existing wetland hydrology, and eliminating any direct or indirect wetland impacts

In addition to drainage needs, the ICDC contacted David Mifsud of Herpetological Resource and Management, LLC (HRM) to assess the portions of the drainage district near and where our work is proposed, and within adjacent areas including the Silverleaf development. The summary of findings from the 2022 pre-restoration assessments include:

> *HRM documented the presence of twelve (12) herpetofauna species, including six (6) amphibians (Eastern American Toad, Green Frog, Northern Leopard Frog, Wood Frog, Eastern/Cope's Gray Treefrog, and Northern Spring Peeper) and six (6) reptiles (Eastern Garter Snake, Eastern Milk*

Snake, Northern Brown Snake, Northern Red-bellied Snake, Midland Painted Turtle, and Eastern Snapping Turtle).

Based on current and anticipated habitat conditions, potential rare species include the state special concern Blanding's Turtle and Butler's Garter Snake. Additional potential species within the project area include Bullfrog, Midland Chorus Frog, Blue-spotted Salamander, Unisexual Salamander, Spotted Salamander, Eastern Tiger Salamander, Eastern Red-backed Salamander, Northern Ribbon Snake, Northern Water Snake, Blue Racer, Eastern Hog nosed Snake, and Eastern Musk Turtle.

Hoskins Drain currently supports moderate herpetofauna diversity pre restoration.

Restoration has the potential to greatly improve herpetological community composition and distribution as well as overall ecosystem function within the Hoskins Drain project while increasing water quality, stormwater capacity, and conveyance.

Pre-restoration data collected by HRM in 2022 will provide valuable ecological baselines for comparison to future post-restoration survey data.

Based on HRM's assessment, and advice from HRM on project plans, we expect that the stability ponds proposed within Area A, and the drain maintenance itself will provide additional habitat that will benefit herpetofauna (including Blandings Turtle) in addition to helping stabilize the Drain. HRM also provided advice with respect to the overflow culvert at Bennett Road, where turtle mortality occurs as they attempt to cross Bennett Road. The existing Hoskin's Drain culvert is continuously full with water prohibiting use as a crossing under the road. Similarly, the replacement culvert (replaced under exemptions) will also maintain some water within the culvert. However, the overflow culvert is set at an elevation that would provide for dry or saturated conditions providing an avenue for movement under Bennett Road, and access to a corridor through the drainage district. Plans will also include movement barriers, within upland, that block access to the road and direct animal movement to the culvert. HRM's Hoskins Drain and Bennett Road reports are attached to this permit application.

Project Construction Sequence, Methods, and Equipment: Describe how the proposed project timing, methods, and equipment will minimize disturbance from the project construction, including but not limited to soil erosion and sedimentation control measures.

PEM to Revise

- Prep for access (portions in frozen conditions)
- Tree removal
- Install soil erosion control BMP's
- Sawcut and remove asphalt pathway (Area B)
- Remove fence (Area C)
- Remove existing culverts and place new culverts and end sections

- Place filter fabric and riprap
- Repave asphalt pathway (Area B)
- Re-install or replace fence (Area C)
- Stabilize all raw areas with seeding
- Remove all soil erosion measures

Project Alternatives: Describe all options considered as alternatives to the proposed project, and describe how impacts to state and federal regulated waters will be avoided and minimized. This may include other locations, materials, etc.

Alternatives considered for Area A involved assessing whether or not the ponds will be included. The decision to include them provides two benefits.; longer term drain bank sustainability and additional habitat within what is now a large monotypic stand of reed canary grass. These are anticipated benefits without negative wetland impacts. It should also be noted that the reed canary grass wetland is maintained by flood waters from Herron Creek, which will not be altered.

Within Areas B and C, numerous alternatives are available to accomplish the project purpose to reduce flooding and provide for drain flow to its outlet at Herron Creek. The “do nothing” alternative was immediately rejected in 2020 when an independent Board of Determination found the project necessary requiring action under the Drain Code. In addition, doing nothing does not address the flooding or connection concerns.

Additional alternative considered included lower invert elevations and water control structures with lower weirs would eliminate the flooding and connectivity concerns. This was rejected due to the negative impacts on wetland hydrology throughout the project area.

The remainder of alternatives considered looked at altering invert elevations, pipe diameter, and use of water control structures through hydraulic modeling. In order to address the project purpose while maintaining wetland hydrology, the ICDC has chosen the proposed alternative that maintains wetland hydrology as “status quo” while providing “excess” water (above a 10-year storm) to move downgradient incrementally at each control structure and culvert invert.

The original petition addressed the loss of trees within the wetland associated with Champion Woods Subdivision. While a large portion of the trees have already been lost due to flooding, the proposed project will reduce the duration of water within the forested area above the 10-year storm event, providing more suitable forested wetland hydrology.

Alternatives for Area D focused on maintaining wetland hydrology while providing a corridor for animal movement (while still accomplishing the project purpose of drain connection and flow during storm events). The chosen alternative avoids wetland impacts to the extent possible with minimal impacts for one overflow culvert installation.

All spoils from the project will be removed from the wetland and stabilized on upland. Construction will be completed in frozen conditions or on construction mats to avoid temporary impacts and work will otherwise be avoided during wet conditions.

Project Compensation: Describe how the proposed impacts to state and federal regulated waters will be compensated, OR explain why compensatory mitigation should not be required for the proposed impacts. Include amount, location, and method of compensation (i.e., bank, on-site, preservation, etc.)

Permanent impacts are minor (less than 0.012 acre) and temporary impacts are proposed that improve wetland habitat. Hydrology that supports up and down gradient wetlands will remain. While a designated drain is present on site, a defined channel is lacking and no stream impacts are proposed. Therefore, no compensatory mitigation is proposed or warranted.

2. Permit Application Response

Project Purpose and Drain Exemption – Area A Pools

1. *Please include the historic overhead and cross sections from 1900s as referred to in the project summary. This information will be necessary to determine if exemptions can be met.*

   The Hoskins Drain was established and constructed in 1886. The original Drain documents identify the location of the drain but do not show a specific width and depth (as is the case with many drains constructed over a century ago). The Hoskins Drain discharges into the Herron Creek Drain. The Herron Creek Drain petition projects in 1897 and 1952/1953 were consistent in setting the grade at the confluence with the Hoskins Drain at elevation 836.24 (NGVD 1929). This has been confirmed based on field investigations, the drain records, site conditions, and the visible location and size of the Drain as it sits today. The proposed restored profile for the Hoskins Drain between its confluence with the Herron Creek Drain and the existing tile/culvert approximately 1,220 feet upstream, and beyond along the Drain's centerline, is above the last depth and grade. Therefore, it is the ICDC's and the project engineer's opinion and position that the Drain is proposed at the same location as originally constructed, at or above the last established depth and grade as originally constructed and the proposed minimal width is less narrow than what was originally constructed. It is our opinion and position that the drain work to restore the profile proposed in the application is exempt from EGLE permit requirements. Copies of the original drain documents are attached.

2. *Provide more clarification regarding the definition of "additional excavations" needed for the Area A purpose on page 2 of the Supplemental Information document. Please also describe what pressure is currently present on the banks of the drain. Clarification is also needed for how creation of pools in Area A will increase stabilization of the drain.*

   "Additional Excavations" refers to construction of the ponds proposed along the Hoskins Drain, as shown in the project plans.

   The soil within the area of the drain, and proposed pools, is classified as Houghton Muck, which is organic and unstable. When soils are unstable, they are more prone to movement caused by adjoining minimal soil pressure, the water table rise and fall, and the freeze thaw cycle. The proposed pools create areas of negative space within which the minimal soil pressure equals zero. The pool locations near the drain also reduce pressure on the banks of the drain from fluctuating water levels and freeze/thaw. Soil pressure is simply the weight of the soil, which in the case of muck soil, causes the soil to slough laterally into the channel. The purpose of the pools is not to stabilize the existing banks of the drain, which is currently a shallow grassed (reed canary grass) swale as the banks no longer exist. The purpose is to provide stability to the banks of the newly maintained drain, once the project is complete.

3. *Will water be pre-treated according to water quality standards before entering regulated wetland?*

   We are not sure what water you are referring to. New untreated stormwater is not proposed to enter the drain or wetland. The project, as proposed is the result of many months of review, assessment and planning focused on addressing the complaints of the petition while maintaining existing wetland hydrology. Any new developments that may request or require new stormwater to enter this system will be held to ICDC water quality standards; something the County takes seriously.

4. *Also provide more information on how the proposed pools will improve the surrounding habitat.*

   To the project team, including StreamsideEco, this seems self-evident. Reed canary grass (*Phalaris arundinacea*), is a highly invasive plant species that negatively impacts plant (and animal) species by reducing native plant species abundance and richness as well as the use of the area by animals. This is exactly what has occurred in Area A. Introduction of diverse topography and establishing open water provides additional habitat, particularly for herpetofauna. Herpetological Resource and Management, LLC (HRM) has been part of this project from the beginning, helping the County find ways to increase connectivity and usable habitat within areas possible given the constraints and needs of the project. Two of their reports were submitted with the application. A third report from HRM is attached addressing Area A.

<u>Project Purpose – Scope</u>

5. *Please confirm the boundary of the project, it looks like areas outside of the proposed project were included in the wetland delineation report.*

   The project activities are as shown on the plans submitted.

6. *Additionally, clarify whether the wetland ponds crossed in area D of the project will be dredged.*

   The ponds are not proposed to be dredged. Excavations necessary for culvert installation are detailed in the permit application.

<u>Project Purpose – Flooding</u>

7. *Please include petition information for flooding issues in residential development.*

   The petition shows two complaints which included back yard flooding (within wooded wetlands) to the point that the overstory was dying. Initial reviews and project designs began to focus on reducing hydrology within the wooded wetland to provide an environment for wetland tree survival. However, after a number of pre-application meetings with EGLE, it was determined that reducing wetland hydrology may be a difficult permit to obtain. In

addition, tree mortality became significant the following year and project designs focused on maintaining existing wetland hydrology but reducing duration after the 10-year storm.

With respect to complaints, we have attached the minutes and a letter read into the record of the Board of Determination that found the project necessary.

Alternative Analysis - Pools

8. *Has it been considered to utilize upland to create floodplain storage and increase habitat diversity? Or to create floodplain shelves instead of pools? This would limit overall wetland impacts as this area is already acting as storage for flood waters.*

   As stated, we do not take the opinion that the pools proposed in Area A represent negative wetland impacts. Relocating the pools to upland does not diversify a monotypic stand of reed canary grass and relocation away from the drain maintenance does not provide bank stability.

9. *Clarify what you mean by "bank sustainability" in the Area A purpose paragraph on page 2 [sic] of Supplemental info document.*

   See number 2 in Project Purpose and Drain Exemption – Area A Pools above.

Wetland Mitigation Required

10. *EGLE has determined that wetland mitigation will likely be required for the project as proposed. Mitigation can be waived if the proposed impacts to wetlands are less than 1/3rd acre (0.33 acres) and there is no reasonable opportunity to mitigate. However, if there is a mitigation bank with available credits in the watershed/ecoregion, that is considered a reasonable opportunity to mitigate. Please provide a conceptual plan for purchase of mitigation bank credits as compensatory mitigation. More information on Mitigation Banks can be found at the following link: https://www.michigan.gov/egle/0,9429,7-135-3313_3687-10426--,00.html*

    As stated previously, the proposed pools do not represent a negative impact to wetlands and we will not be proposing wetland mitigation.

Resources Impacted - Floodplain

11. *After further review, it has been determined that floodplain is in your project area. Please select this resource from the list and fill out associated tables.*

    Part 31 Rules, R 323.1312 clearly states the Drain Commissioner operating under the Drain Code is exempt from obtaining a floodplain permit from EGLE. We therefore will not be applying for a floodplain permit.

Wetland Table - Impacts

12. *As shown in the stated project purpose, several pools will be made in Section A which equate to about 0.56 ac of permanent wetland impact, as spoils from the wetland will be removed to permanently create pools. Please revise this table to reflect this.*

    While we do not agree this is a permanent impact. We will alter the table as requested.

Overhead Plans

Please incorporate the following into your overhead plans:

1. *Show spoils placement on overhead plans*

   We are in the process of securing an upland disposal site and the location may be the responsibility of the chosen contractor after bids are let. We will provide the location (s) when identified and request that this item does not hold up processing of this permit application.

2. *Show on plans existing culverts with dimensions demonstrating that they meet exemptions that will be replaced in place in kind*

   Sheets C2.1 and C2.2 show existing dimensions with respect to length, diameter and locations. We have revised Sheet C2.4 to show the culvert (originally shown as a thin line) and added a note with respect to length.

3. *Show wetland boundaries for Area A*

   The area in the plan view for Sheet C-2.0 was extended to include the limited wetland delineation to the east of Area A and wetland labels were included to indicate that the work in this area is entirely in wetlands.

4. Show floodplain boundaries

See Number 11 above

Cross Section Plans

Please incorporate the following into your cross section plans:

1. Show proposed work and grading on south side of Bennett Road

We are unsure of the request. The final ground elevations are proposed to be the same as currently existing elevations. Calculations for the work were submitted in the application.

2. Describe dimensions of culvert that will be replaced for areas B and C

The dimensions of the culvert that will be replaced for areas B and C are shown on the plan profile and stated in the application.

3. Pool cross sections need to be revised, its showing several extra feet of dredge that is not accounted for.

Plans have been revised and are attached.

4. Show all proposed riprap stabilization for outfalls. currently only two outfalls are proposing riprap.

The riprap shown in the plans is what we are proposing.

5. Show proposed water levels in all pools and existing groundwater level.

Water levels in the pools are expected to be variable. While they will retain water for some time after a wet weather event, and likely some groundwater, there is no expectation that they will maintain permanent pool elevations.

Groundwater levels also vary but are generally high - expected to be within 0-18 inches from the surface based on site observations). Detailed information cannot be provided without a lengthy (and likely expensive) soils and groundwater study.

KML File

Please include a KML shape file for the proposed drains.

There are no proposed drains. This is an existing drain established in 1886. We are unclear as to this request. Please provide more specifics in terms of what your intended use is and what areas you would like to see specifically, so we can tailor it to your needs.

Notes

Wetland Project Information and Impacts > If your project includes EXCAVATION/DREDGE IN WETLAND then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:

Excavation table- Unclear row labels. Clarify what the last three rows signify and what impacts these are.

Area D d/s = Downstream face of critter/overflow culvert (n. side of Bennett Road) above OHWM

Area D u/south = upstream face of critter/overflow culvert (s. side of Bennett Road) above OHWM

Area D culvert = the volume of the culvert barrel below the OHWM, all the way through the barrel.

Note: "Area D u/south" is a typo and should read "Area D u/s".

u/s and d/s signifying upstream and downstream respectively.

3 EGLE ICDC Joint Permit Application

Digital EGLE/USACE Joint Permit Application (JPA) for Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, Environmental Areas, High Risk Erosion Areas and Critical Dune Areas

version 1.44

(Submission #: HQ8-478E-4KYWH, version 3)

Details

Submission ID	HQ8-478E-4KYWH
Status	Draft

Fees

Fee	$500.00
Payments/Adjustments	($500.00)
Balance Due	$0.00 (Paid)

Form Input

Instructions

Click hereto down a copy or print these instructions (recommended).

Contact Information

Applicant Information (Usually the property owner)

First Name	Last Name
Patrick	Lindemann

Organization Name
Ingham County Drain Commissioner

Phone Type	Number	Extension
Business	5176768395	

Email
drainoffice@ingham.org

Address

707 Buhl Avenue

Mason, MI 48854

Is the Applicant the fee simple property owner? (Does the applicant have full and permanent ownership of the parcel, as well as any buildings on that parcel?)
Yes

Has the applicant hired an agent or cooperating agency (agency or firm assisting applicant) to complete the application process?
Yes

Agent Contact

First Name	Last Name
Michael	Nurse

Organization Name
StreamsideEco, LLC

Phone Type	Number	Extension
Mobile	5867649366	

Email
mnurse@streamsideeco.com

Address

3940 Timpson Ave SE

Lowell, MI 49331

Upload Attachment for Authorization from Agent
Letter of Authorization 11.21.24.pdf - 11/21/2024 01:30 PM
Comment
NONE PROVIDED

Are there additional property owners or other contacts you would like to add to the application?
Yes

Additional Contact Information (1 of 1)

Contact Role(s)
Consultant

Contact Information

Prefix
NONE PROVIDED

First Name	Last Name
Alan	Boyer

Title
Engineer

Organization Name
PEA Group

Phone Type	Number	Extension
Mobile	5172025629	

Email
aboyer@peagroup.com

Address
2379 Woodlake Drive
Suite 480
Okemos, MI 48864

Project Location

EGLE Site Reference Number (Pre-Populated)
-1374691956272953151

Project Location
42.70373864304243,-84.45203091507909

Project Location Address
Sophiea Parkway
Okemos, MI 48864

County
Ingham

Is there a Property Tax ID Number(s) for the project area?
Yes
Please enter the Tax ID Number(s) for the project location
Area A - 33-02-02-29-251-010 Area B - 33-02-02-29-402-100

Is there Subdivision/Plat and Lot Number(s)?
No

Is this project within Indian Lands?
No

Local Unit of Government (LUG)
Okemos CDP

Directions to Project Site
See Site Location Map

Background Information

Has the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and/or United States Army Corps of Engineers (USACE) conducted a pre-application meeting/inspection for this project?
Yes

Provide the date of the pre-application meeting/inspection
09/29/2023

Pre-application File Number:
HPG-3FQ8-1GFM5 HPW-HXTB-AQ1FC

EGLE and/or USACE staff person involved in the pre-application meeting/inspection:
Carol Valor, Claire Watts, Jeff Pierce

Has the project scope or design changed since the pre-application meeting/inspection?
Yes

Please explain what has changed. Attach additional documentation as necessary.
See attached plans. Initial and follow-up pre-app meetings showed conceptual designs only. Project has changed to maintain existing wetland hydrology.

Additional Documentation

> PreAppLetter; Hoskins Drain; HPW-HXTB-AQ1FC.pdf - 11/19/2024 04:21 PM
> PreAppLetter 301 303 (WORD).pdf - 11/19/2024 04:23 PM
> **Comment**
> Two pre-application letters from EGLE attached.

Has the EGLE completed a Wetland Identification Program (WIP) assessment for this site?
No

Environmental Area Number (if known):
None

Has the United States Army Corps of Engineers (USACE) completed either an approved or preliminary jurisdictional determination for this site?
No

Were any regulated activities previously completed on this site under an EGLE and/or USACE permit?
No

Have any activities commenced on this project?
No

Is this an after-the-fact application?
No

Are you aware of any unresolved violations of environmental law or litigation involving the property?
No

Is there a conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property?
No

Are there any other federal, interstate, state, or local agency authorizations associated with this project?
No

Permit Application Category and Public Notice Information

Indicate the type of permit being applied for.
Individual Permit for all other projects

This type of permit application requires that you include contact information for the adjacent landowners to this project. If you are only entering in a small number of bordering parcel owners contact information, please select "Enter list of recipients". If there is a rather large number of affected property owners such as a project that significantly affects lake levels, please upload a spreadsheet of the property owners. Please include names and mailing addresses.
Upload a list.

Uploads/Attachments

Adjacent Property Owners_Hoskins.pdf - 11/20/2024 06:24 PM

Comment

List attached

Project Description

Project Use: (select all that apply - Private, Commercial, Public/Government/Tribal, Receiving Federal/State Transportation Funds, Non-profit, or Other)

Public/Government/Tribal

Project Type (select all that apply):

Drain - County

Project Summary (Purpose and Use): Provide a summary of all proposed activities including the intended use and reason for the proposed project.

See Attached

Project Construction Sequence, Methods, and Equipment: Describe how the proposed project timing, methods, and equipment will minimize disturbance from the project construction, including but not limited to soil erosion and sedimentation control measures.

See Attached

Project Alternatives: Describe all options considered as alternatives to the proposed project, and describe how impacts to state and federal regulated waters will be avoided and minimized. This may include other locations, materials, etc.

See Attached

Project Compensation: Describe how the proposed impacts to state and federal regulated waters will be compensated, OR explain why compensatory mitigation should not be required for the proposed impacts. Include amount, location, and method of compensation (i.e., bank, on-site, preservation, etc.)

See attached

Upload any additional information as needed to provide information applicable to your project regarding project purpose sequence, methods, alternatives, or compensation.

Supplimental Information_Hoskins.pdf - 07/08/2025 08:14 AM

Comment

NONE PROVIDED

Resource and Activity Type

SELECT THE ACTIVITIES from the list below that are proposed in your project (check ALL that apply). If you don't see your project type listed, select "Other Project Type". These activities listed require additional information to be gathered later in the application.
Culvert- Wetland Equalizer Only
Other Project Type

The Proposed Project will involve the following resources (check ALL that apply).
Wetland

Major Project Fee Calculation Questions

Is filling of 10,000 cubic yards or more proposed (cumulatively) within wetlands, streams, lakes, or Great Lakes?
No

Is dredging of 10,000 cubic yards (cumulatively) or more proposed within streams, lakes, or Great Lakes? (wetlands not included)
No

Is new dredging or adjacent upland excavation in suspected contamination areas proposed by this application?
No

Is a subdivision, condominium, or new golf course proposed?
No

Wetland Project Information and Impacts

Has a professional wetland delineation been completed for this site?
Yes

Attach a copy of wetland delineation data form(s), and show all wetlands on the site plans.

Hoskins Drain Wetland Delineation Report_Upper Reach.pdf - 06/03/2025 08:20 PM
Hoskins Drain Wetland Delineation Report_Lower Reach.pdf - 06/03/2025 08:20 PM
Comment
NONE PROVIDED

Total acres of wetland affected by this project.

Category	Affected area (acres)
Permanent	0.0598
Temporary	0
	Sum: 0.0598

Is filling or draining of 1 acre or more (cumulatively) of wetland proposed?
No

Select all wetland types that will be affected by this project:
Emergent
Scrub-shrub

If your project includes placing fill in wetland then select the proposed activities from the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:
Riprap

Complete this table for projects involving Fill. Enter each activity/ location that corresponds with each activity selected in the previous question and enter the dimensions. Activities may be entered in one line of the table if they occupy the same impact footprint and cannot be broken out separately (Example: Activity - Driveway and Riprap slope). Multiple activities in different locations should be listed on different lines of the table.

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Area B	20	15.75	1	315	315	12	*NONE PROVIDED*
Area C	19	9.9	1	188.1	188.1	7	*NONE PROVIDED*
				Sum: 503.1	Sum: 503.1	Sum: 19	Sum: NaN

Source of Fill Material:
Off-site
Please Describe
Rip rap to be brought in from commercial source.

Type of Fill.
Other: Only Fieldstone Rip Rap fill is proposed

Type of riprap
Field stone

Will material be installed under the riprap?
Yes

Type of material installed under riprap:
Filter fabric

Select from the following list for Excavation/Dredge Activities (if your proposed project is primarily a structure enter the impact as a structure. Only enter an impacted area in one of the impact tables in one impact section):
Excavation (wetlands)

If your project includes EXCAVATION/DREDGE IN WETLAND then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (sq. feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Area A 1	134.4	27.6	1.2	3709.44	4451.328	165	3831.75
Area A 2	252	31	1.75	7812	13671	506	7853.8
Area A 3	251.9	29.6	1.4	7456.24	10438.736	387	7317.0
Area A 4	252.6	24.2	0.5	6112.92	3056.46	113	6512.4
Area C	19	9.9	1.25	188.1	235.125	9	*NONE PROVIDED*
Area D d/s	4	5.19	0.696	20.76	14.44896	1	*NONE PROVIDED*
Area D u/south	4	.598	.156	2.392	0.373152	0	*NONE PROVIDED*
Area D culvert	68	1.57	2	106.76	213.52	8	*NONE PROVIDED*
				Sum: 25408.612	Sum: 32080.991112	Sum: 1189	Sum: 25514.95

Spoils Disposal

Will the excavation/dredge spoils be disposed of on site or off site?
On site

Describe any measures used to retain sediment:
Spoils to be placed on adjacent upland, seeded and stabilized.

If your project includes STRUCTURES IN WETLAND then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:
Culvert
Outfall Structure

Projects involving Structures:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (Sq. feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
All	0	0	0	0	0	0	*NONE PROVIDED*
				Sum: 0	Sum: 0	Sum: 0	Sum:

If your project includes Other Activities in WETLAND not listed in this section, then select from the proposed activities in the following list. If your activity in Wetland has not been listed in this Wetland Section, then select "Other" and enter a description of your activity. Only enter an impacted area in one of the impact tables (do not duplicate impact entries). If you selected a Fill, Excavation/Dredging, or Structure activity above in this section, but do not have an activity listed as Other, then select None of the Above for this question.
None of the above
Structure Removal (except dam removal)

Is Wetland Mitigation being proposed as part of this proposed project?
No
Explain why no mitigation is proposed.
Totals permanent wetland impacts are limited to 0.012 acre. Project design maintains existing wetland hydrology and 0.586 acre of the impact is part of a wetland enhancement.

Intake or Outfall Structures

Is the intake structure associated with an authorized outfall structure?
Yes

Number of intakes or outfalls:
4

Pipe Description

Unique Identifier	Pipe Diameter (inches):	Invert Elevation:
Area B Intake	12	842.45
Area B Outfall	24	842.30
Area C Intake	12	850.00
Area C Outfall	18	847.56
Area D Intake Bennett Rd Overflow Culvert	48	852.2
Area D Outfall Bennett Rd Overflow Culvert	48	852.2
Area D Intake south	12	854.65
Area D Outfall south	12	854.65
Area D Intake North	15	855.2
Area D Intake North	15	851.79

Type of intake or outfall stabilization:
Riprap

Has the water been treated (outfall only)?
Yes

Upload of Proposed Site Plans

Does your project include any one or more of the following: impacts to one or more acres of wetland, new construction of a breakwater or seawall with a total length more than 1,000 feet, a stream enclosure of greater than 300 feet in one or more segments, or relocation or channelization of a stream more than 1,000 feet in one or more segments? Also select "YES" for any other project that requires federal coordination.
No

If you have obtained a letter resulting from the USFWS Michigan Determination Key (DKey) tool for endangered species, please attach the letter below.

USFWS Information and Planning and Consultation (IPaC) system can be found online at https://ipac.ecosphere.fws.gov/.

USFWS Michigan Determination Key (DKey) Tool

Upload the Michigan DKey Output Letter

> DKey.pdf - 11/19/2024 01:32 PM
> **Comment**
> Any tree to be removed for access will be accomplished during the winter.

Required on all Site Plan uploads. Please identify that all of the following items are included on your plans that you upload with this application.

Site Plan Features	Existing and Proposed Plan Set
Scale, Compass North, and Property Lines	Yes
Fill and Excavation areas with associated amounts in cubic yards	Yes
Any rivers, lakes, or ponds and associated Ordinary High Water Mark (OHWM)	N/A
Exterior dimensions of Structures, Fill and Excavation areas associated with the proposed project	Yes
Dimensions to other Structures and Lot Lines associated with the project	Yes
Topographic Contour Lines from licensed surveyor or engineer when applicable	Yes

Upload Site Plans and Cross Section Drawings for your Proposed Project

20250703_EGLE_EXHIBITS_21-2532_Optimized.pdf - 07/08/2025 07:45 AM
20250917_EGLE_EXHIBITS_21-2532.pdf - 09/17/2025 08:20 PM

Comment

File 20250917 includes the revised plans based on the correction return.

Additional Required and Supplementary Documents

Hoskins Drain Herpetological Report 2022 HRM Final DRAFT Report (1).pdf - 07/08/2025 08:33 AM
Hoskins Drain Herpetological Habtiat Restoration Culvert and Barrier Summary HRM 1-8-25.pdf - 07/08/2025 08:33 AM
Hoskins Drain Turtle Summary HRM Revised 8-29-2025 (1).pdf - 09/17/2025 08:27 PM
Hoskins Drain Correction Return Response Narrative.pdf - 09/17/2025 08:51 PM
ORIGINAL DRAIN DOCUMENTS (1).pdf - 09/17/2025 08:51 PM
Proceedings of the Hoskins Drain Board of Determination.pdf - 09/17/2025 08:52 PM

Comment

The following has been uploaded based on the correction request:
1. Hoskins Drain Turtle Summary HRM Revised 8-29-2025 (1).pdf is the third HRM report addressing Area A.
2. Hoskins Drain Correction Return Response Narrative.pdf
3. Original Drain Documents as requested.
4. Board of Determination Document identifying complaints.

Fees

Individual Permit Fee:
+$500.00

Total Fee Amount:
$500.00

Is the applicant or landowner a State of Michigan Agency?
No

Attachments

Date	Attachment Name	Context	User
9/17/2025 8:52 PM	Proceedings of the Hoskins Drain Board of Determination.pdf	Attachment	Michael Nurse
9/17/2025 8:51 PM	ORIGINAL DRAIN DOCUMENTS (1).pdf	Attachment	Michael Nurse
9/17/2025 8:51 PM	Hoskins Drain Correction Return Response Narrative.pdf	Attachment	Michael Nurse
9/17/2025 8:27 PM	Hoskins Drain Turtle Summary HRM Revised 8-29-2025 (1).pdf	Attachment	Michael Nurse
9/17/2025 8:20 PM	20250917_EGLE_EXHIBITS_21-2532.pdf	Attachment	Michael Nurse
7/8/2025 8:33 AM	Hoskins Drain Herpetological Habtiat Restoration Culvert and Barrier Summary HRM 1-8-25.pdf	Attachment	Michael Nurse
7/8/2025 8:33 AM	Hoskins Drain Herpetological Report 2022 HRM Final DRAFT Report (1).pdf	Attachment	Michael Nurse
7/8/2025 8:14 AM	Supplimental Information_Hoskins.pdf	Attachment	Michael Nurse
7/8/2025 7:45 AM	20250703_EGLE_EXHIBITS_21-2532_Optimized.pdf	Attachment	Michael Nurse
6/3/2025 8:20 PM	Hoskins Drain Wetland Delineation Report_Lower Reach.pdf	Attachment	Michael Nurse
6/3/2025 8:20 PM	Hoskins Drain Wetland Delineation Report_Upper Reach.pdf	Attachment	Michael Nurse
11/21/2024 1:30 PM	Letter of Authorization 11.21.24.pdf	Attachment	Michael Nurse
11/20/2024 6:24 PM	Adjacent Property Owners_Hoskins.pdf	Attachment	Michael Nurse
11/19/2024 4:23 PM	PreAppLetter 301 303 (WORD).pdf	Attachment	Michael Nurse

Date	Attachment Name	Context	User
11/19/2024 4:21 PM	PreAppLetter; Hoskins Drain; HPW-HXTB-AQ1FC.pdf	Attachment	Michael Nurse
11/19/2024 1:32 PM	DKey.pdf	Attachment	Michael Nurse

4 - EGLE Permit

EGLE

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
WATER RESOURCES DIVISION
PERMIT

Issued To:

Patrick Lindemann
707 Buhl Avenue
Mason, Michigan 48854

Permit No:	**WRP047452 v.1**
Submission No.:	**HQ8-478E-4KYWH**
Site Name:	**33-Hoskins Drain- Okemos**
Issued:	**DRAFT**
Revised:	
Expires:	**DRAFT**

This permit is being issued by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division, under the provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); specifically:

- ☐ **Part 301, Inland Lakes and Streams**
- ☒ **Part 303, Wetlands Protection**
- ☐ **Part 315, Dam Safety**
- ☐ **Part 323, Shorelands Protection and Management**
- ☐ **Part 325, Great Lakes Submerged Lands**
- ☐ **Part 353, Sand Dunes Protection and Management**
- ☐ **Part 31, Water Resources Protection (Floodplain Regulatory Authority)**

EGLE certifies that the activities authorized under this permit are in compliance with the State Coastal Zone Management Program and certifies without conditions under the Federal Clean Water Act, Section 401 that the discharge from the activities authorized under this permit will comply with Michigan's water quality requirements in Part 31, Water Resources Protection, of the NREPA and associated administrative rules, where applicable.

Permission is hereby granted, based on permittee assurance of adherence to State of Michigan requirements and permit conditions, to:

Authorized Activity:

Dredge approximately 165 cubic yards of material from 0.087 acre of wetland to construct a 134-foot by 27.5-foot pond (Pond A) to a depth of 1.2 feet, by mechanical means.

Dredge approximately 506 cubic yards of material from 0.18-acre of wetland to construct a 252-foot by 31-foot pond (Pond B) to a depth of 1.75 feet, by mechanical means.

Remove existing 186 foot long by 1-foot-wide culvert from Impact Area B.

Install one 61 foot long, 1-foot diameter culvert recessed 2.5-inches and a 125-foot-long by 2-foot diameter smooth lined corrugated polyethylene pipe (SLCPP) culvert recessed 5-inches below grade. Place 12 cubic yards of riprap at one end of culvert in wetland.

Remove existing 163-foot-long by 1-foot-wide culvert from Impact Area C. Install a 17-foot-long, 1-foot diameter, culvert recessed 2.5 inches and a 146- foot-long by 1.5-foot diameter SLCPP, recessed 3.5 inches below grade. Excavate 9 cubic yards of wetland material to set culvert and place 7 cubic yards of riprap at one end of the culvert in wetland.

Impact Area D will have two culverts placed in upland discharging to separate ponds. Install a 68-foot-long by 48-inch- diameter, wetland equalization culvert recessed 24-inches below the bed beneath Bennett Road. Excavate 9 cubic yards of wetland material to set culvert and place 8 cubic yards of fill below OHWM for wetland equalization culvert.

All work shall be completed in accordance with the approved plans and specifications of this permit.

Waterbody Affected: Hoskins Drain
Property Location: Ingham County, Meridian Township, Town/Range/Section 04N01W29

Authority granted by this permit is subject to the following limitations:

A. Initiation of any work on the permitted project confirms the permittee's acceptance and agreement to comply with all terms and conditions of this permit.
B. The permittee, in exercising the authority granted by this permit, shall not cause unlawful pollution as defined by Part 31 of the NREPA.
C. This permit shall be kept at the site of the work and available for inspection at all times during the duration of the project or until its date of expiration.
D. All work shall be completed in accordance with the approved plans and specifications submitted with the application and/or plans and specifications attached to this permit.
E. No attempt shall be made by the permittee to forbid the full and free use by the public of public waters at or adjacent to the structure or work approved.
F. It is made a requirement of this permit that the permittee give notice to public utilities in accordance with 2013 PA 174 (Act 174) and comply with each of the requirements of Act 174.
G. This permit does not convey property rights in either real estate or material, nor does it authorize any injury to private property or invasion of public or private rights, nor does it waive the necessity of seeking federal assent, all local permits, or complying with other state statutes.
H. This permit does not prejudice or limit the right of a riparian owner or other person to institute proceedings in any circuit court of this state when necessary to protect his rights.
I. Permittee shall notify EGLE within one week after the completion of the activity authorized by this permit.
J. This permit shall not be assigned or transferred without the written approval of EGLE.
K. Failure to comply with conditions of this permit may subject the permittee to revocation of permit and criminal and/or civil action as cited by the specific state act, federal act, and/or rule under which this permit is granted.
L. All dredged or excavated materials shall be disposed of in an upland site (outside of floodplains, unless exempt under Part 31 of the NREPA, and wetlands).

M. In issuing this permit, EGLE has relied on the information and data that the permittee has provided in connection with the submitted application for permit. If, subsequent to the issuance of a permit, such information and data prove to be false, incomplete, or inaccurate, EGLE may modify, revoke, or suspend the permit, in whole or in part, in accordance with the new information.

N. The permittee shall indemnify and hold harmless the State of Michigan and its departments, agencies, officials, employees, agents, and representatives for any and all claims or causes of action arising from acts or omissions of the permittee, or employees, agents, or representative of the permittee, undertaken in connection with this permit. The permittee's obligation to indemnify the State of Michigan applies only if the state: (1) provides the permittee or its designated representative written notice of the claim or cause of action within 30 days after it is received by the state, and (2) consents to the permittee's participation in the proceeding on the claim or cause of action. It does not apply to contested case proceedings under the Administrative Procedures Act, 1969 PA 306, as amended, challenging the permit. This permit shall not be construed as an indemnity by the State of Michigan for the benefit of the permittee or any other person.

O. Noncompliance with these terms and conditions and/or the initiation of other regulated activities not specifically authorized shall be cause for the modification, suspension, or revocation of this permit, in whole or in part. Further, EGLE may initiate criminal and/or civil proceedings as may be deemed necessary to correct project deficiencies, protect natural resource values, and secure compliance with statutes.

P. If any change or deviation from the permitted activity becomes necessary, the permittee shall request, in writing, a revision of the permitted activity from EGLE. Such revision request shall include complete documentation supporting the modification and revised plans detailing the proposed modification. Proposed modifications must be approved, in writing, by EGLE prior to being implemented.

Q. This permit may be transferred to another person upon written approval of EGLE. The permittee must submit a written request to EGLE to transfer the permit to the new owner. The new owner must also submit a written request to EGLE to accept transfer. The new owner must agree, in writing, to accept all conditions of the permit. A single letter signed by both parties that includes all the above information may be provided to EGLE. EGLE will review the request and, if approved, will provide written notification to the new owner.

R. Prior to initiating permitted construction, the permittee is required to provide a copy of the permit to the contractor(s) for review. The property owner, contractor(s), and any agent involved in exercising the permit are held responsible to ensure that the project is constructed in accordance with all drawings and specifications. The contractor is required to provide a copy of the permit to all subcontractors doing work authorized by the permit.

S. Construction must be undertaken and completed during the dry period of the wetland. If the area does not dry out, construction shall be done on equipment mats to prevent compaction of the soil.

T. Authority granted by this permit does not waive permit requirements under Part 91, Soil Erosion and Sedimentation Control, of the NREPA, or the need to acquire applicable permits from the County Enforcing Agent (CEA).

U. Authority granted by this permit does not waive permit requirements under the authority of Part 305, Natural Rivers, of the NREPA. A Natural Rivers Zoning Permit may be required for construction, land alteration, streambank stabilization, or vegetation removal along or near a natural river.

V. The permittee is cautioned that grade changes resulting in increased runoff onto adjacent property is subject to civil damage litigation.

W. Unless specifically stated in this permit, construction pads, haul roads, temporary structures, or other structural appurtenances to be placed in a wetland or on bottomland of the water body are not authorized and shall not be constructed unless authorized by a separate permit or permit revision granted in accordance with the applicable law.

X. For projects with potential impacts to fish spawning or migration, no work shall occur within fish spawning or migration timelines (i.e., windows) unless otherwise approved in writing by the Michigan Department of Natural Resources, Fisheries Division.

Y. Work to be done under authority of this permit is further subject to the following special instructions and specifications:

1. Prior to the initiation of any permitted construction activities, a sedimentation barrier shall be constructed immediately down gradient of the construction site. Sedimentation barriers shall be specifically designed to handle the sediment type, load, water depth, and flow conditions of each construction site throughout the anticipated time of construction and unstable site conditions. The sedimentation barrier shall be maintained in good working order throughout the duration of the project. Upon project completion, the accumulated materials shall be removed and disposed of at an upland (non-wetland, non-floodplain) site and stabilized with seed and mulch. The sedimentation barrier shall then be removed in its entirety and the area restored to its original configuration and cover.

2. 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 reptiles or amphibians. 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.

3. All raw areas in uplands resulting from the permitted construction activity shall be effectively stabilized with sod and/or seed and mulch (or other technology specified by this permit or project plans) in a sufficient quantity and manner to prevent erosion and any potential siltation to surface waters or wetlands. Temporary stabilization measures shall be installed before or upon commencement of the permitted activity, and shall be maintained until permanent measures are in place. Permanent measures shall be in place within five (5) days of achieving final grade.

4. Prior to the initiation of any permitted construction activity, a sedimentation barrier shall be installed along the entire route of the disturbed wetland area and maintained in good working order until permanent stabilization and re-vegetation of all disturbed areas has occurred. The sedimentation barrier shall be removed after re-vegetation.

5. Prior to the start of construction, all adjacent non-work wetland areas shall be protected by properly trenched sedimentation barrier to prevent sediment from entering the wetland. Orange construction fencing may be installed as needed to prohibit construction personnel from entering or performing work in these areas. Sedimentation barrier shall be maintained daily throughout the construction process. Upon project completion, the accumulated materials shall be removed and disposed of at an upland site. The sedimentation barrier shall then be removed in its entirety and the area restored to its original configuration and cover.

6. All raw earth within 100 feet of a lake, stream, or wetland that is not brought to final stabilization by the end of the active growing season shall be temporarily stabilized with mulch blankets in accordance with the following dates: September 20th for the Upper Peninsula, October 1st for the Lower Peninsula north of US-10, and October 10th for the Lower Peninsula south of US-10.

7. All equipment and vehicles shall be thoroughly cleaned and washed prior to entering the work site to prevent contamination by invasive plant and animal species. The permittee and contractors shall take steps to minimize the risk of spreading terrestrial and aquatic invasive species during this project and will take measures to prevent spread, where feasible. Specific prevention measures include the following:

a. Visually inspecting and removing any plants or mud from footwear (boots, hip-boots, and waders).
b. Visually inspecting and removing and properly disposing of any plants and mud from field equipment (nets, shovels, rakes, etc.) and vehicles.
c. Draining all water from vehicles and equipment, prior to leaving the site and before entering a new waterbody.
d. Thoroughly drying equipment (5-7 days, if possible) between sites, when possible.
e. Disinfecting vehicles and equipment between sites (e.g., diluted bleach solution, heated pressure washer), when possible. Disinfection should be conducted away from surface waters, where the disinfecting solution will not enter any storm sewers and/or surface waters.
f. Typical diluted bleach solution treatment is $^1/_2$ cup (four fluid ounces) bleach to five gallons of water, applied by spraying or sponge so surface is thoroughly exposed to bleach solution for 10 minutes.
g. Typical heated pressure wash is 140^0 water temperature, sprayed for 5-10 seconds.
h. Thoroughly washing vehicles and boats between sites (e.g., drive-through car wash).
i. Using only native plants and seed for restorations and best management practices.
j. If invasive aquatic or terrestrial plants are removed from a site, the permittee will take steps to minimize the spread of these species. Dispose of invasive plant material by bagging and transporting to a landfill, composting, or burning, as appropriate and in compliance with local and state laws.
k. A "Watch List" of Michigan's high priority aquatic invasive species along with how to report sightings can be found at https://www.michigan.gov/invasives.

8. No fill, excess soil, or other material shall be placed in any wetland, floodplain, or surface water area not specifically authorized by this permit, its plans, and specifications.
9. During removal or repair of the existing structure, every precaution shall be taken to prevent debris from entering any watercourse. Any debris reaching the watercourse during the removal and/or reconstruction of the structure shall be immediately retrieved from the water. All material shall be disposed of in an acceptable manner consistent with local, state, and federal regulations.

Ponds

10. All dredge/excavated spoils including organic and inorganic soils, vegetation, and other material removed shall be placed on upland (non-wetland, non-floodplain), prepared for stabilization, and stabilized with sod and/or seed and mulch in such a manner to prevent and ensure against erosion of any material into any waterbody, wetland, or floodplain.

11. Construction must be undertaken and completed during the dry period of the wetland, or when frozen.

12. If the area does not dry out or freeze, construction shall be done on equipment mats to prevent compaction of the soil.

13. Upon completion of the project, any disturbed wetland areas shall be restored to the original contour elevation, revegetated and reseeded with species native to Michigan appropriate to the site, and mulched to prevent erosion. Excessive rutting and/or soil disturbance shall be reported in writing to EGLE. Monitoring and additional corrective measures may be required.

14. The property owner, contractor(s), and/or any agent involved in obtaining or exercising this permit are held responsible to ensure the project is constructed in accordance with all drawings and

specifications contained in this permit. The contractor is required to provide a copy of the permit to any, and all, subcontractors doing work authorized by this permit.

Culverts

15. **Equalization culverts shall be a minimum of 18 inches in diameter, installed at the proper elevation for the purpose of water level equalization and must be buried 20% of the culvert diameter.** The culvert shall provide for the free flow of surface water or the movement of organisms between portions of a wetland system. The culvert shall not increase drainage of any existing wetland areas.

16. All fill/backfill shall consist of clean inert material that will not cause siltation nor contain soluble chemicals, organic matter, pollutants, or contaminants. All fill shall be contained in such a manner so as not to erode into any surface water, floodplain, or wetland. All raw areas associated with the permitted activity shall be stabilized with sod and/or seed and mulch, riprap, or other technically effective methods as necessary to prevent erosion.

17. The placement of riprap at the outlet shall be limited to the minimum necessary to ensure proper stabilization. Riprap shall consist of natural field stone or rock (broken concrete is not allowed).

Restoration Standards

18. Upon completion of the project, any disturbed wetland areas from construction activities shall be restored to the original contour elevation, revegetated and reseeded with species native to Michigan appropriate to the site, and mulched to prevent erosion.

19. Photos shall be taken upon completion of your project showing the "as-built" condition of your project. Photos shall be submitted to EGLE's Water Resources Division, Lansing District Office, by uploading the photos to the MiEnviro file schedule of compliance or by email to Claire Watts at wattsc5@michigan.gov, within 30 days of completion of the project. Staff will use such pictures for monitoring compliance with your permit. Failure to submit these photos is an event of noncompliance.

20. The following performance standards will be used to evaluate impacted wetland areas:

    a. Restoration has been completed in accordance with EGLE's approved plans and specifications.
    b. The impacted wetland shall be characterized by the presence of water at a frequency and duration sufficient to support a predominance of wetland vegetation.
    c. Invasive species, bare soil, or non-wetland areas shall not dominate any extensive area of the impacted wetlands; extensive refers to areas greater than 0.01 acre (436 square feet) in size, exclusive of what was there prior to the start of the project.
    d. The impact areas shall be free of oil, grease, debris, and all other contaminants that were not present prior to construction unless they were caused by an activity unrelated to construction. Any debris present prior to construction shall be removed.

21. The permittee shall notify the WRD in writing, within 20 days of completion, of each of the following items:
    a. Final removal of timber matting.
    b. Final grading, if necessary.
    c. Seeding and plant installation, if necessary.

22. A plan to control invasive species should be implemented prior to site restoration if the area was not dominated by invasive species prior to the start of the project.

23. Should the impact areas fail to meet standards after two (2) complete growing seasons, the permittee shall:
    a. Assess the problem and its probable causes.
    b. Develop reasonable and necessary corrective measures.
    c. Submit proposed corrective measures to EGLE for confirmation and approval within 60 days of identification of the problem.
    d. Upon EGLE approval, implement corrective measures. Additional monitoring of the converted wetland areas may be required to evaluate the success of the corrective measures.

24. Any area not successfully restored to wetland conditions (characterized by the presence of water at a frequency and duration sufficient to support a predominance of wetland vegetation) may require additional mitigation to be determined by EGLE.

General Conditions

25. The permittee is responsible for acquiring all necessary easements or rights-of-way before commencing any work authorized by this permit. All construction operations relating to or part of this project shall be confined to the existing right-of-way limits or other acquired easements.
26. The property owner, contractor(s), and any agent involved in obtaining or exercising this permit, are held responsible to ensure the project is constructed in accordance with all drawings and specifications contained in this permit. The contractor is required to provide a copy of the permit to any and all subcontractors doing work authorized by this permit.

27. EGLE has relied on the information and data which the permittee has provided in connection with the permit application. If, subsequent to the issuance of this permit, such information and data prove to be false, incomplete, or inaccurate, EGLE may modify revoke or suspend the permit, in while or in part, in accordance with new information.

28. Authority granted by this permit does not waive permit or program requirements under Part 91 of the NREPA or the need to acquire applicable permits from the CEA. To locate the Soil Erosion Program Administrator for your county, visit https://www.michigan.gov/egle/about/organization/water-resources/soil-erosion/sesc-overview and select "Soil Erosion and Sedimentation Control Agencies".

29. The authority to conduct the activity as authorized by this permit is granted solely under the provisions of the governing act as identified above. This permit does not convey, provide, or otherwise imply approval of any other governing act, ordinance, or regulation, nor does it waive the permittee's obligation to acquire any local, county, state, or federal approval or authorization necessary to conduct the activity.

30. This permit does not authorize or sanction work that has been completed in violation of applicable federal, state, or local statutes.

31. The permit placard shall be kept posted at the work site in a prominent location at all times for the duration of the project or until permit expiration.

32. This permit is being issued for the maximum time allowed and no extensions of this permit will be granted. Initiation of the construction work authorized by this permit indicates the permittee's

acceptance of this condition. The permit, when signed by EGLE, will be for a five-year period beginning on the date of issuance. If the project is not completed by the expiration date, a new permit must be sought.

33. Upon signing by the permittee named herein, this permit must be returned to the EGLE's Water Resources Division, Lansing District Office, for final execution. This permit shall become effective on the date of the EGLE representative's signature.

Permittee hereby accepts and agrees to comply with the terms and conditions of this permit.

X _____ 1-9-26
Permittee Date

X Patrick E. Lindemann, Ingham County Drain Commissioner
Printed Name and Title of Permittee

Issued By: _____
Claire Watts
Lansing District Office
Water Resources Division
517-388-6686

5. Pre-Application Letter

GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
LANSING DISTRICT OFFICE

LIESL EICHLER CLARK
DIRECTOR

March 22, 2022

SENT VIA E-MAIL

Mr. Patrick E. Lindemann
Drain Commissioner
707 Buhl Avenue
Mason, Michigan 48854

Dear Mr. Lindemann:

SUBJECT: Preapplication Meeting
MiWaters Site Name: 33-Sophiea Pkwy-Okemos
Submission Number: HPG-3FQ8-1GFM5
Okemos CDP, Ingham County

This letter is a follow up to our March 15, 2022, preapplication meeting regarding the proposed project in Okemos, Ingham County. The purpose of a preapplication meeting is to provide you with information that will clarify the permit process, answer preliminary questions about your specific project in order to avoid delays at a later date, and to determine, if possible, the need for wetland or inland lakes and streams permits.

During this meeting, we reviewed the need to obtain a permit under Part 301, Inland Lakes and Streams; and Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). The review was based on the on-site visit and discussion of the proposed project at which time it was determined that a permit is required under Part 303 of the NREPA. Please reference the submission number at the top of this letter when submitting a permit application for this project. Provided that the proposed project and location are not altered, this determination is binding on EGLE for a period of two years from the date of this meeting.

During the meeting, we also discussed a number of issues related to the project, including the following:

- Information about completing an application form. Please submit the Joint Permit Application (JPA) using the same MiWaters site as was used for this preapplication meeting request.
- The need to very clearly define the purpose and goals of your project in the permit application.
- The need for a more thorough analysis of alternative methods or locations in the permit application.

- The potential presence of state- or federally listed threatened or endangered species on the site. We recommend review of the material available on the Michigan Department of Natural Resources' Web site at Michigan.gov/Threatened and Endangered Species.
- The idea of using a drone survey was discussed to acquire ground elevation and contours and provide photos of forested wetland to supplement the wetland delineation mapping and provide the full extent of existing wetland, and lastly to provide some measurement of the loss of forested wetland.
- Survey existing trees, dead and live and provide tree species list.
- The need for plans to reflect the proposed minimum and maximum extent of ponding provided by the agri-drain structure and using water level contours and illustrate them on the plans. Identify the elevation (vertical range) and size of the permanent pool(s) and provide a narrative to explain how the selected water elevation(s) support, maintain, improve, retore, or expand forested wetland. Discuss wetland enhancement options for replanting forested wetlands including species types, number of trees per acre, deer protection measures, etc.

Please note that this is not a permit. The WRD cannot indicate during a preapplication meeting whether or not a permit will be issued. The WRD cannot make a decision regarding a permit until it has considered all of the information provided in the final permit application, and, in some instances, has also considered comments received in response to a public notice of the project. Therefore, the WRD cannot legally tell you whether the project will be permitted in advance of a permit application being submitted and reviewed.

The EGLE submission number assigned to this project is HPG-3FQ8-1GFM5. Please keep a record of this submission number and use it when submitting a final application or otherwise corresponding with our office on this project.

We appreciate the opportunity to meet with you or your representative to address these concerns. We have established a submission for this project, and the information submitted to date will be used to facilitate processing of the final application. If you should have follow-up questions before then, please contact me at 517-388-3667; valorc@michigan.gov; or EGLE, WRD, Lansing District Office, 525 West Allegan Street, 1st Floor, South Tower, Lansing, Michigan 48933.

Sincerely,

Carol Valor
Water Resources Division

cc: Mr. Alan Boyer, LSG
Mr. Mike Nurse, Streamside Ecological

6 Pre-Application Second Letter

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
LANSING DISTRICT OFFICE

GRETCHEN WHITMER
GOVERNOR

PHILLIP D. ROOS
DIRECTOR

December 7, 2023

VIA E-MAIL

Patrick E Lindeman
707 Buhl Avenue
Mason, MI 48854-0220

Dear Patrick E Lindeman:

SUBJECT: Preapplication Meeting
Site Name: 33-Hoskins Drain Sophiea Rd-Okemos
Submission Number: HPW-HXTB-AQ1FC
T 04N, R 01W, Section 29, Okemos CDP, Ingham County

This letter is a follow up to our September 29,2023, preapplication meeting regarding the proposed project in Okemos CDP, Ingham County. The purpose of a preapplication meeting is to provide you with information that will clarify the permit process, answer preliminary questions about your specific project in order to avoid delays at a later date, and to determine, if possible, the need for wetland or inland lakes and streams permits.

During this meeting, we reviewed the need to obtain a permit under Part 301, Inland Lakes and Streams; and Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). The review was based on discussion of the proposed project and/or draft permit application, the proposed site, and potential modifications to the project discussed during our meeting.

During the review of the project site, the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) Water Resources Division (WRD) made the following findings regarding the need for a permit under Part 301 and Part 303 of the NREPA:

- ☒ **A permit is required for the project as proposed.**
- ☐ A permit is not required for the project as proposed.
- ☐ It cannot be determined whether a permit is required given the information presented at this time.

This determination is based on the project plan prepared by Alan Boyer and dated July 11,2023 along with other information provided at the time of this meeting only. Provided that the proposed project and location are not altered, this determination is binding on EGLE for a period of two years from the date of this meeting.

During the meeting, we also discussed a number of topics related to the project, including the following:

- Detail possible alternative design options to minimize project effects on aquatic resources in the permit application and why the proposed option is the most feasible. It will need to be discussed how changing the swale location will correct drainage in wetland rather than just performing drain maintenance on the current location of the swale.

- Based on the review of the provided plans and information gathered and the pre-application meeting, stream mitigation may be required for the project as proposed. If it is determined the project can be approved with the purchase of mitigation credits, we will send a countersignature permit. An SQT should be performed on the existing drain that is proposed to be relocated. The SQT will inform whether full stream mitigation would be required and will be used in the planning and design for the mitigation.

- Clarification in the project plans including;
    - A detailed description of the proposed project in the narrative section which: highlights the purpose of the project, summarizes the history of flooding occurrences, type of installation (mechanical, by hand, etc.) for the culverts and swale, wetland restoration methods, what will happen to existing channel, and potential stream mitigation.
    - A description in the narrative section of which Best Management Practices (BMPs) have been incorporated into new channel design. A potential BMP that should be considered is a two-stage channel design.
    - Comprehensive cross sections of existing swale, proposed swale relocation, and culvert replacements.
    - Comprehensive overhead plans showing all work going on, where spoils piles will be placed if excavation occurs, and any temporary access methods used.
    - Showing “as built” conditions for swale.
    - A list of native plants used for the project and showing on the overhead plans where these would be placed.

Please note that this is not a permit. The WRD cannot indicate during a preapplication meeting whether or not a permit will be issued. The WRD cannot make a decision regarding a permit until it has considered all of the information provided in the final permit application, and, in some instances, has also considered comments received in response to a public notice of the project. Therefore, the WRD cannot legally tell you whether the project will be permitted in advance of a permit application being submitted and reviewed.

The EGLE submission number assigned to this project is HPW-HXTB-AQ1FC. Please keep a record of this submission number and use it when submitting a final application or otherwise corresponding with our office on this project.

We appreciate the opportunity to meet with you or your representative to address these concerns. We have established a submission for this project, and the information submitted to date will be used to facilitate processing of the final application. If you should have follow-up questions before then, please contact me at 517-388-6686; wattsc5@michigan.gov; or EGLE,

WRD, Lansing District Office, 525 West Allegan Street, 1st Floor, South Tower , Lansing, Michigan 48933.

Sincerely,

Claire Watts
Water Resources Division

cc:
Jeff Pierce, EGLE
Kate Kirkpatrick, EGLE

7 Project Plans

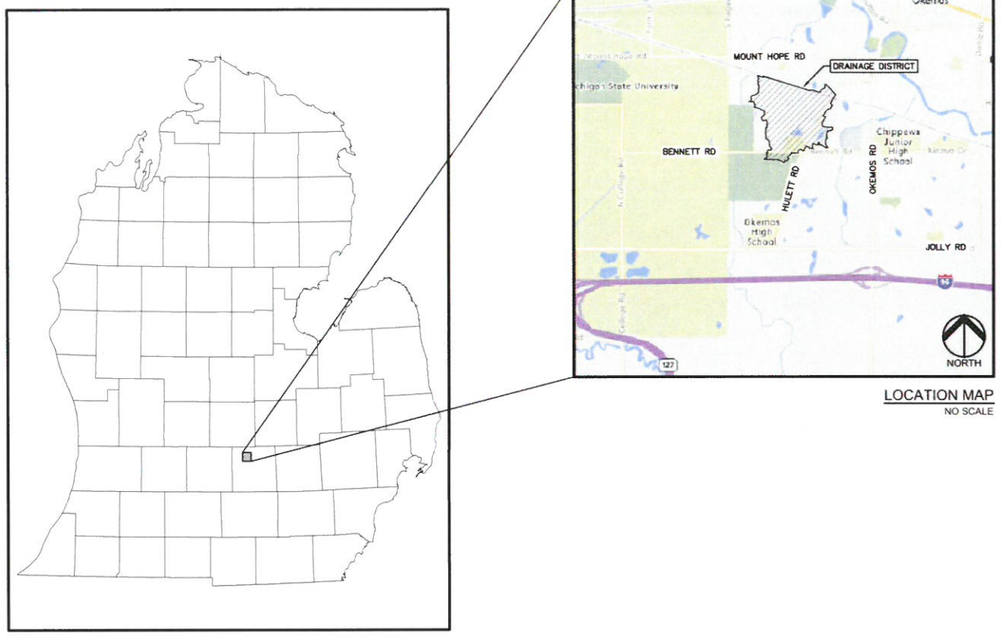
EGLE PERMIT PLANS

HOSKINS DRAIN (H62-70)

SECTION 29, T4N, R1W

MERIDIAN TWP, INGHAM COUNTY, MICHIGAN

INDEX OF DRAWINGS	
NUMBER	TITLE
	COVER SHEET
C-1.0	DRAINAGE DISTRICT MAP
C-2.0	IMPACT AREA 'A' POOL DETAILS
C-2.1	IMPACT AREA 'B'
C-2.2	IMPACT AREA 'C'
C-2.3	IMPACT AREA 'D'
C-2.4	IMPACT AREA 'D'



LOCATION MAP
NO SCALE

PERMIT / APPROVAL SUMMARY		
DATE SUBMITTED	DATE APPROVED	PERMIT / APPROVAL

PERMITTEE SIGNATURE	DATE: 1-9-26

REVISIONS	
DESCRIPTION	DATE
ORIGINAL ISSUE DATE	3 JUL 2025
CORRECTIONS PER EGLE	17 SEP 2025
CORRECTIONS PER EGLE	18 DEC 2025

NOT FOR CONSTRUCTION

DESIGN TEAM

OWNER

INGHAM COUNTY DRAIN COMMISSIONER
707 BUHL AVENUE
MASON, MI 48854
CONTACT: CARLA CLOS, DEPUTY DRAIN COMMISSIONER
PHONE: 517.676.8395
EMAIL: CCLOS@INGHAM.ORG

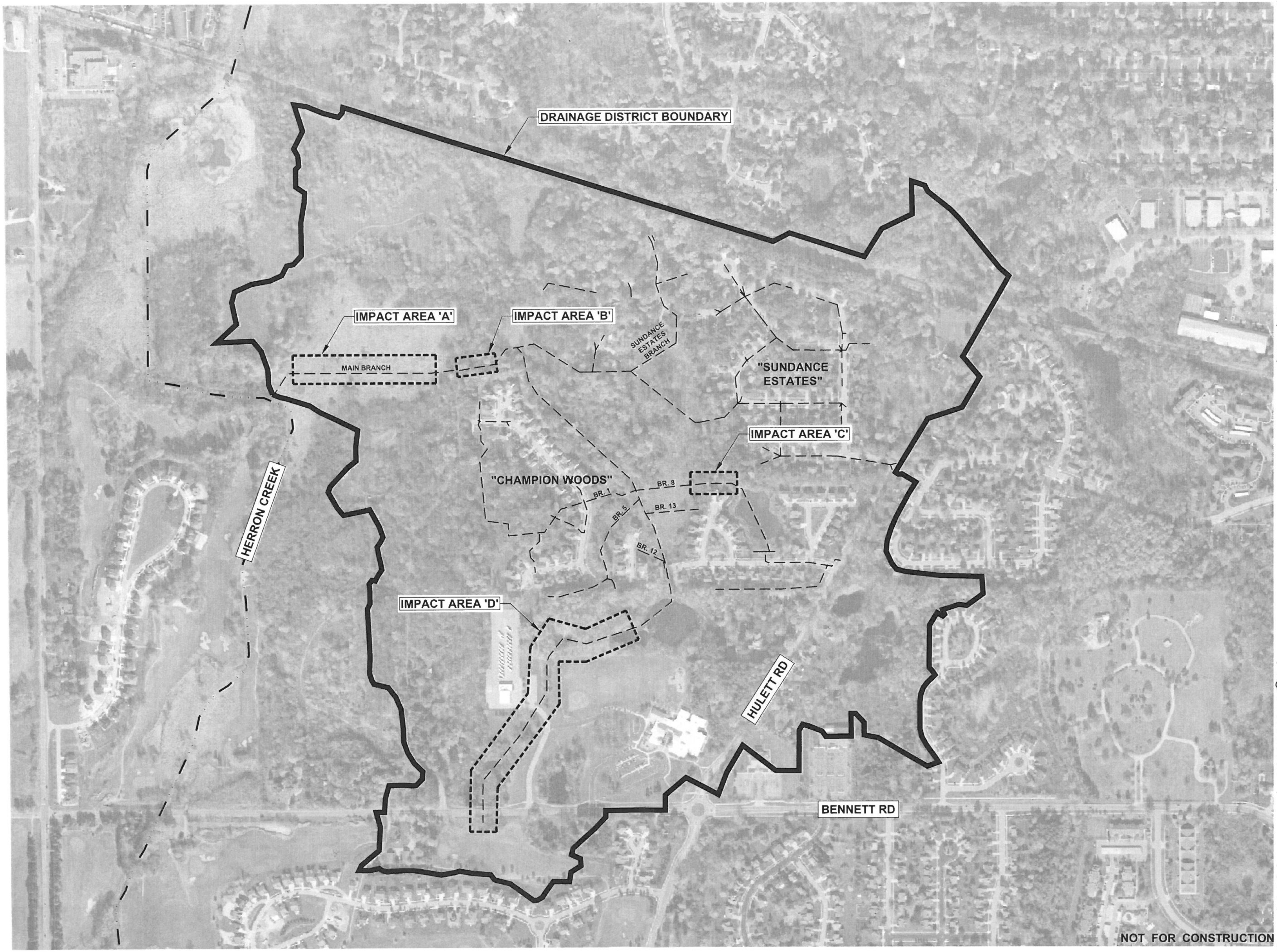
CIVIL ENGINEER

PEA GROUP
2379 WOODLAKE DRIVE, SUITE 480
OKEMOS, MI 48864
CONTACT: GREGORY LAMKIN, PE
PHONE: 844.813.2949
EMAIL: GLAMKIN@PEAGROUP.COM

WETLAND CONSULTANT

STREAMSIDE ECOLOGY
3940 TIMPSON AVE SE
LOWELL, MI 49331
CONTACT: MIKE NURSE
PHONE: 586.764.9366
EMAIL: MNURSE@STREAMSIDEECO.COM

PEA GROUP



PEA GROUP
t: 844.813.2949
www.peagroup.com

NORTH

0 125 250 500

SCALE: 1" = 250'

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT

PATRICK E. LINDEMANN INGHAM COUNTY DRAIN COMMISSIONER
707 BUHL AVENUE
MASON, MICHIGAN

PROJECT TITLE

HOSKINS DRAIN
SECTION 29, T4N R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MI

REVISIONS

CORRECTIONS PER EGLE 17 SEP 2025
CORRECTIONS PER EGLE 18 DEC 2025

ORIGINAL ISSUE DATE:
3 JUL 2025

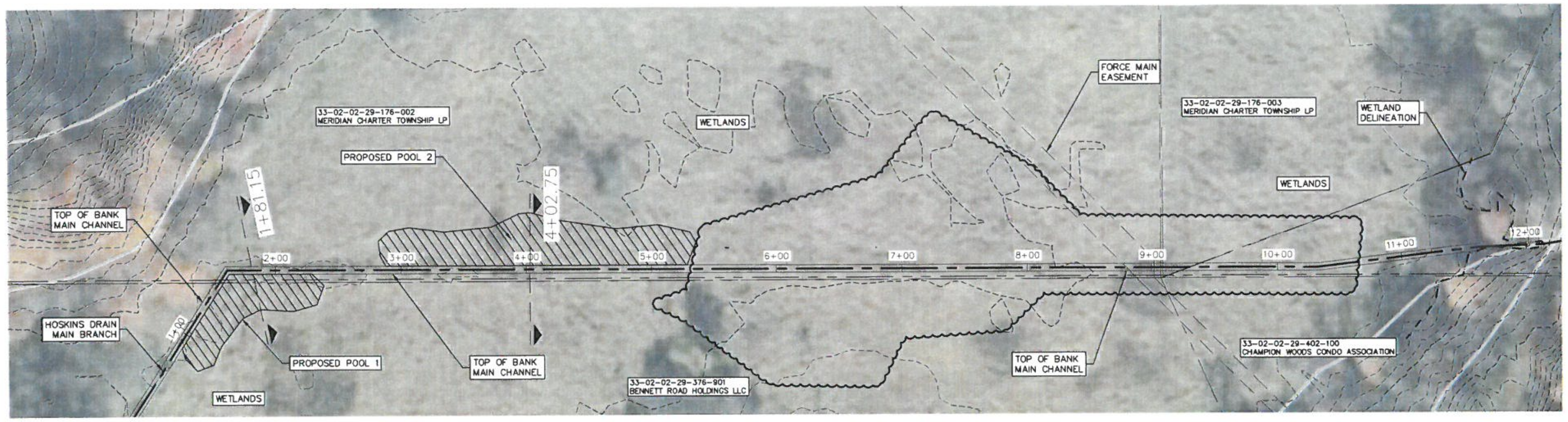
DRAWING TITLE

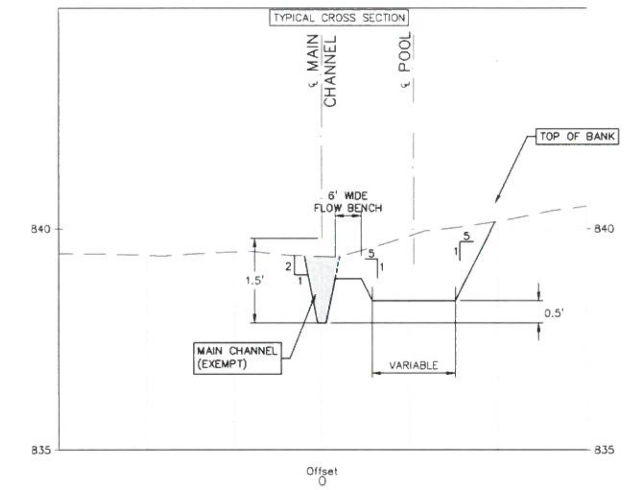
DRAINAGE DISTRICT MAP

PEA JOB NO.	23-2532
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:

C-1.0





PEA GROUP

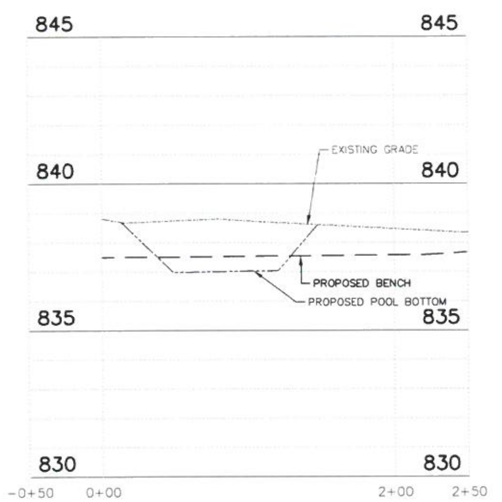
t: 844.813.2949
www.peagroup.com

NORTH

SCALE: 1" = 60'

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

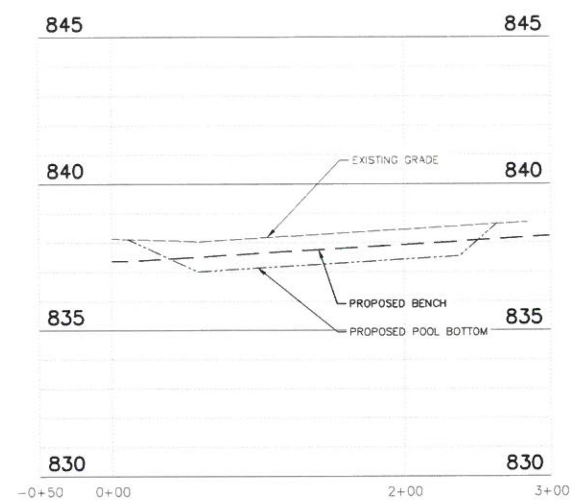
CAUTION!!



POOL 1 PROFILE

HOR: 1" = 20'
VER: 1" = 1'

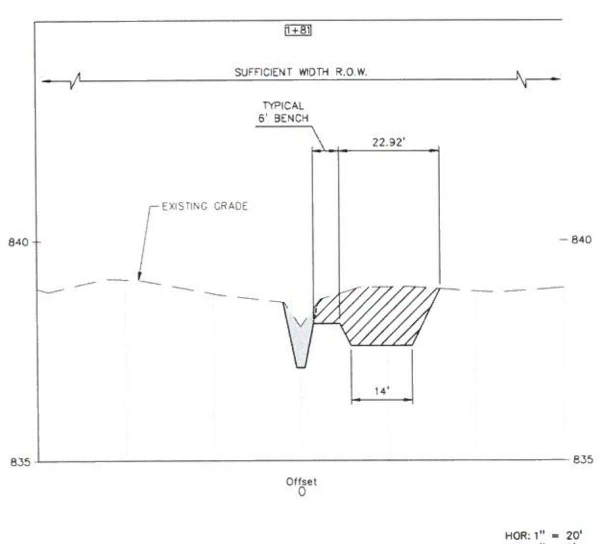
AVERAGE LENGTH = 134.4 FT
AVERAGE WIDTH = 27.6 FT
AVERAGE DEPTH = 1.2 FT
VOLUME = 170.3 CYD



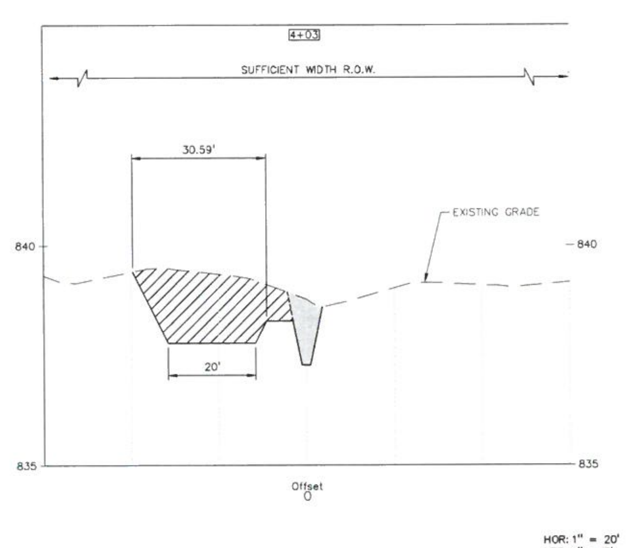
POOL 2 PROFILE

HOR: 1" = 20'
VER: 1" = 1'

AVERAGE LENGTH = 252.3 FT
AVERAGE WIDTH = 31 FT
AVERAGE DEPTH = 1.75 FT
VOLUME = 508.4 CYD



HOR: 1" = 20'
VER: 1" = 2'



HOR: 1" = 20'
VER: 1" = 2'

NOTE: CROSS SECTIONS LOOKING UPSTREAM

CLIENT

PATRICK E. LINDEMANN INGHAM COUNTY DRAIN COMMISSIONER

707 BUHL AVENUE
MASON, MICHIGAN

PROJECT TITLE

HOSKINS DRAIN

SECTION 29, T4N R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MI

REVISIONS

CORRECTIONS PER EGLE 17 SEP 2025
CORRECTIONS PER EGLE 18 DEC 2025

ORIGINAL ISSUE DATE:
3 JUL 2025

DRAWING TITLE

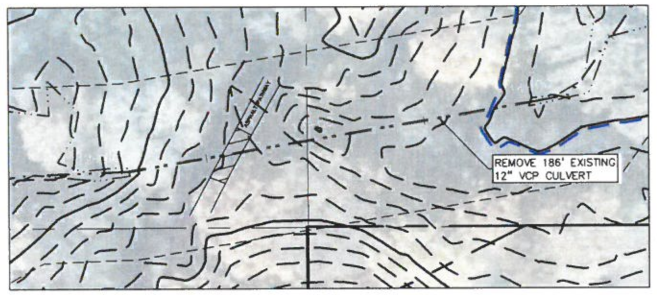
IMPACT AREA 'A' POOL DETAILS

PEA JOB NO.	23-2532
P.M.	GKL
DN.	JMJ
DES.	GKL

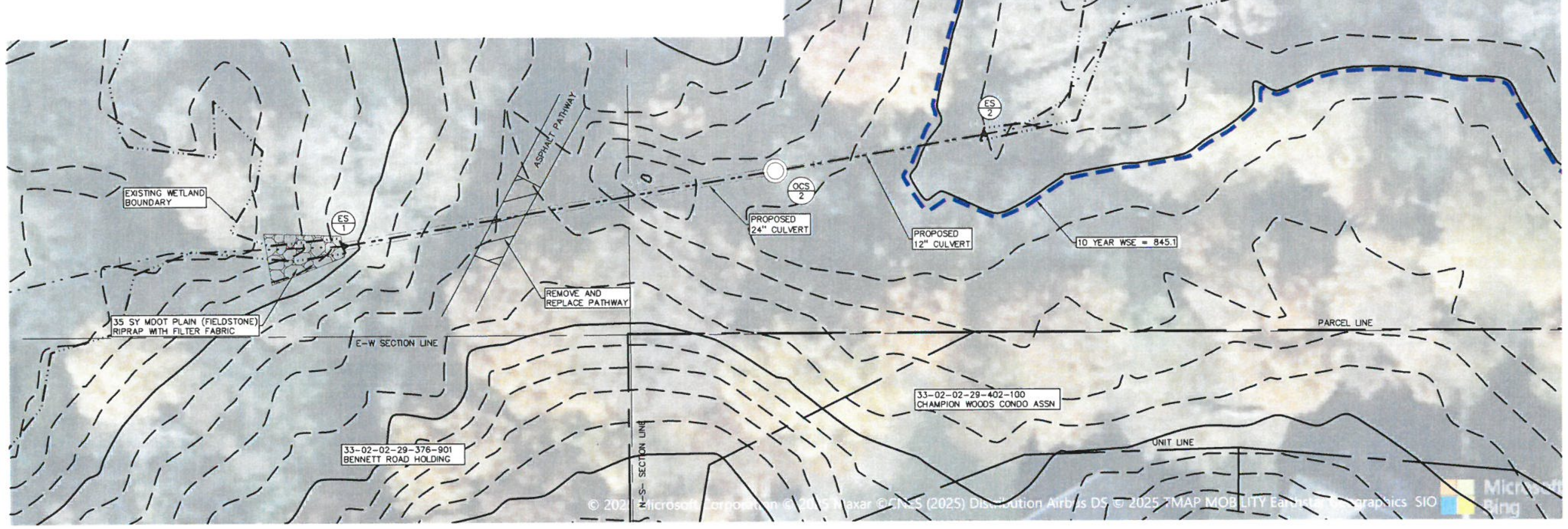
DRAWING NUMBER:

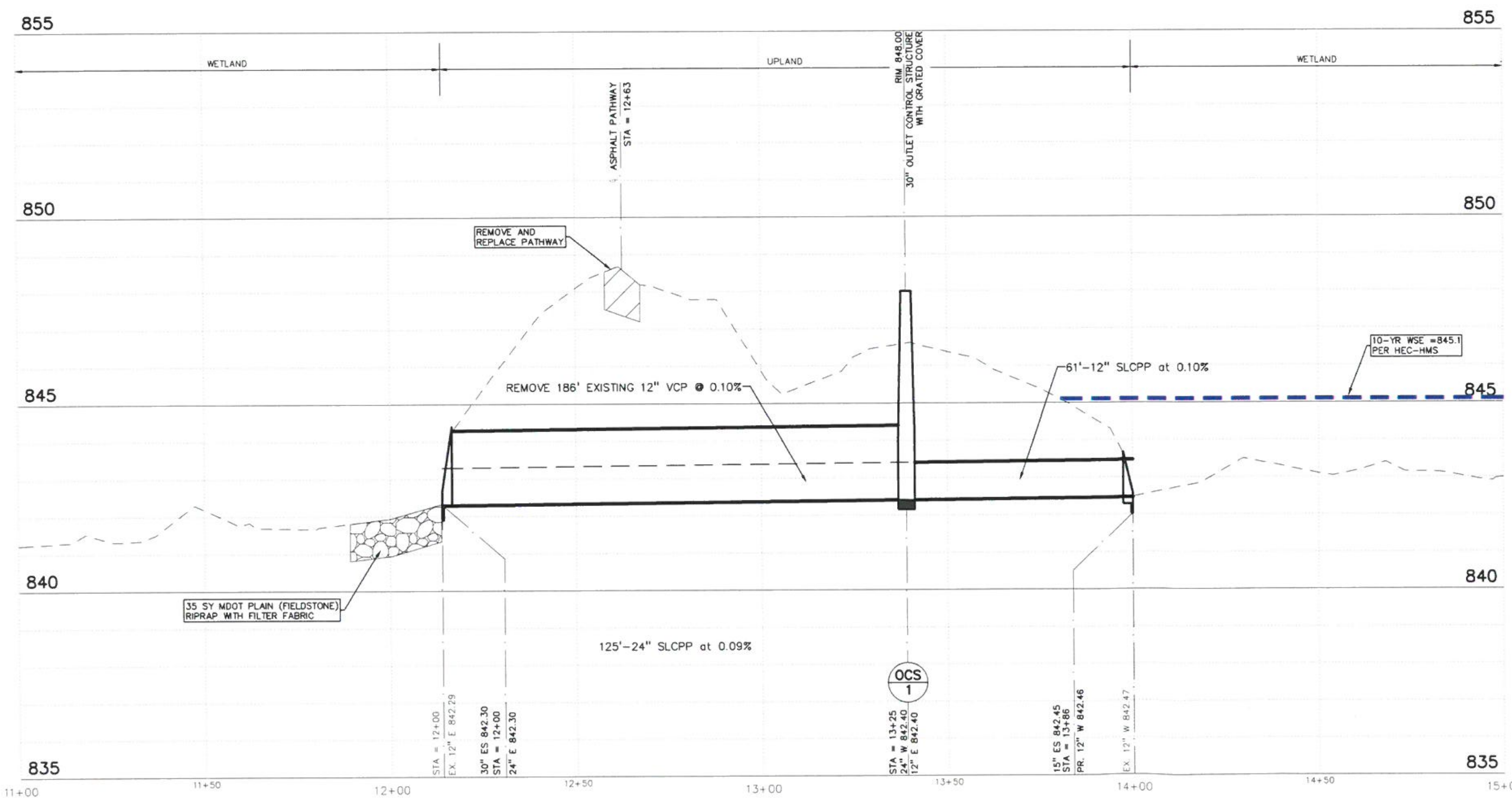
C-2.0

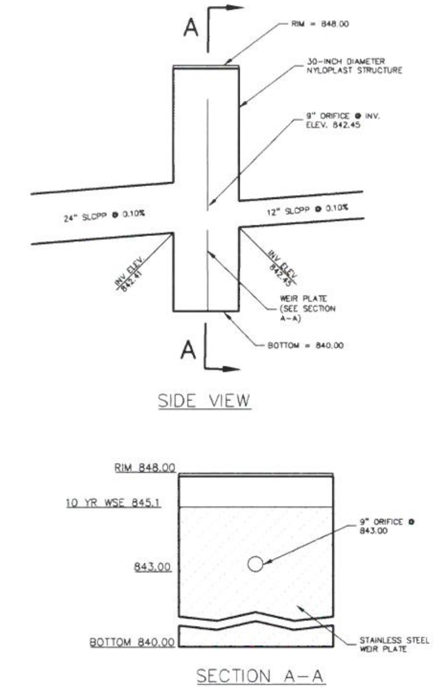
NOT FOR CONSTRUCTION



EXISTING STORM







OUTLET CONTROL STRUCTURE DETAIL

NOT TO SCALE

Comparison of Outlet Rates

Existing	
10-yr WSE	845.1
Q_{10} 12" culvert	3.4 CFS
Proposed	
10-yr WSE	845.1
Q_{10} orifice	3.4 CFS

PEA GROUP

t: 844.813.2949
www.peagroup.com

NORTH

0 10 20 40

SCALE: 1" = 20'

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CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT

PATRICK E. LINDEMANN INGHAM COUNTY DRAIN COMMISSIONER

707 BUHL AVENUE
MASON, MICHIGAN

PROJECT TITLE

HOSKINS DRAIN

SECTION 29, T4N R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MI

REVISIONS

CORRECTIONS PER EGLE 17 SEP 2025
CORRECTIONS PER EGLE 18 DEC 2025

ORIGINAL ISSUE DATE:
3 JUL 2025

DRAWING TITLE

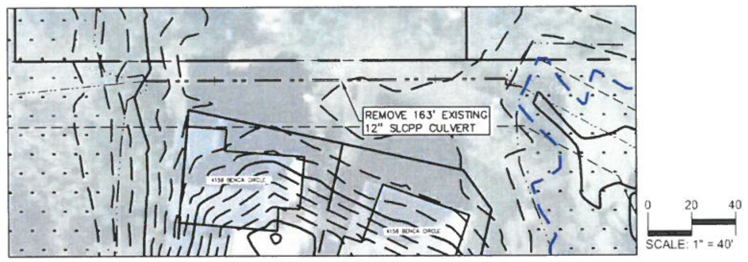
IMPACT AREA 'B'

PEA JOB NO.	23-2532
P.M.	GKL
DN.	JMJ
DES.	GKL

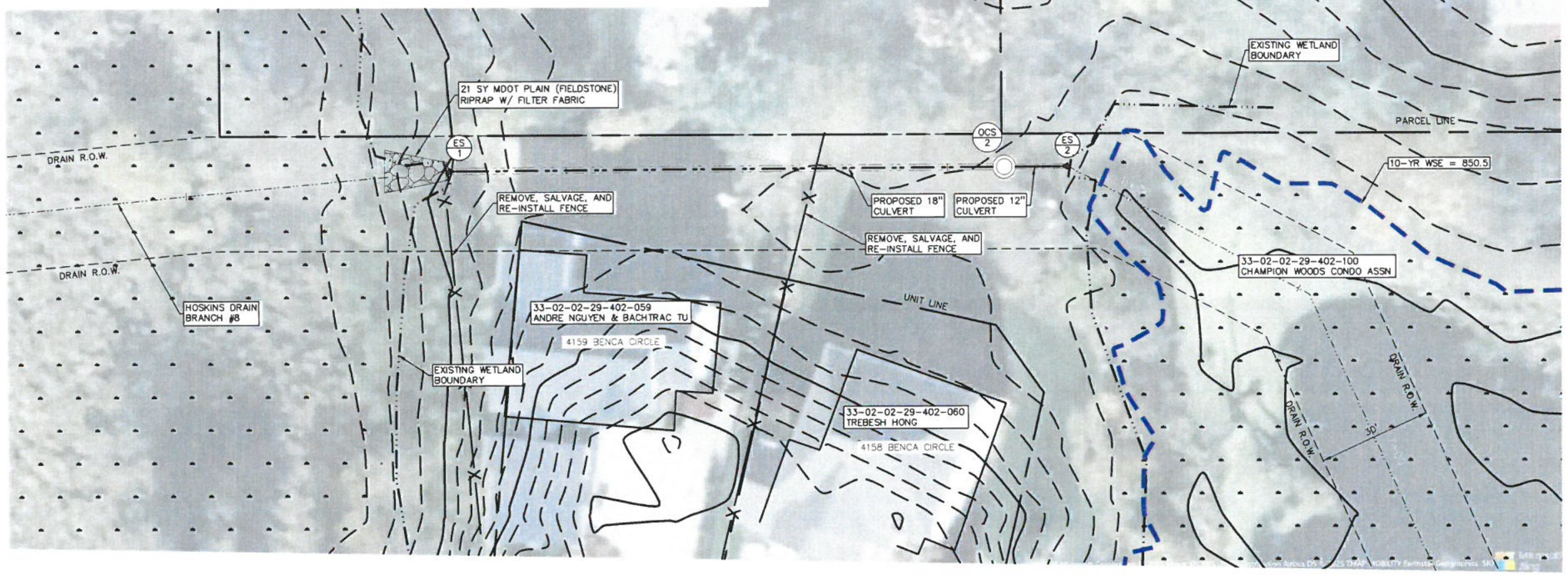
DRAWING NUMBER:

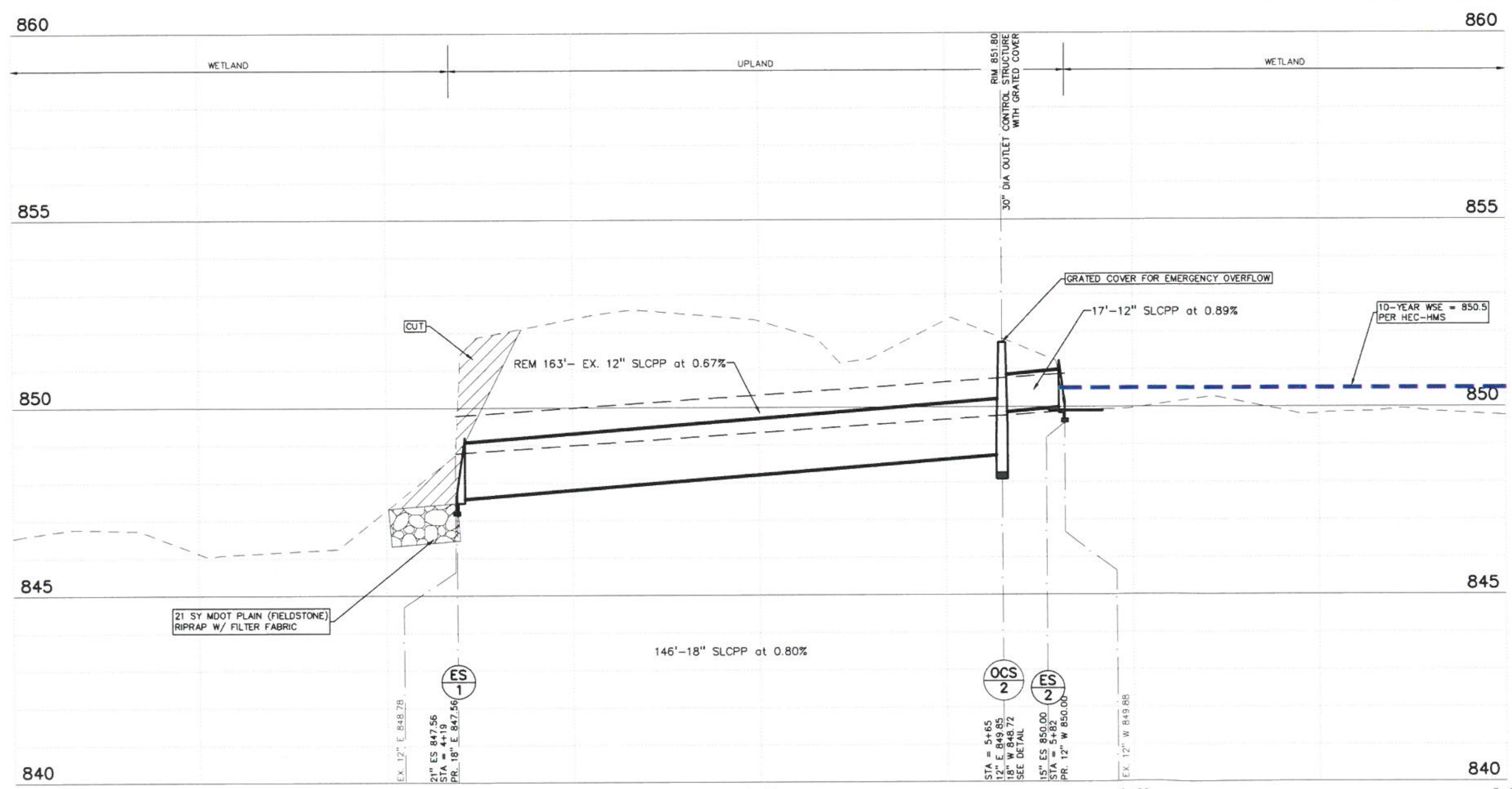
C-2.1

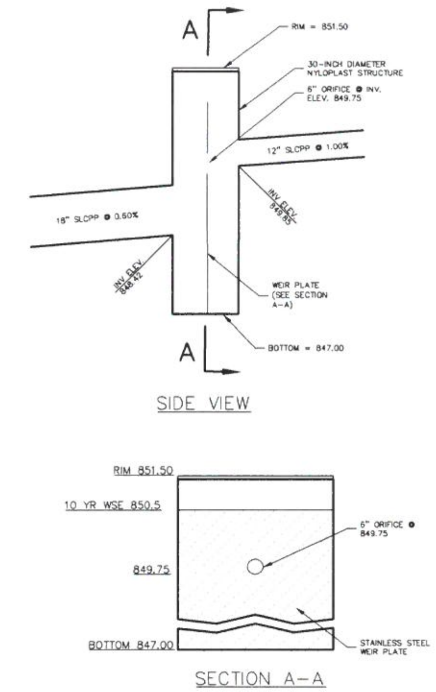
NOT FOR CONSTRUCTION



EXISTING STORM







OUTLET CONTROL STRUCTURE DETAIL

NOT TO SCALE

Comparison of Outlet Rates

Existing	
10-yr WSE	850.5
Q_{10} 12" culvert	0.7 CFS
Proposed	
10-yr WSE	850.5
Q_{10} orifice	0.7 CFS

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NORTH

0 10 20 40
SCALE: 1" = 20'

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707 BUHL AVENUE
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PROJECT TITLE

HOSKINS DRAIN
SECTION 29, T4N R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MI

REVISIONS	
CORRECTIONS PER EGLE	17 SEP 2025
CORRECTIONS PER EGLE	18 DEC 2025

ORIGINAL ISSUE DATE:
3 JUL 2025

DRAWING TITLE

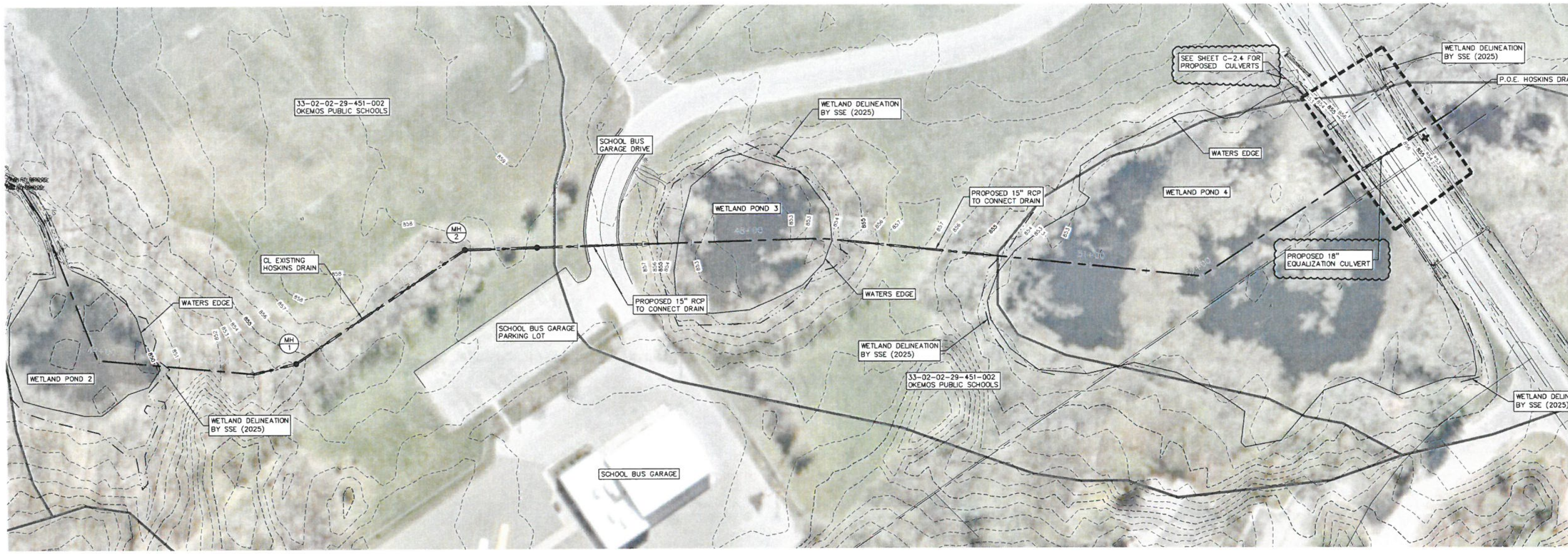
IMPACT AREA 'C'

PEA JOB NO.	23-2532
P.M.	GKL
DN.	JMJ
DES.	GKL

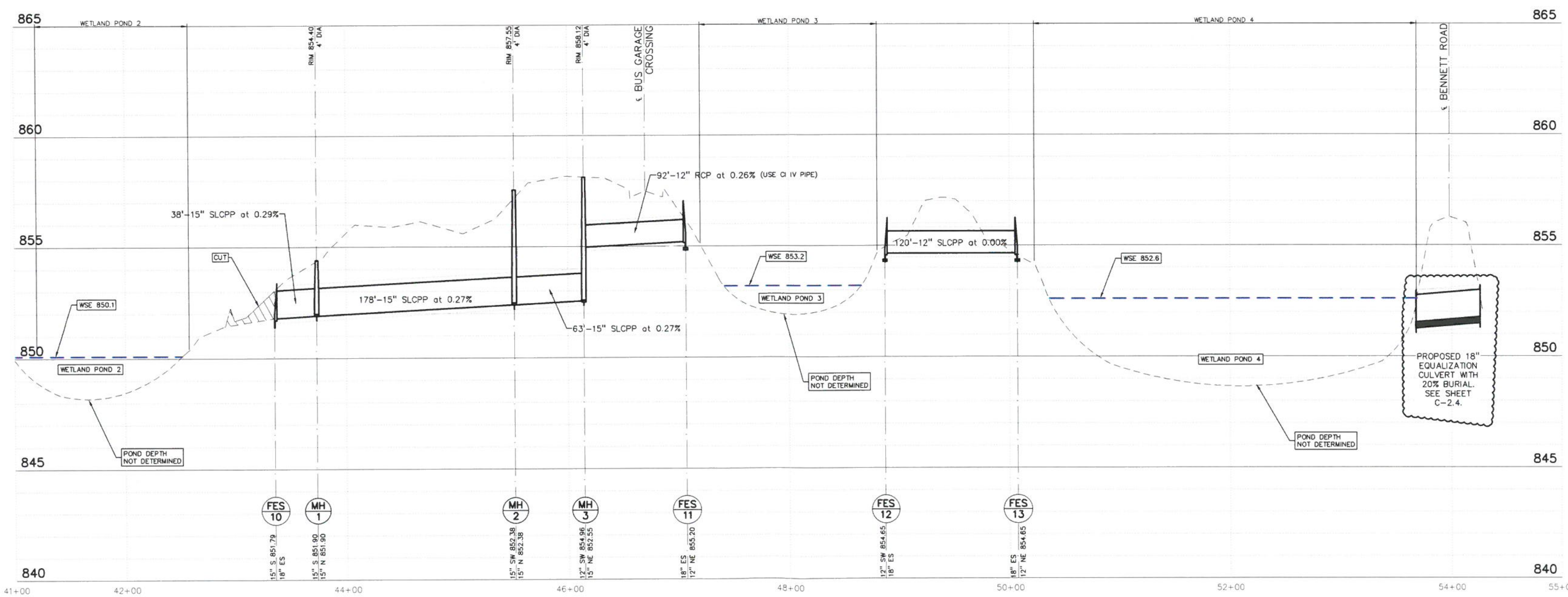
DRAWING NUMBER:

C-2.2

NOT FOR CONSTRUCTION



33-02-02-29-451-002
OKEMOS PUBLIC SCHOOLS
SCHOOL BUS GARAGE DRIVE
WETLAND DELINEATION BY SSE (2025)
SEE SHEET C-2.4 FOR PROPOSED CULVERTS
WETLAND DELINEATION BY SSE (2025)
P.O.E. HOSKINS DRAIN
WATERS EDGE
WETLAND POND 4
WETLAND POND 3
PROPOSED 15" RCP TO CONNECT DRAIN
MH 2
CL EXISTING HOSKINS DRAIN
PROPOSED 18" EQUALIZATION CULVERT
WATERS EDGE
PROPOSED 15" RCP TO CONNECT DRAIN
WATERS EDGE
MH 1
SCHOOL BUS GARAGE PARKING LOT
WETLAND DELINEATION BY SSE (2025)
33-02-02-29-451-002
OKEMOS PUBLIC SCHOOLS
WETLAND POND 2
WETLAND DELINEATION BY SSE (2025)
WETLAND DELINEATION BY SSE (2025)
SCHOOL BUS GARAGE



865
860
855
850
845
840
WETLAND POND 2
RIM 854.40 4' DIA
RIM 857.55 4' DIA
RIM 858.12 4' DIA
℄ BUS GARAGE CROSSING
WETLAND POND 3
WETLAND POND 4
℄ BENNETT ROAD
92'-12" RCP at 0.26% (USE Cl IV PIPE)
38'-15" SLCPP at 0.29%
120'-12" SLCPP at 0.00%
CUT
WSE 853.2
WSE 852.6
178'-15" SLCPP at 0.27%
WETLAND POND 3
WSE 850.1
63'-15" SLCPP at 0.27%
WETLAND POND 2
WETLAND POND 4
PROPOSED 18" EQUALIZATION CULVERT WITH 20% BURIAL. SEE SHEET C-2.4.
POND DEPTH NOT DETERMINED
POND DEPTH NOT DETERMINED
POND DEPTH NOT DETERMINED
FES 10
MH 1
MH 2
MH 3
FES 11
FES 12
FES 13
15" S 851.79
18" ES
15" S 851.90
15" N 851.90
15" SW 852.38
15" N 852.38
12" SW 854.96
15" NE 852.55
18" ES
12" NE 855.20
12" SW 854.65
18" ES
18" ES
12" NE 854.65
41+00
42+00
44+00
46+00
48+00
50+00
52+00
54+00
55+00

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NORTH

SCALE: 1" = 50'

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CORRECTIONS PER EGLE 18 DEC 2025

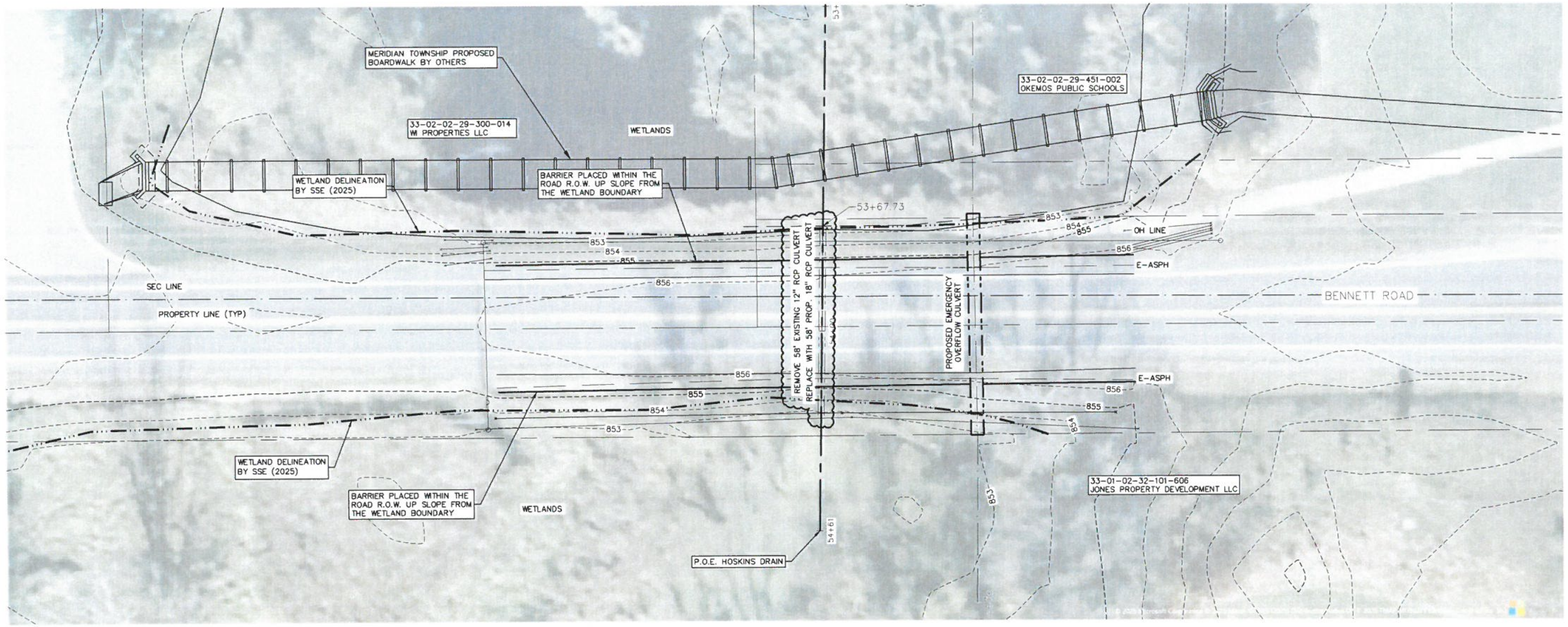
ORIGINAL ISSUE DATE:
3 JUL 2025

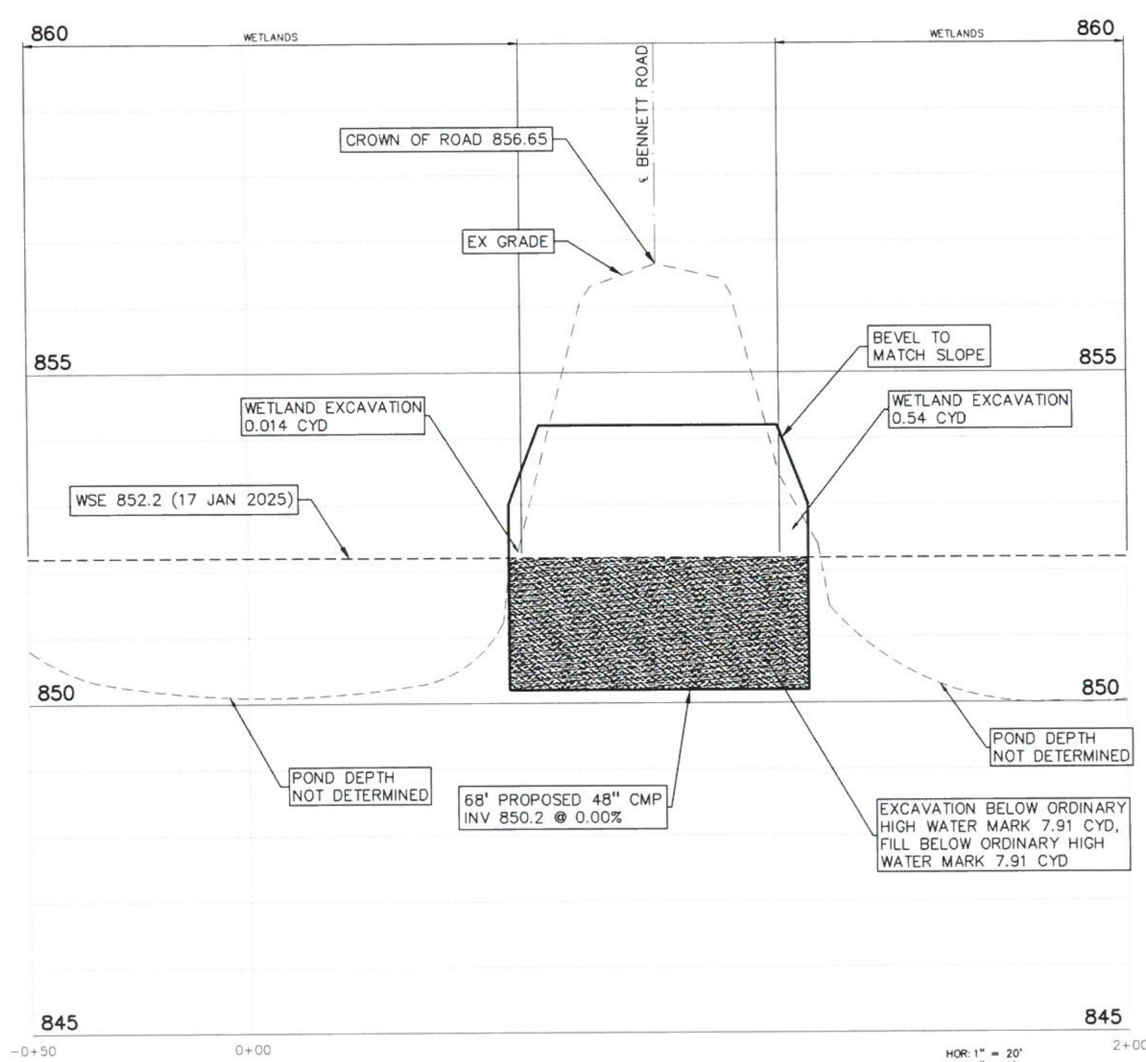
DRAWING TITLE
IMPACT AREA 'D'

PEA JOB NO.	23-2532
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:
C-2.3

NOT FOR CONSTRUCTION





WETLAND DOWNSTREAM OF CROSSING:

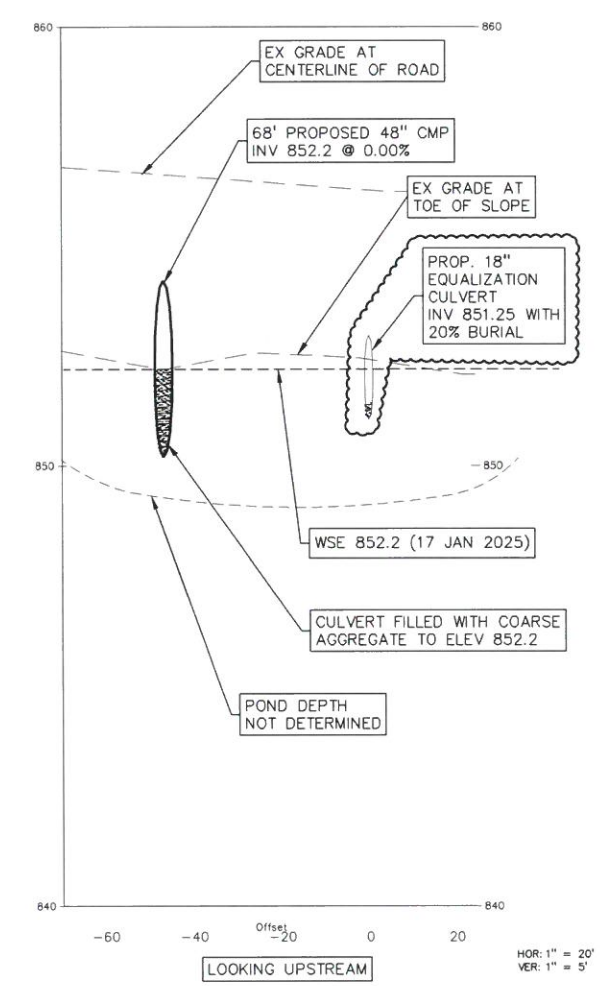
AVERAGE LENGTH = 4 FT
AVERAGE WIDTH = 5.19 FT
AVERAGE DEPTH = 0.696 FT
VOLUME = 0.54 CYD

WETLAND UPSTREAM OF CROSSING:

AVERAGE LENGTH = 4 FT
AVERAGE WIDTH = 0.598 FT
AVERAGE DEPTH = 0.156 FT
VOLUME = 0.014 CYD

CULVERT-BELOW ORDINARY HIGH WATER MARK:

AVERAGE LENGTH = 68 FT
AVERAGE WIDTH = 1.57 FT
AVERAGE DEPTH = 2 FT
VOLUME = 7.91 CYD



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NORTH
SCALE: 1" = 20'

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DRAWING TITLE
IMPACT AREA 'D'

PEA JOB NO.	23-2532
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:
NOT FOR CONSTRUCTION C-2.4

8 Wetlands Delineation Report – Lower Reach

WETLAND DELINEATION

Hoskins Drain
Lower Reach

T04N, R01W, Section 29
Okemos, Michigan
Ingham County

Prepared By:

StreamsideEco

Prepared For:

INGHAM COUNTY
CLEAN WATER
DRAIN COMMISSIONER
PATRICK E. LINDEMANN

July 24, 2024

Introduction

StreamsideEco, LLC (SECO) conducted a wetland delineation on a property located within T04N, R01W, Section 29, Okemos, Michigan. The area of study focused on wetlands located within the lower reaches of the drain, adjacent to Champion Woods Subdivision at specific areas of potential project impacts (**Figure 1**). Delineations within the upper reach are detailed in a separate report. The purpose of this work was to identify the extent, location and regulatory status of wetlands within the study area.

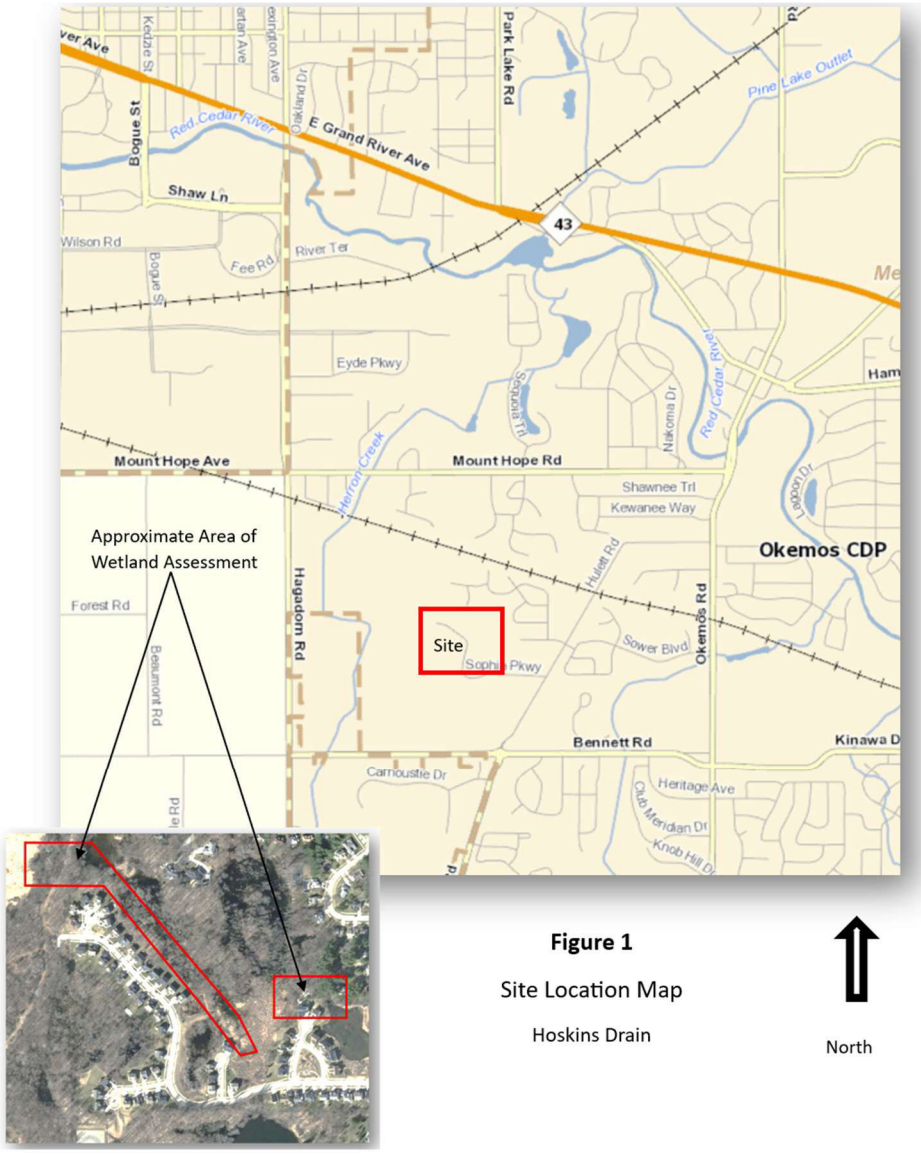

Figure 1

Site Location Map

Hoskins Drain

North

Methods

On July 24, 2024, SECO conducted a wetland review and delineation pursuant to statutory language and Rules of Part 303, Wetland Protection, of the Natural Resources and Environmental Protection Act

(NREPA), 1994 P.A. 451, as amended. As required, specific methodology followed that set forth in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual including the Northcentral and Northeast Regional Supplement. The wetland/upland interface was flagged in the field with survey ribbon and sequentially lettered and numbered for ease in visualizing and surveying boundaries. The wetland boundaries were subsequently surveyed by PEA Group.

Results and Discussion

Four wetland boundaries were established in the field (**Figure 2**). The lettering/numbering of each delineated area are provided in the table below.

Boundary A	A1-A20	Boundary D	D1-D-18
Boundary B	B1-B100	Boundary E	E1-E10

Figure 2

Wetland Delineation Map

Hoskins Drain

North

Wetland A consists of a forested system along the edge of a large monotypic stand of reed canary grass (*Phalaris arundinacea*). This area recieves water from Wetland B via a 12 inch culvert underneath a walking trail. Wetland B consists of a mixture of energent, open water, scrub shrub and forested wetland, although many, if not most of the trees in the central portion of the wetland have died as a result of flooding conditions.

The focus of review for Wetland B was the western edge of the wetland where a small swale leads to the 12 inch culvert. Wetlands D and E consist of scrub shrub and emergent wetland respectively, adjacent to a 12 inch culvert proposed for replacement. Michigan Department of Environment, Great Lakes and Energy (EGLE) Wetland Data Sheets are provided in **Attachment A** for each wetland boundary. Dominant wetland plant species present along the wetland/upland interfaces are provided in **Table 1** below.

Table 1. Wetland Plant Species found along Wetlands A, B, D, and E

Wetland Area	Scientific Name	Common Name	Wetland Rating
A	*Acer negundo*	Box Elder	FAC
	Cornus racemosa	Gray Dogwood	FAC
	Glyceria striata	Fowl Manna Grass	OBL
	Onoclea sensibilis	Sensitive Fern	FACW
	Phalaris arundinacea	Reed Canary Grass	FACW
	Solidago gigantea	Smooth Goldenrod	FACW
	Viburnum opulus	Cranberry	FAC
	Vitis riparia	Riverbank Grape	FACW
B	*Acer saccharinum*	Silver Maple	FACW
	Cornus amomum	Silky Dogwood	FACW
	Fraxinus pennsylvanica	Green Ash	FACW
	Glyceria striata	Fowl Manna Grass	OBL
	Impatiens capensis	Jewelweed	FACW
	Onoclea sensibilis	Sensitive Fern	FACW
	Phalaris arundinacea	Reed Canary Grass	FACW
	Salix interior	Sandbar Willow	FACW
	Solidago gigantea	Smooth Goldenrod	FACW
	Toxicodendron radicans	Poison Ivy	FAC
	Typha angustifolia	Narrowleaf Cattail	OBL
	Typha latifolia	Broad-leaved Cattail	OBL
	Ulmus americana	American Elm	FACW
	Urtica dioica	Nettle	FACW
	Vitis riparia	Riverbank Grape	FACW
D	*Carex lacustris*	Lake Sedge	OBL
	Cornus racemosa	Gray Dogwood	FAC
	Glyceria striata	Fowl Manna Grass	OBL
	Phalaris arundinacea	Reed Canary Grass	FACW
	Physocarpus opulifolius	Nine Bark	FACW
	Solidago gigantea	Smooth Goldenrod	FACW
	Typha latifolia	Broad-leaved Cattail	OBL
	Urtica dioica	Nettle	FACW
	Viburnum lentago	Nanny Berry	FAC
E	Cornus amomum	Silky Dogwood	FACW
	Cornus racemosa	Gray Dogwood	FAC
	Leersia oryzoides	Rice Cutgrass	OBL
	Phalaris arundinacea	Reed Canary Grass	FACW
	Salix nigra	Black Willow	OBL
	Typha angustifolia	Narrowleaf Cattail	OBL
	Verbena hastata	Verbena	FACW

Wetland Regulation

Wetlands in Michigan are regulated by EGLE under Part 303 of NREPA if they are greater than five acres in size. Wetlands are also regulated by the state, regardless of size, if they are: contiguous to, within 500 feet of, or have a surface water connection to an inland lake, stream, or pond or; are within 1,000 feet of a Great Lake or Great Lake Connecting Waters. Based on our review, it is our opinion that all wetlands delineated on site are regulated by the State because they are all part of a larger wetland system that is greater than 5 acres in size, and have a surface water connection to the Herron Creek Drain located west of the study area.

Permits would be required from the State prior to conducting any regulated activities within the wetland. Regulated activities include but are not necessarily limited to excavating, filling, grading (essentially movement of soils), construction, altering hydrology (draining), and use (e.g. directing and storing water).

Numerous natural environmental factors and human induced changes may cause changes in the extent of wetland on a parcel over a period of time. The water resources identified on the property represents SECO's opinion on what EGLE would consider to be wetland based on the condition of the site at the time of inspection and recent regulatory policies and attitudes. Please note that EGLE has the final determination regarding the presence and location of wetlands and surface waters and their respective jurisdictional statuses. We recommend a jurisdictional confirmation from EGLE be requested.

ATTACHMENT A

EGLE Data Sheets

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Okemos/Ingham Sampling Date: 7/24/24
Applicant/Owner: Ingham County Drain Commissioner State: Michigan Sampling Point: A-6 Wet
Investigator(s): StreamsideEco, LLC; M. Nurse Section, Township, Range: T04N, R01W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
Slope (%): 0-1 Lat.: 42.70477 Long.: -84.45258 Datum: NA
Soil Map Unit Name: Houghton Muck NWI Classification: FW Emergent
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X 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)
- X Water-Stained Leaves (B9)
- X 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)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	X	No	____	Depth (inches): 5
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches): 4

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: A-6 Wet

Tree Stratum	Plot Size (30Ft)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Viburnum opulus*	1		FACW
2				
3				
4				
5				
6				
7				
8				
9				
10				
		1	= Total Cover	

Herb Stratum	Plot Size (1M)	Absolute % Cover	Dominant Species	Indicator Status
1	*Phalaris arundinacea*	99	Y	FACW
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		99	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	1
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*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 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? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** A-6 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-13	N2.5/						Muck	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- X Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ 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)

Indicators for Problematic Hydric Soils:

- ___ 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**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ 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 (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Okemos/Ingham Sampling Date: 7/24/24
Applicant/Owner: Ingham County Drain Commissioner State: Michigan Sampling Point: A-6 Up
Investigator(s): StreamsideEco, LLC; M. Nurse Section, Township, Range: T04N, R01W
Landform (hillslope, terrace, etc.): hillside Local relief (concave, convex, none): Convex
Slope (%): 12 to 18 Lat.: 42.70452 Long.: -84.45271 Datum: NA
Soil Map Unit Name: Hillsdale-Riddles sandy loams NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

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): ____

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: A-6 Up

Tree Stratum	Plot Size (30Ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Prunus serotina*	40	Y	FACU
2	*Rhamnus cathartica*	10	N	FAC
3	*Quercus alba*	5	N	FACU
4				
5				
6				
7				
8				
9				
10				
		55	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Zanthoxylum americanum*	20	Y	FACU
2	*Rhamnus cathartica*	20	Y	FAC
3				
4				
5				
6				
7				
8				
9				
10				
		40	= Total Cover	

Herb Stratum	Plot Size (1M)	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	30	Y	FAC
2	*Zanthoxylum americanum*	20	Y	FACU
3	*Lonicera tatarica*	20	Y	FACU
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		70	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	11	28
Sapling/Shrub Stratum	8	20
Herb Stratum	14	35
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	60	x 3 =	180
FACU species	105	x 4 =	420
UPL species	0	x 5 =	0
Column totals	165 (A)		600 (B)

Prevalence Index = B/A = 3.64

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*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 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? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** A-6 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-4	10YR 4/2	90	10YR6/2	10			Sandy Loam	
4-14	7.5YR 4/3						Sandy Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ 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)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Okemos/Ingham Sampling Date: 7/24/24
Applicant/Owner: Ingham County Drain Commissioner State: Michigan Sampling Point: B-64 Wet
Investigator(s): StreamsideEco, LLC; M. Nurse Section, Township, Range: T04N, R01W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
Slope (%): 1 to 2 Lat.: 42.70339 Long.: -84.44977 Datum: NA
Soil Map Unit Name: Houghton Muck NWI Classification: Lowland Hardwood
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial
- X Imagery (B7)
- ___ Sparsely Vegetated Concave
- X Surface (B8)
- X 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)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery
- ___ (C9)
- X Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	X	No	___	Depth (inches): 3
Saturation present? (includes capillary fringe)	Yes	X	No	___	Depth (inches): 2

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B-64 Wet

Tree Stratum	Plot Size (30Ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Ulmus americana*	20	Y	FACW
2	*Acer negundo*	20	Y	FAC
3	*Fraxinus pennsylvanica*	10	N	FACW
4	*Acer saccharinum*	10	N	FACW
5				
6				
7				
8				
9				
10				
		60	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Cornus racemosa*	10	Y	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		10	= Total Cover	

Herb Stratum	Plot Size (1M)	Absolute % Cover	Dominant Species	Indicator Status
1	*Phalaris arundinacea*	40	Y	FACW
2	*Urtica dioica*	20	Y	FAC
3	*Onoclea sensibilis*	10	N	FACW
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		70	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	12	30
Sapling/Shrub Stratum	2	5
Herb Stratum	14	35
Woody Vine Stratum	0	0

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: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	50	x 3 =	150
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	140 (A)		330 (B)

Prevalence Index = B/A = 2.36

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*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 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? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** B-64 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	2.5N/							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- X Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ 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)

Indicators for Problematic Hydric Soils:

- ___ 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**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ 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 (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Okemos/Ingham Sampling Date: 7/24/24
Applicant/Owner: Ingham County Drain Commissioner State: Michigan Sampling Point: B-64 Up
Investigator(s): StreamsideEco, LLC; M. Nurse Section, Township, Range: T04N, R01W
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Convex
Slope (%): 6 to 12 Lat.: 42.70319 Long.: -84.44998 Datum: NA
Soil Map Unit Name: Filer fine sandy loam NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	X	No	X	Depth (inches):
Water table present?	Yes	X	No	X	Depth (inches):
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches): 15

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B-64 Up

Tree Stratum	Plot Size (30Ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Prunus serotina*	20	Y	FACU
2	*Rhamnus cathartica*	10	Y	FAC
3	*Quercus rubra*	10	Y	FACU
4	*Acer saccharinum*	10	Y	FACW
5				
6				
7				
8				
9				
10				
		50	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Lonicera tatarica*	20	Y	FACU
2	*Rosa multiflora*	10	Y	FACU
3				
4				
5				
6				
7				
8				
9				
10				
		30	= Total Cover	

Herb Stratum	Plot Size (1M)	Absolute % Cover	Dominant Species	Indicator Status
1	*Rubus occidentalis*	40	Y	
2	*Phalaris arundinacea*	5	N	FACW
3	*Solidago altissima*	5	N	FACU
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		50	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	10	25
Sapling/Shrub Stratum	6	15
Herb Stratum	10	25
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 28.57% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	10	x 3 =	30
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column totals	90 (A)		320 (B)

Prevalence Index = B/A = 3.56

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*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 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? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** B-64 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-5	7.5YR 3/3	95	7.5YR 6/3	5			Sandy Loam	
5-15	5YR 4/3	85	10YR 6/3	15			Sandy Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ 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)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Okemos/Ingham Sampling Date: 7/24/24
Applicant/Owner: Ingham County Drain Commissioner State: Michigan Sampling Point: D-12 Wet
Investigator(s): StreamsideEco, LLC; M. Nurse Section, Township, Range: T04N, R01W
Landform (hillslope, terrace, etc.): Depressional Local relief (concave, convex, none): Concave
Slope (%): 0-1 Lat.: 42.70303 Long.: -84.44722 Datum: NA
Soil Map Unit Name: Houghton Muck NWI Classification: Lowland Hardwoods
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X 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)
- X 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)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	____	No	X	Depth (inches): ____
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches): 10

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: D-12 Wet

Tree Stratum	Plot Size (30Ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Quercus bicolor*	15	Y	FACW
2	*Rhamnus cathartica*	5	Y	FAC
3	*Salix nigra*	5	Y	OBL
4				
5				
6				
7				
8				
9				
10				
		25	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Cornus racemosa*	40	Y	FAC
2	*Lonicera tatarica*	5	N	FACU
3				
4				
5				
6				
7				
8				
9				
10				
		45	= Total Cover	

Herb Stratum	Plot Size (1M)	Absolute % Cover	Dominant Species	Indicator Status
1	*Urtica dioica*	60	Y	FAC
2	*Leersia oryzoides*	30	Y	OBL
3	*Glyceria striata*	20	N	OBL
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		110	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	5	13
Sapling/Shrub Stratum	9	23
Herb Stratum	22	55
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	55	x 1 =	55	
FACW species	15	x 2 =	30	
FAC species	105	x 3 =	315	
FACU species	5	x 4 =	20	
UPL species	0	x 5 =	0	
Column totals	180	(A)	420	(B)

Prevalence Index = B/A = 2.33

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*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 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? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** D-12 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	N2.5/						Muck	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- X Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ 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)

Indicators for Problematic Hydric Soils:

- ___ 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**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ 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 (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Okemos/Ingham Sampling Date: 7/24/24
Applicant/Owner: Ingham County Drain Commissioner State: Michigan Sampling Point: D-12 Up
Investigator(s): StreamsideEco, LLC; M. Nurse Section, Township, Range: T04N, R01W
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Convex
Slope (%): 6 to 12 Lat.: 42.70283 Long.: -84.44703 Datum: NA
Soil Map Unit Name: Filer fine sandy loam NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

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): ____

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: D-12 Up

Tree Stratum	Plot Size (30Ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	10	Y	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		10	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Berberis thunbergii*	20	Y	FACU
2	*Lonicera tatarica*	10	Y	FACU
3	*Rhamnus cathartica*	10	Y	FAC
4				
5				
6				
7				
8				
9				
10				
		40	= Total Cover	

Herb Stratum	Plot Size (1M)	Absolute % Cover	Dominant Species	Indicator Status
1	*Berberis thunbergii*	40	Y	FACU
2	*Solidago altissima*	5	N	FACU
3	*Cirsium arvense*	5	N	FACU
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		50	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	2	5
Sapling/Shrub Stratum	8	20
Herb Stratum	10	25
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 40.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	20	x 3 =	60	
FACU species	80	x 4 =	320	
UPL species	0	x 5 =	0	
Column totals	100 (A)		380	(B)

Prevalence Index = B/A = 3.80

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*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 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? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** D-12 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-8	7.5YR 3/3						Sandy Loam	
8-14	10YR 6/3						Sandy Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ 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)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Okemos/Ingham Sampling Date: 7/24/24
Applicant/Owner: Ingham County Drain Commissioner State: Michigan Sampling Point: E-4 Wet
Investigator(s): StreamsideEco, LLC; M. Nurse Section, Township, Range: T04N, R01W
Landform (hillslope, terrace, etc.): Depressional Local relief (concave, convex, none): Concave
Slope (%): 0-1 Lat.: 42.70276 Long.: -84.44633 Datum: NA
Soil Map Unit Name: Houghton Muck NWI Classification: Emergent
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X 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)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	X	No	___	Depth (inches):	0.2
Water table present?	Yes	X	No	___	Depth (inches):	0
Saturation present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: E-4 Wet

Tree Stratum	Plot Size (30Ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Salix nigra*	10	Y	OBL
2				
3				
4				
5				
6				
7				
8				
9				
10				
		10	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Cornus racemosa*	15	Y	FAC
2	*Cornus amomum*	5	Y	
3	*Salix nigra*	5	Y	OBL
4				
5				
6				
7				
8				
9				
10				
		25	= Total Cover	

Herb Stratum	Plot Size (1M)	Absolute % Cover	Dominant Species	Indicator Status
1	*Phalaris arundinacea*	40	Y	FACW
2	*Typha angustifolia*	30	Y	OBL
3	*Galium trifidum*	10	N	FACW
4	*Leersia oryzoides*	5	N	OBL
5	*Verbena hastata*	5	N	FACW
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		90	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	2	5
Sapling/Shrub Stratum	5	13
Herb Stratum	18	45
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 83.33% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	50	x 1 =	50
FACW species	55	x 2 =	110
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	120 (A)		205 (B)

Prevalence Index = B/A = 1.71

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*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 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? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** E-4 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-8	N2.5/						Muck	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- X Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ 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)

Indicators for Problematic Hydric Soils:

- ___ 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**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ 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 (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Okemos/Ingham Sampling Date: 7/24/24
Applicant/Owner: Ingham County Drain Commissioner State: Michigan Sampling Point: E-4 Up
Investigator(s): StreamsideEco, LLC; M. Nurse Section, Township, Range: T04N, R01W
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Convex
Slope (%): 6 to 12 Lat.: 42.70284 Long.: -84.44645 Datum: NA
Soil Map Unit Name: Filer fine sandy loam NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

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): ____

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: E-4 Up

Tree Stratum	Plot Size (30Ft)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15ft)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size (1M)	Absolute % Cover	Dominant Species	Indicator Status
1	*Cirsium arvense*	20	Y	FACU
2	*Solidago altissima*	10	Y	FACU
3	*Asclepias syriaca*	10	Y	UPL
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		40	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	8	20
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	10	x 5 =	50
Column totals	40 (A)		170 (B)

Prevalence Index = B/A = 4.25

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*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 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? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** E-4 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-3	7.5YR 3/3						Sandy Loam	
3-12	10YR 6/3						Sandy Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ 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)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

9 Wetlands Delineation Report – Upper Reach

WETLAND DELINEATION

Hoskins Drain
Upper Reach

T04N, R01W, Section 29
Okemos, Michigan
Ingham County

Prepared By:

StreamsideEco

Prepared For:

INGHAM COUNTY
CLEAN WATER
DRAIN COMMISSIONER
PATRICK E. LINDEMANN

May 16, 2025

Introduction

StreamsideEco, LLC (SECO) conducted a wetland delineation on a property located within T04N, R01W, Section 29, Okemos, Michigan. Two delineations were conducted along the Hoskin's Drain; one for the upper and one for the lower reach of the drain. The area of this study focused on wetlands located within and adjacent to the Hoskins Drain at specific areas of potential project impacts within the upper reach of the Drain (**Figure 1**). Results of the lower reach are presented in a separate report. The purpose of this work was to identify the extent, location and regulatory status of wetlands within the study area.

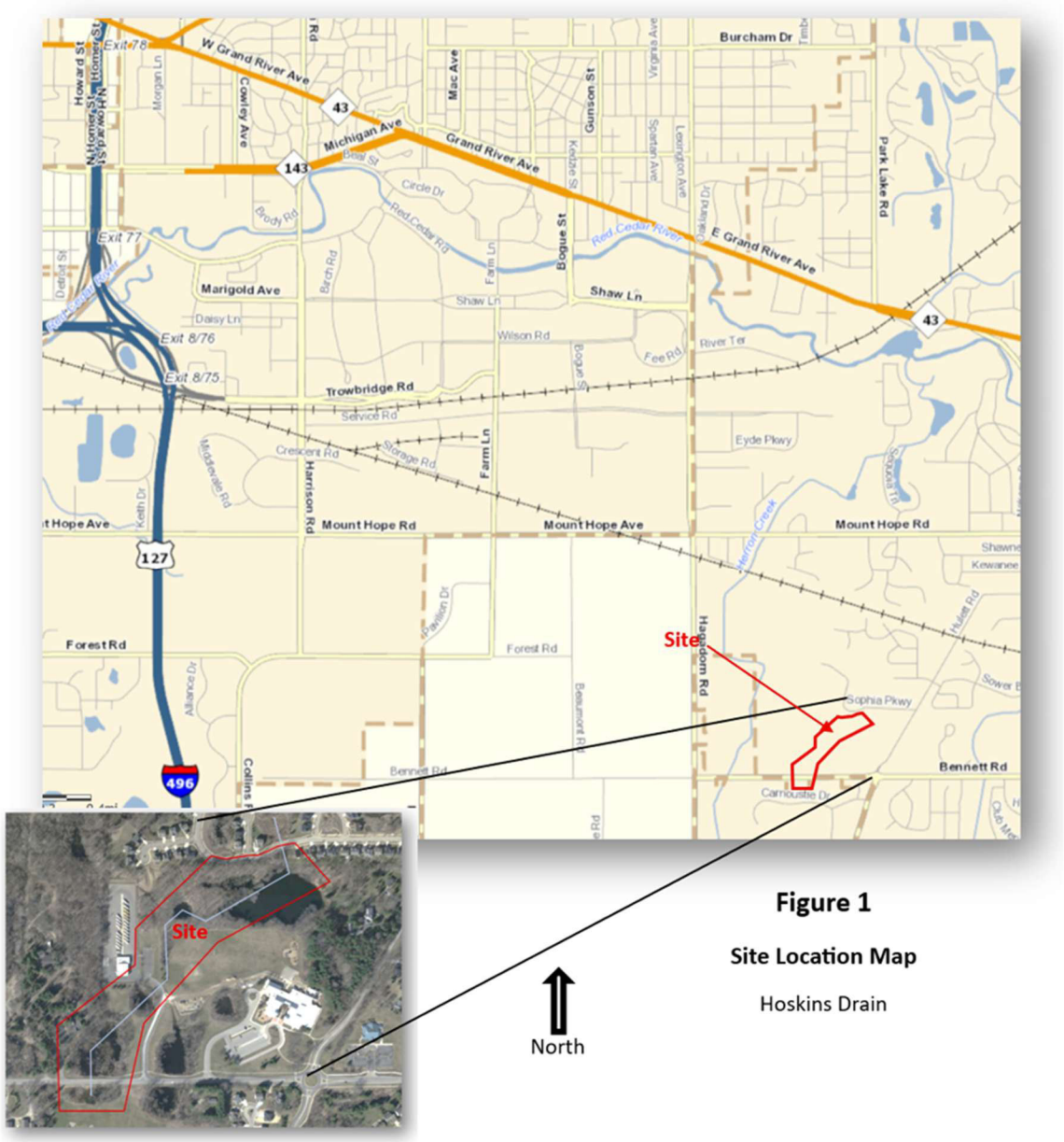

Figure 1

Site Location Map

Hoskins Drain

Methods

On May 14, 2025, SECO conducted a wetland review and delineation pursuant to statutory language and Rules of Part 303, Wetland Protection, of the Natural Resources and Environmental Protection Act (NREPA), 1994 P.A. 451, as amended. As required, specific methodology followed that set forth in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual including the Northcentral and Northeast Regional Supplement. The wetland/upland interface was flagged in the field with survey ribbon and sequentially lettered and numbered for ease in visualizing and surveying boundaries. The wetland boundaries were subsequently surveyed by PEA Group.

Results and Discussion

Five wetland boundaries were established in the field (**Figure 2**). The lettering/numbering of each delineated area are provided in **Figure 2** below.

Figure 2

Wetland Delineation Map

Hoskins Drain

Wetlands A and B consists of an emergent wetland along the edge Bennett Road dominated by narrow-leaved cattail (*Typha angustifolia*). This location is the site of relatively significant reptile and amphibian road kill.

Wetland C is the north side of the wetland delineated by boundary B and consists of a shallow open water pond with an emergent, scrub shrub and forested wetland edge; with some scrub shrub expanding into the pond area. Wetland D is similar to Wetland C with a shallow pond surrounded by wetland schrubs and trees.

Wetland E is a larger complex with a higher porportion of forested wetland along the north site of a large pond. This wetland contains a mix of forested, scrub shrub, and emergent wetland and drains through a culvert to the north across Sophia Drive into Champian Woods Subdivision (lower reaches of the Hoskins Drain).

Michigan Department of Environment, Great Lakes and Energy (EGLE) Wetland Data Sheets are provided in **Attachment A** for each wetland boundary. Dominant wetland plant species present along the wetland/upland interfaces are provided in **Table 1** below.

E

Table 1. Wetland Plant Species found along Wetlands A, B, C, D, and

Wetland Area	Scientific Name	Common Name	Wetland Rating	Wetland Area	Scientific Name	Common Name	Wetland Rating
A	*Typha angustifolia*	Narrow-leaved Catt	OBL	D	*Lemna minor*	Common Duckweed	OBL
	Cirsium arvense	Canada thistle	FACU		*Phalaris arundinace*	Reed Canary Grass	FACW
	Acer negundo	Box Elder	FACU		*Rhamnus cathartica*	Common Buckthorn	FAC
	Carex lacustris	Lake Sedge	OBL		*Salix nigra*	Black Willow	OBL
	Lemna minor	Small Duckweed	OBL		*Solanum ptycanthum*	Eastern Black Night	FACU
	Salix interior	Sandbar Willow	FACW		*Ranunculus sceleral*	Cursed Crowfoot	OBL
	Salix nigra	Black Willow	OBL		*Sambucus canadensi*	Common Eldeberry	FACW
	Salix fragilis	Crack Willow	FAC		*Vitis riparia*	Grape	FACW
					Toxicodendron radic	Poison Ivy	FAC
B	*Ranunculus sceleratus*	Cursed Crowfoot	OBL		*Inpatens capensis*	Jewelweed	FACW
	Lemna minor	Common duckweed	OBL		*Solanum dulcamara*	Nightshade	FAC
	Nasturtium officinale	Watercress	OBL				
	Typha angustifolia	Narrow-leaved Catt	OBL		*Acer saccharinum*	Silver Maple	FACW
	Urtica dioicia	Nettle	FACW		*Acer rubrum*	Red Maple	FAC
	Vitis riparia	Grape	FACW		*Fraxinus pennsylvan*	Green Ash	FACW
					Glyceria striata	Fowl Manna Grass	OBL
C	*Acer negundo*	Box Elder	FAC	E	*Nasturtium officinal*	Watercress	OBL
	Salix nigra	Black Willow	OBL		*Solidago gigantea*	Smooth Goldenrod	FACW
	Salix fragilis	Crack Willow	FACW		*Toxicodendron radic*	Poison Ivy	FAC
	Glyceria striata	Fowl mannagrass	OBL		*Vitis riparia*	River-bank Grape	FAC
	Inpatens capensis	Jewelweed	FACW		*Iris versicolor*	Iris	OBL
	Typha latifolia	Broad leaved cattail	OBL		Onoclea sensibilis	Sensitive Fern	FACW
					Populus deltoides	Eastern Cottonwood	FACW

Wetland Regulation

Wetlands in Michigan are regulated by EGLE under Part 303 of NREPA if they are greater than five acres in size. Wetlands are also regulated by the state, regardless of size, if they are: contiguous to, within 500 feet of, or have a surface water connection to an inland lake, stream, or pond or; are within 1,000 feet of a Great Lake or Great Lake Connecting Waters. Based on our review, it is our opinion that all wetlands delineated on site are regulated by the State because they all have a surface water connection to an inland stream (Hoskins Drain and Herron Creek), and are contiguous to ponds along the Hoskins Drain rout and course.

Permits would be required from the State prior to conducting any regulated activities within the wetland. Regulated activities include but are not necessarily limited to excavating, filling, grading (essentially movement of soils), construction, altering hydrology (draining), and use (e.g. directing and storing water).

Numerous natural environmental factors and human induced changes may cause changes in the extent of wetland on a parcel over a period of time. The water resources identified on the property represents SECO's opinion on what EGLE would consider to be wetland based on the condition of the site at the time of inspection and recent regulatory policies and attitudes. Please note that EGLE has the final

determination regarding the presence and location of wetlands and surface waters and their respective jurisdictional statuses. We recommend a jurisdictional confirmation from EGLE be requested.

ATTACHMENT A

EGLE Data Sheets

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Ingham Sampling Date: 5/14/25
Applicant/Owner: ICDC State: MI Sampling Point: A8 Wet
Investigator(s): StreamsideEco, LLC M. Nurse Section, Township, Range: 04N01W32
Landform (hillslope, terrace, etc.): Lake Plains Local relief (concave, convex, none): Concave
Slope (%): 0-2 Lat.: 42.69728 Long.: -84.45266 Datum: N/A
Soil Map Unit Name: Colwood-Brookston loams NWI Classification: PSS/PEM
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- X 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)
- ___
- ___
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	X	No	____	Depth (inches):	0.2
Water table present?	Yes	X	No	____	Depth (inches):	0.2
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches):	0.2

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: A8 Wet

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size (1 SqM)	Absolute % Cover	Dominant Species	Indicator Status
1	*Typha angustifolia*	95	Y	OBL
2	*Cirsium arvense*	1	N	FACU
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		96	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	19	48
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	95	x 1 =	95
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column totals	96 (A)		99 (B)

Prevalence Index = B/A = 1.03

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*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 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? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** A8 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-6	10YR 2/2	100					Silt Loam	
6-12	10YR 2/2	90	10YR 4/2				Silt Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Ingham Sampling Date: 5/14/25
Applicant/Owner: ICDC State: MI Sampling Point: A12 Up
Investigator(s): StreamsideEco Section, Township, Range: 04N01W32
Landform (hillslope, terrace, etc.): Lake Plains Local relief (concave, convex, none): Concave
Slope (%): 0-2 Lat.: 42.69743 Long.: -84.45246 Datum: N/A
Soil Map Unit Name: Colwood-Brookston loams NWI Classification: PSS1
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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)
- ___
- ___
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes ____	No X	Depth (inches): ____	**Indicators of wetland hydrology present?**	N
Water table present?	Yes ____	No X	Depth (inches): ____		
Saturation present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____		

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: A12 Up

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size (1 SqM)	Absolute % Cover	Dominant Species	Indicator Status
1	*Cirsium arvense*	90	Y	FACU
2	*Vinca minor*	5	N	UPL
3	*Asclepias syriaca*	5	N	UPL
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		100	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	90	x 4 =	360
UPL species	10	x 5 =	50
Column totals	100 (A)		410 (B)

Prevalence Index = B/A = 4.10

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*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 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? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** A12 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
1-8	10YR 4/4						Road Slope	Fill for Bennett Road

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ 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)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Ingham Sampling Date: 5/14/25
Applicant/Owner: ICDC State: MI Sampling Point: B7 Up
Investigator(s): Streamside M. Nurse Section, Township, Range: 04N01W29
Landform (hillslope, terrace, etc.): Lake Plains Local relief (concave, convex, none): Concave
Slope (%): 0-2 Lat.: 42.69744 Long.: Datum: N/A
Soil Map Unit Name: Colwood-Brookston loams NWI Classification: PFO/PSS
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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)
- ___
- ___
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes ____	No ____	Depth (inches):	
Water table present?	Yes ____	No ____	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes ____	No ____	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B7 Up

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size (1 SqM)	Absolute % Cover	Dominant Species	Indicator Status
1	*Mulch blanket*	100	Y	
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		100	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	0 (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
___ Dominance test is >50%
___ Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*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 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? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** B7 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-6	10YR 4/4							Road fill

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ 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)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Ingham Sampling Date: 5/14/25
Applicant/Owner: ICDC State: MI Sampling Point: B7 Wet
Investigator(s): StreamsideEco Section, Township, Range: 04N01W29
Landform (hillslope, terrace, etc.): Lake Plains Local relief (concave, convex, none): Concave
Slope (%): 0-2 Lat.: 42.69744 Long.: -84.45225 Datum: N/A
Soil Map Unit Name: Co NWI Classification: Water
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X 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)
- ___
- ___
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	X	No	____	Depth (inches):	0.1
Water table present?	Yes	X	No	____	Depth (inches):	0.1
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches):	0.1

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B7 Wet

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size (1 SqM)	Absolute % Cover	Dominant Species	Indicator Status
1	*Typha angustifolia*	60	Y	OBL
2	*Lemna minor*	30	Y	OBL
3	*Ranunculus sceleratus*	5	N	OBL
4	*Nasturtium officinale*	1	N	OBL
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		96	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	19	48
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	96	x 1 =	96
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	96 (A)		96 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*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 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? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** B7 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-9	10YR4/2						Silt Loam	
9-12	10YR4/2	95	10YR 3/2	10			Silt Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? ___Y___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Ingham Sampling Date: 5/14/25
Applicant/Owner: ICDC State: MI Sampling Point: C8 Up
Investigator(s): Streamside M. Nurse Section, Township, Range: 04N01W29
Landform (hillslope, terrace, etc.): Till Plains Local relief (concave, convex, none): Concave
Slope (%): 0-2 Lat.: 42.699 Long.: -84.45114 Datum: N/A
Soil Map Unit Name: Owosso-Marlette sandy loams NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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)
- ___
- ___
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes ____	No ____	Depth (inches):	
Water table present?	Yes ____	No ____	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes ____	No ____	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: C8 Up

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Juglans nigra*	20	Y	FACU
2	*Acer negundo*	20	Y	FAC
3				
4				
5				
6				
7				
8				
9				
10				
		40	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Lonicera tatarica*			FACU
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size (1 SqM)	Absolute % Cover	Dominant Species	Indicator Status
1	*Alliaria petiolata*	40	Y	FACU
2	*Parthenocissus quinquefolia*	20	Y	FACU
3	*Hackelia virginiana*	10	N	FACU
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		70	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	8	20
Sapling/Shrub Stratum	0	0
Herb Stratum	14	35
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 25.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column totals	110 (A)		420 (B)

Prevalence Index = B/A = 3.82

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
___ Dominance test is >50%
___ Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*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 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? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** C8 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-5	10YR 3/2						fine sandy loam	
5-10	10YR 4/3						fine sandy loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ 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)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Ingham Sampling Date: 5/14/25
Applicant/Owner: ICDC State: MI Sampling Point: C8 Wet
Investigator(s): Streamside M. Nurse Section, Township, Range: 04N01W29
Landform (hillslope, terrace, etc.): Till Plains Local relief (concave, convex, none): Concave
Slope (%): 0-6 Lat.: 42.699 Long.: -84.45114 Datum: N/A
Soil Map Unit Name: Owosso-Marlette sandy loams NWI Classification: PSS1/EM1C
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X 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)
- ___
- ___
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches):	____
Water table present?	Yes	X	No	____	Depth (inches):	4
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches):	1

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: C8 Wet

Tree Stratum	Plot Size (30ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Salix nigra*	5	Y	OBL
2	*Acer negundo*	1	N	FAC
3				
4				
5				
6				
7				
8				
9				
10				
		6	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size (1 SqM)	Absolute % Cover	Dominant Species	Indicator Status
1	*Phalaris arundinacea*	85	Y	FACW
2	*Typha latifolia*	5	N	OBL
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		90	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	1	3
Sapling/Shrub Stratum	0	0
Herb Stratum	18	45
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	10	x 1 =	10
FACW species	85	x 2 =	170
FAC species	1	x 3 =	3
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	96 (A)		183 (B)

Prevalence Index = B/A = 1.91

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*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 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? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** C8 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-8	10YR 4/2						Silty loam with thin	layer of organics

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? ___Y___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Ingham Sampling Date: 5/14/25
Applicant/Owner: ICDC State: MI Sampling Point: D19 Up
Investigator(s): Streamside M. Nurse Section, Township, Range: 04N01W29
Landform (hillslope, terrace, etc.): Till Plains Local relief (concave, convex, none): Concave
Slope (%): 2 to 6 Lat.: 42.699 Long.: -84.45114 Datum: N/A
Soil Map Unit Name: Oshtemo sandy loam NWI Classification: PSS1
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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)
- ___
- ___
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes ____	No ____	Depth (inches):	
Water table present?	Yes ____	No ____	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes ____	No ____	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: D19 Up

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer negundo*	15	Y	FAC
2	*Prunus serotina*	15	Y	FACU
3	*Rhamnus cathartica*	10	Y	FAC
4				
5				
6				
7				
8				
9				
10				
		40	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	25	Y	FAC
2	*Lonicera tatarica*	15	Y	FACU
3				
4				
5				
6				
7				
8				
9				
10				
		40	= Total Cover	

Herb Stratum	Plot Size (1 SqM)	Absolute % Cover	Dominant Species	Indicator Status
1	*Carex pennsylvanica*	15	Y	UPL
2	*Rhamnus cathartica*	10	Y	FAC
3	*Cirsium arvense*	10	Y	FACU
4	*Frangula alnus*	5	N	FAC
5	*Rubus occidentalis*	1	N	UPL
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		41	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	8	20
Sapling/Shrub Stratum	8	20
Herb Stratum	8	21
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 8 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	65	x 3 =	195
FACU species	40	x 4 =	160
UPL species	16	x 5 =	80
Column totals	121 (A)		435 (B)

Prevalence Index = B/A = 3.60

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*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 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? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** D19 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-9	10YR 4/3						Sandy loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ 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)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Ingham Sampling Date: 5/14/25
Applicant/Owner: ICDC State: MI Sampling Point: D19 Wet
Investigator(s): Streamside M. Nurse Section, Township, Range: 04N01W29
Landform (hillslope, terrace, etc.): Till Plains Local relief (concave, convex, none): Concave
Slope (%): 2 to 6 Lat.: 42.699 Long.: -84.45114 Datum: N/A
Soil Map Unit Name: Owosso-Marlette sandy loams NWI Classification: PSS1
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X 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)
- X 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)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___
- ___
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	X	No	____	Depth (inches):	0
Water table present?	Yes	X	No	____	Depth (inches):	0
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: D19 Wet

Tree Stratum	Plot Size (30ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Salix nigra*	1		OBL
2				
3				
4				
5				
6				
7				
8				
9				
10				
		1	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15 ft)	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	5	Y	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	

Herb Stratum	Plot Size (1 SqM)	Absolute % Cover	Dominant Species	Indicator Status
1	*Phalaris arundinacea*	80	Y	FACW
2	*Lemna minor*	5	N	OBL
3	*Solanum dulcamara*	5	N	FAC
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		90	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	1
Sapling/Shrub Stratum	1	3
Herb Stratum	18	45
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	6	x 1 =	6
FACW species	80	x 2 =	160
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	96 (A)		196 (B)

Prevalence Index = B/A = 2.04

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*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 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? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** D19 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-8	10yr 3/2							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ 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**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ 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 (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Ingham Sampling Date: 5/14/25
Applicant/Owner: ICDC State: MI Sampling Point: E25 Up
Investigator(s): Streamside Section, Township, Range: 04N01W29
Landform (hillslope, terrace, etc.): Moraines Local relief (concave, convex, none): Concave
Slope (%): 6 to 12 Lat.: 42.70089 Long.: -84.44861 Datum: N/A
Soil Map Unit Name: Metea loamy sand NWI Classification: PFO
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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)
- ___
- ___
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes ____	No ____	Depth (inches):	
Water table present?	Yes ____	No ____	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes ____	No ____	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: E25 Up

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer saccharum*	60	Y	FACU
2				
3				
4				
5				
6				
7				
8				
9				
10				
		60	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer saccharum*	10	Y	FACU
2				
3				
4				
5				
6				
7				
8				
9				
10				
		10	= Total Cover	

Herb Stratum	Plot Size (1 SqM)	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer saccharum*	20	Y	FACU
2	*Carex pennsylvanica*	10	Y	UPL
3	*Lonicera tatarica*	10	Y	FACU
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		40	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	12	30
Sapling/Shrub Stratum	2	5
Herb Stratum	8	20
Woody Vine Stratum	0	0

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: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	100	x 4 =	400
UPL species	10	x 5 =	50
Column totals	110 (A)		450 (B)

Prevalence Index = B/A = 4.09

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*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 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? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** E25 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-6	10YR 4/3						Loamy Sand	
6-12	10YR 5/4						Loamy Sand	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ 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)

Indicators for Problematic Hydric Soils:

___ 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**)
___ Dark Surface (S7) (**LRR K, L**
___ 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 (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Hoskins Drain City/County: Ingham Sampling Date: 5/14/25
Applicant/Owner: ICDC State: MI Sampling Point: E25 Wet
Investigator(s): Streamside M. Nurse Section, Township, Range: 04N01W29
Landform (hillslope, terrace, etc.): Lakebed Local relief (concave, convex, none): Concave
Slope (%): 0-1 Lat.: 42.70089 Long.: -84.44861 Datum: N/A
Soil Map Unit Name: Edwards muck NWI Classification: PFO
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X 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)
- X 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)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___
- ___
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches):	____
Water table present?	Yes	X	No	____	Depth (inches):	4
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches):	2

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: E25 Wet

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer saccharinum*	20	Y	FACW
2	*Acer rubrum*	1	N	FAC
3				
4				
5				
6				
7				
8				
9				
10				
		21	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Fraxinus pennsylvanica*	5	Y	FACW
2				
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	

Herb Stratum	Plot Size (1 SqM)	Absolute % Cover	Dominant Species	Indicator Status
1	*Glyceria striata*	50	Y	OBL
2	*Toxicodendron radicans*	5	N	FAC
3	*Solidago gigantea*	1	N	FACW
4	*Vitis riparia*	1	N	FAC
5	*Nasturtium officinale*	1	N	OBL
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		58	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	4	11
Sapling/Shrub Stratum	1	3
Herb Stratum	12	29
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	51	x 1 =	51
FACW species	26	x 2 =	52
FAC species	7	x 3 =	21
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	84 (A)		124 (B)

Prevalence Index = B/A = 1.48

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*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 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? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** E25 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-7	N 2.5						Muck	
7-12	5YR 3/2						Muck	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- X Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA**
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ 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)

Indicators for Problematic Hydric Soils:

- ___ 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**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ 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 (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

10 Hoskins Drain Herpetological Report

Hoskins Drain Herpetological Report

October 2022

Prepared for:

Patrick E. Lindemann
Ingham County Drain Commissioner
P.O. Box 220
707 Buhl Ave.
Mason, MI 28854-0220

Prepared by:

Herpetological Resource and Management, LLC
P.O. Box 110
Chelsea, MI 48118

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Table of Contents

Executive Summary

In 2022, Herpetological Resource and Management, LLC (HRM) was contracted by the office of the Ingham County Drain Commissioner (ICDC) to conduct surveys targeting amphibians and reptiles associated with Hoskins Drain project located in Meridian Charter Township, Ingham County, Michigan. Pre-restoration surveys were conducted from June through October 2022 within the project area. The objective was to evaluate the onsite conditions and assess baseline amphibian and reptile species presence and distribution prior to the proposed drain improvement project. HRM was also contracted to assist in the identification of Best Management Practices (BMPs) that can be incorporated in the project. This report focuses on the findings of these pre-restoration surveys to help guide water quality and habitat improvement opportunities prior to restoration and construction within the project area.

Major findings from the 2022 pre-restoration assessments include:

- HRM documented the presence of twelve (12) herpetofauna species, including six (6) amphibians (Eastern American Toad, Green Frog, Northern Leopard Frog, Wood Frog, Eastern/Cope's Gray Treefrog, and Northern Spring Peeper) and six (6) reptiles (Eastern Garter Snake, Eastern Milk Snake, Northern Brown Snake, Northern Red-bellied Snake, Midland Painted Turtle, and Eastern Snapping Turtle).
- Based on current and anticipated habitat conditions, potential rare species include the state special concern Blanding's Turtle and Butler's Garter Snake.
- Additional potential species within the project area include Bullfrog, Midland Chorus Frog, Blue-spotted Salamander, Unisexual Salamander, Spotted Salamander, Eastern Tiger Salamander, Eastern Red-backed Salamander, Northern Ribbon Snake, Northern Water Snake, Blue Racer, Eastern Hog-nosed Snake, and Eastern Musk Turtle.
- Hoskins Drain currently supports moderate herpetofauna diversity pre-restoration.
- Restoration has the potential to greatly improve herpetological community composition and distribution as well as overall ecosystem function within the Hoskins Drain project while increasing water quality, stormwater capacity, and conveyance.
- Pre-restoration data collected by HRM in 2022 will provide valuable ecological baselines for comparison to future post-restoration survey data.

Introduction

Amphibians and reptiles (collectively regionally known as herpetofauna) are recognized as key bioindicators—gauges of environmental health. These animal groups are highly sensitive to environmental pollutants and habitat disturbances, and can indicate habitat quality concerns that may not be addressed through water quality or floral assessments (Cooperrider et al. 1986, Welsh and Droege 2001, Guilfoyle 2010). Their presence, distribution, and relative abundance can be important tools in identifying the need for and success of habitat restoration projects.

In 2022, Herpetological Resource and Management, LLC (HRM) was contracted by the office of the Ingham County Drain Commissioner (ICDC) to conduct herpetofaunal assessments within Hoskins Drain, which is proposed for future improvements to address flooding concerns and improve water quality. Between June and October of 2022, HRM conducted pre-restoration surveys within the project area prior to proposed construction. In addition to Hoskins Drain, HRM was contracted to conduct a more regional assessment of the drain area. HRM conducted opportunistic herpetofaunal surveys within adjacent properties to the north (Southwest Meridian Uplands Natural Area Preserve) and south (Silverleaf Condominium) of the drain.

The primary objective of HRM was to document the pre-restoration distribution of amphibians and reptiles within Hoskins Drain and adjacent properties. Results from the assessments conducted in 2022 will serve as a baseline to which the results of subsequent post-restoration surveys may be compared. These comparisons will help determine the overall success of the restoration effort and the ecological health of the system following project completion. In addition, HRM identified Best Management Practices (BMPs) and potential habitat improvement projects recommended to be implemented during construction and incorporated into restoration design. HRM also evaluated opportunities for the proposed Silverleaf development to incorporate restoration and enhancement components to improve the overall landscape quality and connectivity post-construction with Hoskins Drain.

Site Location and Description

The project is located within the Hoskins Drain watershed, Meridian Charter Township, Ingham County, Michigan. The Hoskins Drainage project supports multiple ecological community types. Other adjacent land uses include the Sundance Estates and Champion Woods subdivisions (Photos 1-5). Its boundaries are defined by the CSX Transportation railroad to the north, Hulett Road to the east, and Bennett Road to the South. The project area represents a subset of the Hoskins Drainage District and includes the large central wetland in which Hoskins Drain bisects, the Southwest Meridian Uplands

Natural Area preserve to the north, and a former gravel pit to the south which is proposed for development (Silverleaf Condominiums).

The central wetland of interest is heavily dominated by Reed Canary Grass (*Phalaris arundinacea*) and is surrounded by deciduous forest. This upland forest supports multiple vernal pools. A large upland grassland habitat is located north of the forest. The western edge of the wetland is defined by Herron Creek. The wetland's southern border is adjacent to a sparsely vegetated upland area composed of sandy soils from previous use as a gravel pit and proposed Silverleaf Condominium development.

Herpetofaunal Regulations

Michigan Threatened and Endangered species are afforded protection against collection or take through the Natural Resources and Environmental Protection Act, Part 365, Endangered Species Protection, administered by the Michigan Department of Natural Resources (MDNR) Wildlife Division. The law requires permits when listed species might be harmed, handled, or disturbed, even if proposed work includes conservation activities that are likely to benefit the species long-term (Michigan Department of Natural Resources 1994). Most Special Concern species in Michigan are not afforded protection under this legislation; however, Special Concern reptiles and amphibians are protected from take in accordance with MDNR Fisheries Division Order (224.16). The order states that take from the wild or possession of any such species is prohibited except as authorized under a Scientific Collector's Permit. The Eastern Massasauga Rattlesnake (*Sistrurus catenatus*) is also listed as Federally Threatened. The Federal Endangered Species Act of 1973 protects threatened and endangered species by prohibiting take including harassing, harming, hunting, shooting, wounding, killing, trapping, capturing, or collecting individuals (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1973).

Methods

Pre-restoration herpetofaunal surveys were conducted between June and October of 2022 by HRM staff trained in the identification and sampling of amphibians and reptiles. HRM crews surveyed Hoskins Drain, Herron Creek, and the associated upland habitat surrounding the drain (Map 1). These areas were surveyed for all life stages of herpetofauna and evaluated for potential habitat. Various survey techniques were utilized to assess the richness and spatial distribution of resident herpetofauna including visual observation, call-based identification of frogs, and visual inspection of potential nesting and basking sites. No voucher samples were collected, though photographs were taken when possible. All survey activities were in accordance with HRM's Scientific Collector's and Threatened and Endangered Species permits issued by the State of Michigan.

Each positively identified amphibian and reptile was recorded in the database. The following data were collected for each record: (1) species, (2) sex of each individual (when possible), (3) behavior of each individual, and (4) reproductive condition of each individual (if observable). Observation locations were recorded using a Trimble® Juno SB GPS Unit, which records the location to U.S. Environmental Protection Agency (EPA) Tier II National Geospatial Data Spatial Standards, and mapped using ArcMap® software.

Results

Ongoing research into the genetics, physiology, behavior, and fossil history of amphibians and reptiles has led to debates about their proper classification. Some biologists have proposed the splitting of established genera like Rana ("typical frogs") and Bufo ("true toads") into the newer genera Lithobates and Anaxyrus, respectively (Harding and Holman 1999). Some suggestions have included using the newly proposed groupings as subgenera, allowing recognition of the new divisions while maintaining name stability. For the purposes of this report this system will be followed for the genus of toad Bufo (Anaxyrus). The genus of "typical frogs" will not include subgenera based on a recent publication which supports the placement of all North American ranid frogs in the genus Rana (Yuan et al. 2016). These classifications are also recognized by Harding and Mifsud (Harding and Mifsud 2017).

Based upon habitat conditions evaluated during 2022 pre-restoration assessments and potential conditions following proposed restoration, HRM identified two (2) rare herpetofauna species, the Butler's Garter Snake (*Thamnophis butleri*) and Blanding's Turtle (*Emydoidea blandingii*), which may occur within the overall project area. Both are species of state special concern and protected in the state of Michigan.

Twelve (12) species of amphibians and reptiles were documented within the assessment area of Hoskins Drain during 2022 pre-restoration sampling (Table 1-2). Species observed included the Eastern American Toad (*Anaxyrus americanus*), Green Frog (*Rana [Lithobates] clamitans melanota*) (Photo 6), Northern Leopard Frog (*Rana [Lithobates] pipiens*) (Photo 7), Wood Frog (*Rana [Lithobates] sylvatica*) (Photo 8), Eastern/Cope's Gray Treefrog (*Hyla versicolor/chrysoscelis*), Northern Spring Peeper (*Pseudacris crucifer crucifer*) (Photo 9), Eastern Garter Snake (*Thamnophis sirtalis sirtalis*) (Photo 10), Eastern Milk Snake (*Lampropeltis triangulum triangulum*) (Photo 11), Northern Brown Snake (*Storeria dekayi dekayi*) (Photo 12), Northern Red-bellied Snake (*Storeria occipitomaculata occipitomaculata*), Midland Painted Turtle (*Chrysemys picta marginata*) (Photo 13-14), and Eastern Snapping Turtle (*Chelydra serpentina*) (Photo 15). An additional eleven (11) potential non-rare species, based upon habitat conditions within the project area, include the Bullfrog (*Rana [Lithobates] catesbeiana*), Midland Chorus Frog (*Pseudacris triseriata triseriata*), Blue-spotted Salamander (*Ambystoma laterale*), Unisexual Salamander (*A. laterale* complex), Spotted Salamander (*Ambystoma maculatum*), Eastern Tiger Salamander (*Ambystoma tigrinum tigrinum*), Eastern Red-backed Salamander

(*Plethodon cinereus*), Northern Ribbon Snake (*Thamnophis sauritus septentrionalis*), Northern Water Snake (*Nerodia sipedon sipedon*), Blue Racer (*Coluber constrictor foxi*), Eastern Hog-nosed Snake (*Heterodon platirhinos*), and Eastern Musk Turtle (*Sternotherus odoratus*)(Table 1-2).

Discussion and Recommendations

This project was initiated by the ICDC as part of a drain improvement project to address localized flooding and improve water quality within Hoskins Drain. The nearby proposed Silverleaf Condominium development project was opportunistically assessed by HRM and discussed here in a comprehensive report. HRM detected twelve (12) of herpetofauna (Table 1-2). Of the thirteen (13) identified potential species, two (2) are state-protected species, including the special concern Butler's Garter Snake and Blanding's Turtle. The Butler's Garter Snake can be somewhat cryptic and the Blanding's Turtle often have large home ranges making detection difficult at times. Both species may potentially inhabit the project area currently, though they were not observed during HRMs surveys. These rare species have experienced steady declines, primarily due to habitat loss, fragmentation, water quality degradation, and persecution (Harding and Mifsud 2017). Preserving and restoring appropriate habitat conditions is crucial to their persistence.

HRM recommends the implementation of Best Management Practices (BMPs) to minimize harm to herpetofauna populations and their habitats during and after the proposed construction of Hoskins Drain and the Silverleaf Condominium. Invasive species management is a BMP often recommended within wetland environments adjacent to urban and suburban areas because of the prevalence of invasive species in these regions and their negative impacts on aquatic systems and wildlife. The central wetland in which Hoskins Drain is located is heavily dominated by Reed Canary Grass (Photo 1). Due to the abundance of Reed Canary Grass in this area and its presence in nearby connected systems, it is not economically feasible to eradicate this invasive species from the project area. The incorporation of the following BMP recommendations will likely help to negate the negative impacts associated with this established invasive plant species.

A primary Hoskins Drain BMP recommendation is the incorporation of a meandering drainage channel, as opposed to the traditional linear drain concept, which would improve habitat quality for amphibians, reptiles, and other wildlife. A meandering channel simulates a natural river corridor and increases the contact time wildlife experience with the riparian environment. Aquatic basking opportunities for turtles and other herpetofauna are currently limited within Hoskins Drain. Including woody debris with low hanging branches within the proposed drainage channel recommended would enhance habitat quality for herpetofauna within the project area. These structures would provide basking opportunities critical to reptile thermoregulation and function as nursery habitat for larval amphibians.

Prior to construction activities associated with the Hoskins Drain improvement, HRM recommends relocating resident herpetofauna within the construction corridor to an adjacent wetland in order to minimize the risk of construction-related mortality. The incorporation of wildlife barrier fencing (WBF) constructed of silt fencing three feet in height with one foot trenched, to serve as a wildlife barrier and exclude herpetofauna from the workspace is recommended (Mifsud 2014). This material provides multiple functions including soil erosion control during the construction phase. Construction personnel should inspect WBF daily to search for holes, tears, and other gaps or damage to prevent herpetofauna from potentially entering the workspace. Any deficiencies should be repaired and a walk-down performed before any vehicles or equipment operates within the project area.

It is recommended where feasible or in targeted areas that vehicles and equipment travel with a maximum speed limit of 10 mph within the project area. Drivers and operators of vehicles and equipment should be encouraged to yield to snakes, turtles, and other wildlife. Wildlife signage can also be placed to alert contractors of the potential of rare species and provide photos of these for reference. In addition, the use of synthetic erosion control mesh during construction and restoration activities is strongly discouraged as it can fatally entangle herpetofauna and other wildlife (Mifsud 2014). Photodegradable varieties do not degrade when shaded by newly sprouted vegetation and must also be avoided. Several wildlife-friendly, natural products are available and should be used as the standard for erosion control.

HRM also recommends certain BMPs designed to mitigate potential habitat loss with regard to the construction of the proposed Silverleaf Condominium. HRM recommends the creation of reptile overwinter habitats called hibernacula near the drain project. Hibernacula serve as critical refuges for herpetofauna, encouraging species persistence in the area and potentially attracting new and rare species by providing overwinter security (Mifsud 2014). During early constructions activities including earthmoving, sand and large field stones can be stockpiled and later used for habitat restoration purposes. Turtle nests were observed within the project area, though area was limited. Increasing these habitat features on the landscape is encouraged. The stockpiled sandy soils can be used for creating turtle nesting areas. In addition to natural materials, stockpiled construction debris (concrete, asphalt, tree stumps, and other debris) were observed on the proposed Silverleaf Condominium site (Photo 16). Currently, these provide critical structure for herpetofauna and the loss of this habitat resulting from the development could impact overall species composition including Butler's Garter Snakes. Using on-site materials and creating artificial structure such as hibernacula can mitigate negative impacts and improve habitat within Hoskins Drain post-construction.

Consider as part of proposed detention ponds within the proposed project oversizing by 20% to include native aquatic emergent and submergent vegetation and basking logs. The vegetation will improve onsite water quality and provide an aesthetic appeal. The logs will provide basking opportunity for wildlife. Incorporating turtle nesting areas along the edge provides additional habitat value. (Mifsud 2014). Adding exposed sandy soil to the bank of the drainage channel would also benefit resident turtle populations by providing improved nesting areas (Mifsud 2014).

The incorporation of these various restoration and enhancement measures will likely help to accelerate the effectiveness of the restoration for herpetofauna, encourage the colonization of additional species, such as the state special concern Butler's Garter Snake and Blanding's Turtle, and improve overall ecosystem health at Hoskins Drain. The project area currently supports a relatively moderate level of herpetofauna diversity. With the proposed restoration and additional BMP recommendations, the site could potentially support a high diversity and richness of amphibian and reptile species.

Conclusion

Based on 2022 amphibian and reptile pre-restoration sampling, Hoskins Drain currently supports a relatively moderate richness and density of amphibians and reptiles. Future restoration and mitigation efforts are likely to both improve habitat for species already residing on-site and increase opportunities for site colonization by additional species. The data collected during HRM's pre-restoration surveys will serve as an important benchmark for assessing the success of future restoration efforts within this area, and will allow for improved project planning that considers the habitat requirements of local wetland-associated herpetofauna. Post-restoration monitoring is recommended to assess species response.

Tables

Common Name	Species Name	Observed Species	Potential Species	State Status
Eastern American Toad	*Bufo [Anaxyrus] americanus americanus*	X	-	-
Bullfrog	*Rana [Lithobates] catesbeianus*	-	X	-
Green Frog	*Rana [Lithobates] clamitans*	X	-	-
Northern Leopard Frog	*Rana [Lithobates] pipiens*	X	-	SGCN
Wood Frog	*Rana [Lithobates] sylvatica*	X	-	-
Eastern/Cope's Gray Treefrog	*Hyla chrysoscelis/versicolor*	X	-	-
Northern Spring Peeper	*Pseudacris crucifer crucifer*	X	-	-
Midland Chorus Frog	*Pseudacris triseriata triseriata*	-	X	SGCN
Blue-spotted Salamander	*Ambystoma laterale*	-	X	SGCN
Unisexual Salamander	*A. laterale* complex	-	X	-
Spotted Salamander	*Ambystoma maculatum*	-	X	SGCN
Eastern Tiger Salamander	*Ambystoma tigrinum tigrinum*	-	X	SGCN
Eastern Red-backed Salamander	*Plethodon cinereus*	-	X	-

Table 1. Amphibians documented by HRM within Hoskins Drain project area during pre-restoration surveys in 2022, and species identified as potentially present given current habitat conditions.

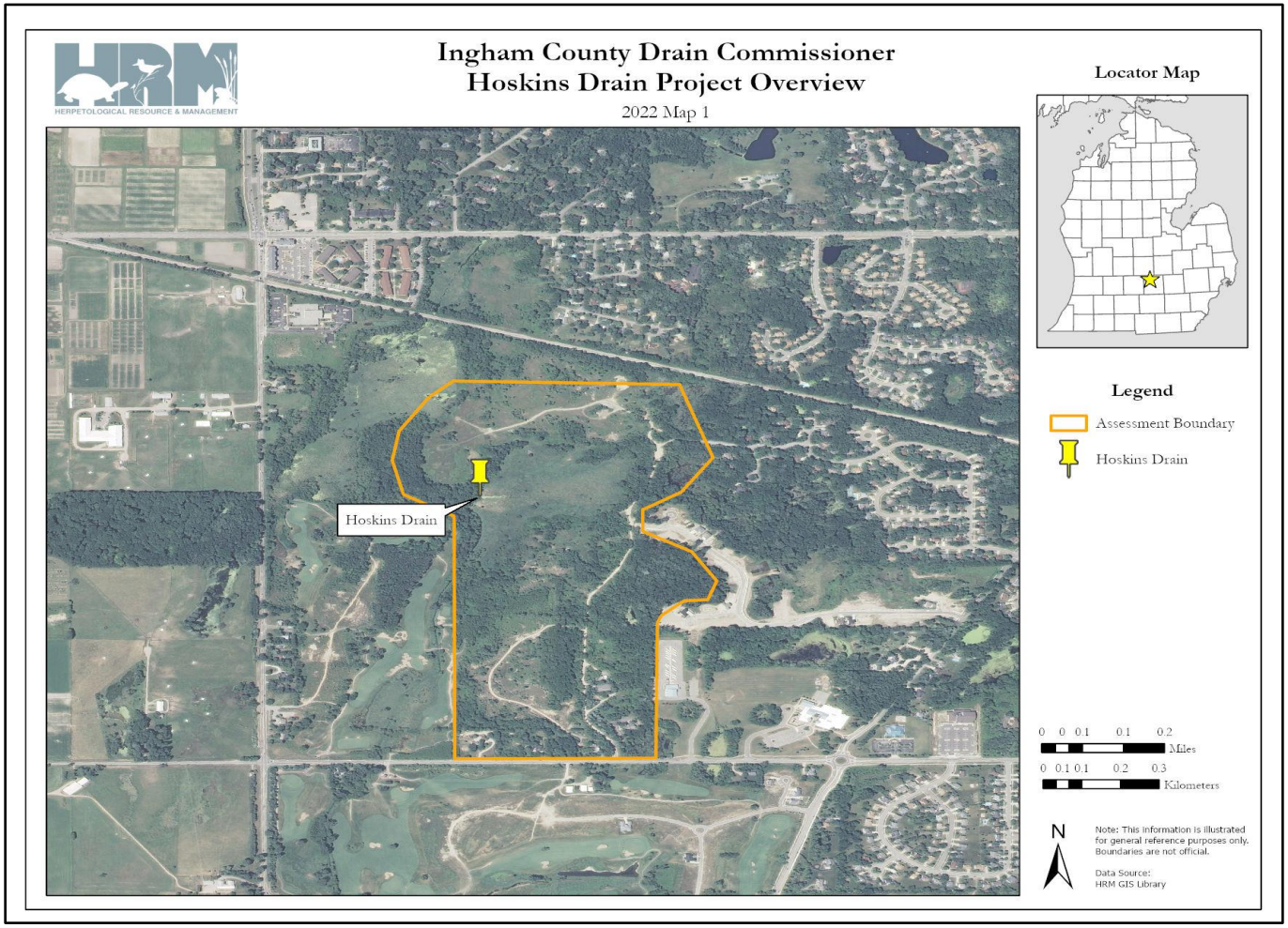
SC= special concern
SGCN= species of greatest conservation need
X – denotes observed or potential species

Common Name	Species Name	Observed Species	Potential Species	State Status
Butler's Garter Snake	*Thamnophis butleri*	-	X	SC
Eastern Garter Snake	*Thamnophis sirtalis sirtalis*	X	-	-
Northern Ribbon Snake	*Thamnophis sauritus septentrionalis*	-	X	-
Eastern Milk Snake	*Lampropeltis triangulum triangulum*	X	-	-
Northern Brown Snake	*Storeria dekayi dekayi*	X	-	-
Northern Red-bellied Snake	*Storeria occipitomaculata occipitomaculata*	X	-	-
Northern Water Snake	*Nerodia sipedon sipedon*	-	X	-
Blue Racer	*Coluber constrictor foxi*	-	X	SGCN
Eastern Hog-nosed Snake	*Heterodon platirhinos*	-	X	SGCN
Midland Painted Turtle	*Chrysemys picta marginata*	X	-	-
Eastern Snapping Turtle	*Chelydra serpentina serpentina*	X	-	-
Eastern Musk Turtle	*Sternotherus odoratus*	-	X	-
Blanding's Turtle	*Emydoidea blandingii*	-	X	SC

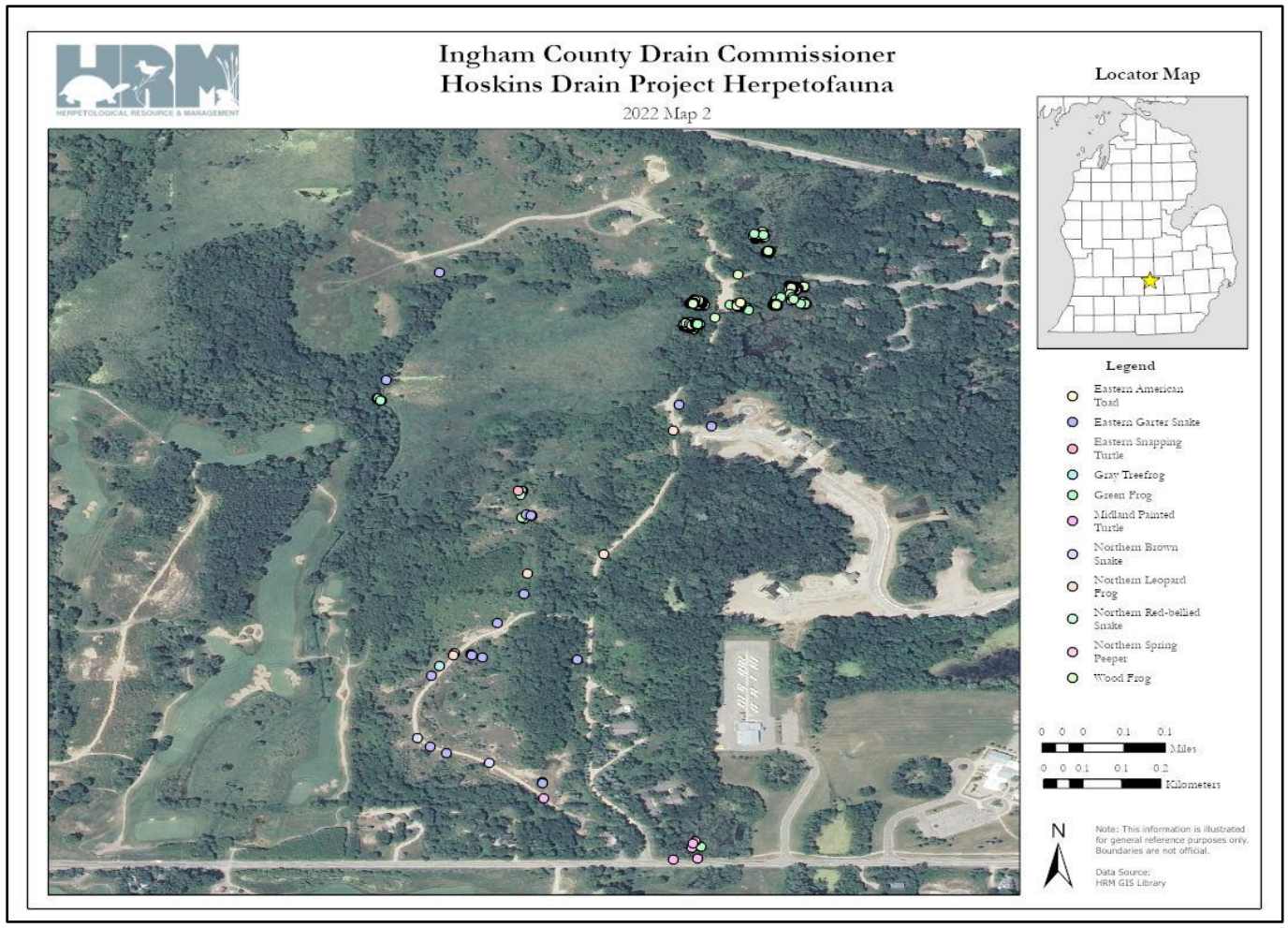
Table 2. Reptiles documented by HRM within Hoskins Drain project area during pre-restoration surveys in 2022, and species identified as potentially present given current habitat conditions.

SC= special concern
SGCN= species of greatest conservation need
X – denotes observed or potential species

Maps



Map 1. Hoskins Drain project area and overview.



Map 2. Herpetofauna documented by HRM at Hoskins Drain in 2022 during pre-restoration surveys.

Photos

Photo 1. Central wetland of Hoskins Drain dominated by Reed Canary Grass.

Photo 2. Intersection of Hoskins Drain and Herron Creek.

Photo 3. Deciduous forest habitat located within the Hoskins Drain project area.

Photo 4. Grassy field to the north of the large central wetland within Hoskins Drain.

Photo 5. Former gravel pit area and proposed location for the Silverleaf Condominium development featuring sandy soils and meadow vegetation.

Photo 6. Juvenile Green Frog resting alongside a watercourse within Hoskins Drain.

Photo 7. Northern Leopard Frog observed within a wetland in Hoskins Drain.

Photo 8. Juvenile Wood Frog detected within the Hoskins Drain project area.

Photo 9. Northern Spring Peeper observed within deciduous forest habitat.

Photo 10. Eastern Garter Snake observed within deciduous forest habitat of Hoskins Drain.

Photo 11. Eastern Milk Snake detected by HRM staff within the project area.

Photo 12. A Northern Brown Snake located within the project area by HRM.

Photo 13. A female Midland Painted Turtle observed nesting within the project area.

Photo 14. A Midland Painted Turtle basking on a submerged log in pond adjacent to the proposed Silverleaf Condominium construction.

Photo 15. Eastern Snapping Turtle nest located within Hoskins Drain project area.

Photo 16. One of several potential herpetofauna hibernaculum present within the former gravel pit area.

Species Profiles

Blanding's Turtle (*Emydoidea blandingii*)

In Michigan, the Blanding's Turtle is listed as a species of special concern and protected under the MDNR Fisheries Order 224.16 (Michigan Department of Natural Resources 2016). While still locally common in some parts of Michigan, this species is listed as threatened or endangered in other portions of its range, and it is currently being considered for federal protection. This species requires a mosaic of wetland habitats for its survival. For much of the year, they prefer open water areas with structures such as logs or stumps on which to bask. Females require well drained soils, usually with southern exposure, for nesting and will travel long distances to find a suitable nesting location. Hibernation occurs within open water bodies, where the animals burrow into the substrate below the frost line. The Blanding's Turtle has a life span of approximately 80 years and does not reach sexual maturity until around 20 years of age. Adults have few natural predators, but hatchlings and juveniles suffer very high mortality rates. Local annual nest predation, especially by raccoons, is often 100%. For this reason, it may take one adult female decades to produce enough offspring to replace herself and her mate and, thus, maintain a stable population. Due to their very low reproductive rate, it is extremely important to maintain ample nesting areas as well as the shrub swamp wetland habitat that Blanding's Turtles rely upon to survive and reproduce (Ernst and Lovich 2009, Harding and Mifsud 2017).

Butler's Garter Snake (*Thamnophis butleri*)

In Michigan, the Butler's Garter Snake is listed as a species of special concern, which affords it protection under MDNR Fisheries Order 224.16 (Michigan Department of Natural Resources 2016). In Canada however, the species is currently listed as endangered. Ranging from 15 to 30 inches long, these yellow/orange striped snakes are found only in the southeastern half of the state. The Butler's Garter Snake requires wet grassy habitats including meadows prairies, waterbody shores, as well as old fields, and is commonly found under debris in these locations outside of its mating season, which occurs in early spring. Movement of this species tends to be restricted to the vicinity of water and parallel to the margins of marsh habitat. Butler's Garter Snakes are rarely observed in woodland habitat, and thus wooded areas likely act as natural barriers. The primary prey for Butler's Garter Snakes is earthworms, which they typically forage for in fairly small ranges of less than 2.5 acres. Being a relatively small snake, the Butler's Garter Snake faces predation from a variety of wildlife. The greatest growing threat for this snake is the development of urban and suburban lands which can devastate populations of the species. Butler's Garter Snakes rely on open fields in which are particularly likely to be developed and are attracted to gravel roads and walking/biking trails for basking leaving them particularly vulnerable to mortality (COSEWIC 2010, Harding and Mifsud 2017).

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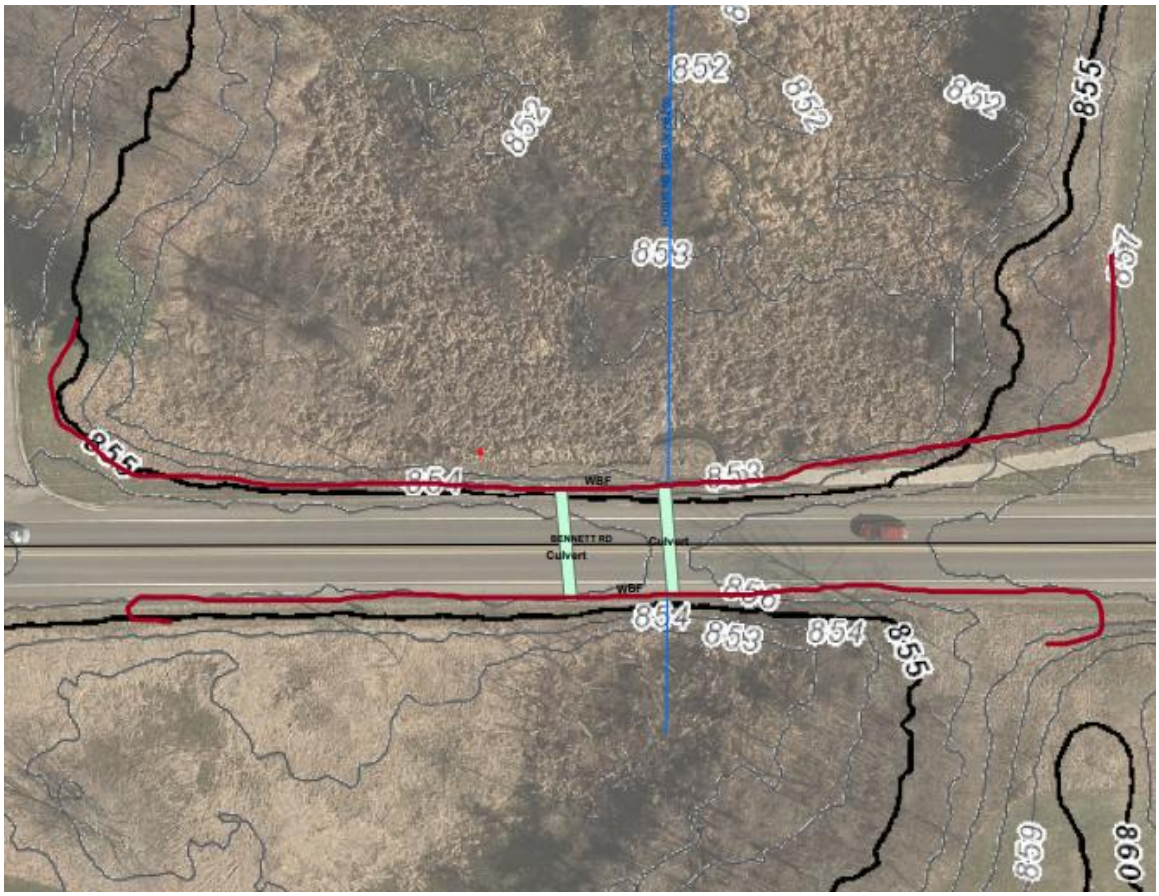
11 Hoskins Drain Herpetological Culvert Recommendations

Hoskins Drain Improvement Project
Herpetological Culvert Recommendations

January 2025



Prepared for:

Patrick E. Lindemann
Ingham County Drain Commissioner
P.O. Box 220
707 Buhl Ave.
Mason, MI 28854-0220

Prepared by:

Herpetological Resource and Management, LLC
P.O. Box 110
Chelsea, MI 48118

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Table of Contents

Introduction

Amphibians and reptiles (collectively regionally known as herpetofauna) are recognized as key bioindicators, or gauges of environmental health. They are ecologically important as they fulfill an essential mid-level position in many food webs as both predators and as a prey base for other animals (Harding and Mifsud 2017). Their presence and relative abundance can be important tools in identifying and measuring overall ecosystem health (Cooperrider et al. 1986, Guilfoyle 2010, Herpetological Resource and Management 2022). Efforts to protect and minimize impacts to these species and their habitat are becoming increasingly important.

Habitat connectivity is a critical part of amphibian and reptile life history and roads pose a major threat to herpetofauna. Seasonally, turtles and snakes migrate to find breeding, nesting, and foraging sites. Amphibians also travel across roads seasonally and during rain events to breed, find overwinter sites, forage, and to seek new habitat. Connectivity of habitats are essential for gene flow, population viability, and completion of natural species life history (Mifsud, 2014). Roads are a major contributing factor to herpetofauna population declines, causing vehicle-wildlife collisions and fragmenting habitat (Gunson et al., 2016; Gibbons et al., 2000). Fragmentation reduces genetic diversity, increases predation pressure, reduces habitat quality, and encourages invasive species colonization. Turtles are particularly susceptible to road mortality due to their innate slower movement and tendency for females to lay eggs in loose roadside gravel (Gibbs & Shriver, 2002; Garrah, 2012). Herpetofauna in Michigan relies on wetlands and adjacent upland for specific habitat features and frequently move between these habitats communities on a seasonal basis (Mifsud, 2014). Drainage culverts have been observed to allow herpetofauna a safe roadway crossing (Dodd et al, 2004; Aresco, 2005; Taylor et al., 2014).

In 2022, Herpetological Resource and Management, LLC (HRM) was contracted by the office of the Ingham County Drain Commissioner (ICDC) to conduct herpetofaunal assessments within Hoskins Drain, which has been proposed for future improvements to address flooding concerns and improve water quality. Between April and September of 2023, HRM continued conducting pre-restoration assessments within the project area prior to proposed construction. In addition to Hoskins Drain, HRM was contracted to conduct a more regional assessment of the drain area. HRM conducted herpetofaunal assessments within adjacent properties to the north (Southwest Meridian Uplands Natural Area Preserve) and south (Silverleaf Condominium) of the drain.

Through these efforts, HRM identified Best Management Practices (BMPs) and potential habitat improvement projects recommended to be implemented during construction and incorporated into restoration design. HRM also evaluated the potential for the proposed Silverleaf Condominium development project to incorporate restoration and enhancement components aimed at improveing the overall landscape quality and connectivity in theHoskins Drain area after construction. As part of this effort, HRM recommended the incorporation of wildlife culverts to

reduce road-related mortality. This summary will expand on this recommendation providing various designs and their advantages and limitations. These recommendations are based on knowledge of wildlife use of culverts and are not assessed for engineering limitations or other mechanical variables that will also need to be considered when selecting a culvert design.

Discussion and Recommendations

Based on the known species use and historic mortality of rare species, implementing appropriate BMPs is an effective way to minimize injury or mortality to amphibians and reptiles associated with vehicle-wildlife collisions (Mifsud 2014). These measures are particularly important to establish in areas where rare, sensitive, and long-lived species occur. Multiple species of conservation concern occur within the Project area, and proactive measures can help minimize the potential risk to herpetofauna and avoid take of protected species.

Based on the results of the desktop analysis and HRM's knowledge of Hoskins Drain, to reduce road mortality HRM recommends the implementation of culverts (round, box, or arch), a barrier wall, turtle crossing signs, and rumble strips or speed bumps (Map 1). The proposed recommendations are the professional opinion of HRM and are based on our understanding of the scope of the Project.

Culvert: Typically, a tunnel- like structure carrying water under a road or railway to provide cross drainage. For this Project, the culvert will act as a movement and migration corridor to connect herpetofauna habitat and reduce road mortality. Culverts can be constructed from High Density Polyethylene (HDPE), Structural Steel Plate (SSP), Corrugated Steel Pipe (CSP), or concrete. It should be noted that metal is a less desirable material due to its conductivity, making the passage cold during spring migratory periods. The HDPE is a cost-effective means to mitigate road mortality, and the pipe can also be used to make barrier walls. Turtle mortality has been observed at Bennet Road and the known occurrences of protected herpetofauna make mitigating potential threats important. Three different styles (round, box, and arched) of culvert are discussed below:

Round Culvert: Constructed from HDPE, SSP, or CSP to be installed underneath the road (Photo 1). It is important for the diameter to be wide enough so that light can penetrate through the length of the tunnel (Photo 2). For example, for tunnels < 50 ft, diameter should be 5 ft; for tunnels 50-82 ft a diameter of 6 ft should be used (Ontario Ministry of Natural Resources and Forestry, 2016). Placement of culverts underneath the road and barrier fences/walls would reduce mortality and better maintain these areas as functionally connected habitats for herpetofauna species (Photo 3).

Box Culvert: A square or rectangular shaped tunnel with a slab top constructed with concrete (Photo 4). For tunnels < 50 ft, width should be 5 ft and height 3.0 ft; for tunnels 50-82 ft a width of 6 ft and height of 3.0 ft should be used (Ontario Ministry of Natural Resources and Forestry, 2016). Box culverts are preferable in loose soil conditions due to their rigid frame, and reduction of pressure on soil by bottom slab of culvert. Tunnel floor should be buried with natural substrate to encourage herpetofauna and wildlife use (Photo 5).

Arch Culvert: An arch constructed with concrete, HDPE, SSP, or CSP with a natural bottom. Arched culverts with a natural bottom require footings of concrete or metal to prevent sinking of the arch (Photo 6). For tunnels < 50 ft, width should be 6 ft and height 3 ft; for tunnels 50-82 ft a width of 6.6 ft and height of 3.0 ft should be used (Ontario Ministry of Natural Resources and Forestry, 2016). An open arch culvert allows for natural substrate conditions to be retained on the culvert bottom.

Barrier Wall: Constructed from HDPE, SSP, or CSP pipe cut in half lengthwise, installed at the base of the road shoulder and held upright using ¾" steel rods of 5 ft and 6.6 ft lengths (Photo 7). Barrier walls should be 4-6 ft in height to discourage climbing snakes (Eastern Fox Snake) and have a lipped wall or overhang to prevent amphibians from jumping over. Earth should be removed to allow for the installation of the barrier wall, following installation, backfill consisting of earth and sand should be graded directly to the top of the barrier wall to ensure road drainage is not compromised. The barrier wall should extend from a culvert (middle point) and run parallel to the road 44 yd (132 ft) to the left and right of the culvert (Photo 8). The total length of a barrier wall should be approximately 87-98 yd (261-294 ft). At each end of the barrier wall a turnaround should be installed to orient turtles back toward the culvert (Photo 9). This turnaround should consist of wall at a 135° angle for 20 ft, then a wall parallel to the roadside wall for another 20 ft. Man-made features along roadsides may influence species movement and access to crossing structures (Gartner Lee and Ecoplans 2009). Placement of barrier walls along roadsides to direct herpetofauna to culverts would reduce mortality and better maintain these areas as functionally connected habitats (Photo 10).

Turtle Crossing Sign with a Flashing Beacon: A turtle crossing sign with a flashing beacon is another measure that may be used to alert motorists of turtles crossing the roadway (Photo 11). The cost for a single sign and a solar powered flashing beacon is approximately $1500. The annual operating cost of a flashing sign would be approximately $500. According to Gunson (2012), the effectiveness of wildlife signs is not known. While this strategy seems like a cost-effective solution there is no empirical data to support the use of signage as a standalone measure to reduce wildlife road mortality. This mitigation measure is not recommended as a sole strategy to reduce incidents of turtle road mortality. Benefits

of signage include driver awareness of wildlife and potential reduction in road mortality. Enhancement of signs (flashing, flags) seasonally during increased herpetofauna movements or high traffic periods can help to avoid driver habituation.

Examples:

- https://trafficsafetyzone.com/product/solar-pedestrian-crossing-sign/?wmc-currency=USD
- https://xwalk.com/product-categories/all-signs/warning-signs/ts40-deer-crossing-flashing-led-edge-lit-sign/

Conclusion

Habitat fragmentation, as a result of habitat destruction and degradation, is among the most significant causes of reptile and amphibian population declines. Tens of thousands are killed on roadways every year, and persistent mortality events can reduce species abundance up to two miles away (Mifsud, 2014). Based on the results of the desktop review, and HRM staff professional experience, BMPs were developed for the Project to reduce herpetofauna injury and death due to vehicle-wildlife collisions including under-road passages, walls to direct herpetofauna, signage, and vehicle speed reducers. It is the advice of HRM that HDPE be used as this plastic pipe is the most cost-effective means to mitigate road mortality and is versatile. HDPE pipe can be used as both a round culvert and cut in half to create barrier walls along roadsides. The limiting factor will be road and engineering requirements based on traffic volumes.

Implementing the recommended BMPs including instillation of culverts, barrier walls, turtle crossing signs, and rumble strips or speed hump/bumps will minimize the potential for impact to herpetofauna of the Hoskins Drain including the state protected and federal candidate Blanding's Turtle.

The incorporation of these various restoration and enhancement measures will likely help to accelerate the effectiveness of the restoration for herpetofauna, encourage the colonization of additional species, like Blanding's Turtle and Butler's Garter Snake, and improve overall ecosystem health at Hoskins Drain. The project area currently supports a relatively moderate level of herpetofauna diversity. With the proposed restoration and additional BMP recommendations, the site could potentially support a high diversity and richness of amphibian and reptile species.

Photos

Photo 1. Round pipe culvert connecting habitat. Photo credit: "Turtle Road Mortality Mitigation Project Final Report" by Glenside Ecological Serviced Limited, Project 14006.

Photo 2. Light penetrating through the tunnel. Photo credit: "Turtle Road Mortality Mitigation Project Final Report" by Glenside Ecological Serviced Limited, Project 14006.

Photo 3. Round culvert made of pipe being used by an Eastern Snapping Turtle. Photo credit: "Turtle Road Mortality Mitigation Project Final Report" by Glenside Ecological Serviced Limited, Project 14006.

Photo 4. Box culvert on a highway in Ontario. Photo credit: "Best Management Practices for Mitigating the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario" by the Ontario Ministry of Natural Resources and Forestry)

Photo 5. Soil and habitat structures places on box culvert bottom. Photo credit: "Best Management Practices for Mitigating the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario" by the Ontario Ministry of Natural Resources and Forestry)

Photo 6. Arch culvert with metal footings. Photo credit: "Best Management Practices for Mitigating the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario" by the Ontario Ministry of Natural Resources and Forestry)

Photo 7. Barrier wall built along roadside. Photo credit: "Turtle Road Mortality Mitigation Project Final Report" by Glenside Ecological Serviced Limited, Project 14006.

Photo 8. Barrier wall and round culvert. Photo credit: "Turtle Road Mortality Mitigation Project Final Report" by Glenside Ecological Serviced Limited, Project 14006.

Photo 9. Turnaround on the end of a barrier wall. Photo credit: "Turtle Road Mortality Mitigation Project Final Report" by Glenside Ecological Serviced Limited, Project 14006.

Photo 10. Barrier wall in use by an Eastern Snapping Turtle. Photo credit: "Turtle Road Mortality Mitigation Project Final Report" by Glenside Ecological Serviced Limited, Project 14006.

Photo 11. Example of a turtle crossing sign, flashing lights or flags can be added to make the signage more eye-catching to drivers. Photo credit: The Canadian Nature Photographer. "How to Avoid Hitting Wild Animals with Your Vehicle" by Dr. Robert Berdan, 2014.

Photo 12. Eastern Snapping Turtle crossing the road seeking nesting opportunities.

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12 Hoskins Drain Habitat Improvement Value Assessment for Herpetofauna

Hoskins Drain Habitat Improvement Value Assessment for Herpetofauna

August 2025

Prepared by:

Herpetological Resource and Management, LLC
(313) 268-6189

Prepared for:

Patrick E. Lindemann
Ingham County Drain Commissioner
P.O. Box 220
707 Buhl Ave.
Mason, MI 28854-0220

Introduction

At the request of the Ingham County Drain Commission (hereafter referred to as ICDC), Herpetological Resource and Management. (hereafter referred to as HRM) was contracted to assess amphibian and reptile (collectively regionally referred to as herpetofauna) richness, spatial distribution, and health. Wetland habitat within the Hoskins Drain has degraded and become largely homogenized, reducing the overall functional value and capacity to support a rich community composition of amphibians, reptiles, and other wildlife.

Several species were identified as part of our assessments, including the Blandings Turtle (*Emydoidea blandingii*). Several efforts were proposed as part of the Hoskins Drain project to create and enhance habitat conditions to support a rich community composition of herpetofauna, thus helping to improve overall ecosystem function and improve water quality conditions (Mifsud, 2023).

Blanding's Turtle Natural History

In Michigan, the Blanding's Turtle is listed as a species of special concern and protected under the Michigan Department of Natural Resources (MDNR) Fisheries Order 224.16 (Michigan Department of Natural Resources 2016). While this species can be found in some parts of Michigan with higher densities, this species is listed as threatened or endangered in most of its range and is currently being considered for federal protection (U.S. Fish & Wildlife Service 2015).

This species requires a mosaic of wetland habitats for its survival. For much of the year, they prefer open water areas with structures such as logs or stumps on which to bask. Females require well drained soils, usually with southern exposure, for nesting and will travel long distances to find a suitable nesting location. Hibernation occurs within open water bodies, where the animals burrow into the substrate below the frost line. The Blanding's Turtle has a life span of approximately 80 years and does not reach sexual maturity until around 20 years of age. Adults have few natural predators, but hatchlings and juveniles suffer very high mortality rates.

Local annual nest predation, especially by raccoons, is often 100%. For this reason, it may take one adult female decades to produce enough offspring to replace herself and her mate and, thus, maintain a stable population. Due to their very low reproductive rate, it is extremely important to maintain ample nesting areas as well as the shrub swamp wetland habitat that Blanding's Turtles rely upon to survive and reproduce (Ernst and Lovich 2009, Harding and Mifsud 2017).

Ecological Consequences of Degraded Landscapes

Wetland functionality and conditions are often compromised if specific habitat conditions are not present that are necessary for the life history of herpetofauna, especially species like Blanding's Turtles, which are habitat specialists. The loss of herpetofauna can disrupt ecosystem function, as these organisms foster symbiotic relationships among various plant and animal species (Adil et al., 2019; Witz et al., 1991). Their absence can lead to ecological imbalances, underscoring the importance of proper wetland function and conditions. Herpetofauna are essential components of wetland food webs, serving as both predators and prey. Their elimination would disrupt population

dynamics within the ecosystem (Mifsud, 2023). Improving habitat features to support a target species can significantly benefit wetland function and value.

Herpetofauna-Focused Wetland Restoration Solution

Wetland restoration and enhancement initiatives have historically exhibited a limited focus on herpetofauna conservation (Mifsud, 2023). In contrast, the present project is specifically designed to address the critical factors limiting habitat quality and functionality for herpetofauna within the Hoskins Drain, with a particular emphasis on providing suitable ecological conditions for several of the area's rarest species. The proposed restoration designs directly target the loss of habitat value for these populations and other aquatic-dependent organisms, with methodologies tailored to promote long-term conservation and ecological sustainability. This approach aligns with the established principle that rehabilitating existing degraded wetlands should be prioritized over new creation when feasible to maximize resource efficiency and ecological benefit.

The proposed wetland restoration and integrated habitat features for the Hoskins Drain project are designed to directly enhance the existing species composition and provide suitable habitat for a broader assemblage of taxa. A critical component of this initiative is the creation of open water areas, which are essential for sustaining populations of the Blanding's turtle (*Emydoidea blandingii*) and other aquatic and semi-aquatic species, including anurans, by providing necessary resources for breeding, egg deposition, and larval development. Concurrently, the dredging of the drain channel will increase its functionality as a wildlife corridor, promoting up- and downstream movement and reconnecting landscape features to support a diverse community of wetland-associated species.

The construction of upland nesting areas outside of the wetland in adjacent upland habitat to the south will provide critical nesting habitat for turtles. Additionally, the strategic placement of basking logs will create vital microhabitats for thermoregulation of reptiles, loafing sites for birds, and refugia for aquatic invertebrates, amphibians, and fish, thereby increasing the overall ecological value of the area. To help optimize the functional value of this overall landscape and habitat improvement, a reptile hibernaculum is also being considered on the south end of the project in an upland area currently dominated by dense shrubs. The conversion of this area to a hibernacula will facilitate increased seasonal use and refugia for several species including the MDNR Special Concern Butler's Garter Snake (*Thamnophis butleri*) which is known to occur on this site.

A novel and highly valuable aspect of this project is the incorporation of connectivity-focused culverts designed to facilitate safe wildlife passage beneath roads, a proactive measure to mitigate road mortality for highly mobile species like the Blanding's Turtle, which remains innovative despite over three decades of wildlife passage use. This holistic approach, which addresses direct habitat requirements alongside landscape connectivity and movement ecology, is a critical and often overlooked element of effective restoration. Furthermore, properly designed wetland restorations adjacent to high-quality landscapes, such as those near the drain, have the potential to achieve

greater species richness than the original habitat, assuming implementation is executed as proposed. This intervention is a critical need within a region experiencing ongoing degradation; without active restoration to improve ecological function, the declining habitat quality will continue to diminish the functional value of the wetland system for herpetofauna and other wildlife and reduce overall landscape integrity (Mifsud 2023). Consequently, this effort constitutes a vital step in maintaining viable habitat blocks within an otherwise fragmented urbanizing landscape.

Conclusion

The proposed wetland habitat features, and restoration components proposed as part of the Hoskins drain effort will directly benefit several species of herpetofauna. With emphasis on sensitive and rare species, including the Blandings Turtle. A systematic approach that integrates species-specific and landscape-level requirements is critical, as this restoration and enhancement will establish the necessary ecological functions and values to support viable populations and facilitate habitat expansion for this and other herpetofauna species (Mifsud 2023).

This novel and holistic approach uniquely combines targeted herpetofauna needs, including considerations of natural history and ecological prerequisites, with overarching objectives for wetland conservation and water quality improvement, thereby creating a synergistic framework essential for achieving long-term restoration success and population viability.

Literature Cited

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13 Endangered Species Act Review

Endangered Species Act Review

DETERMINATION KEY

All Species Michigan Determination Key

Release date: October 18, 2024

You completed the latest version of this key, published October 18, 2024, and reached a determination of not applicable for species or critical habitats covered by the key.

This key is intended to streamline review of projects for potential effects to Federally listed threatened and endangered (TE) species and designated critical habitat (CH).

This key is designed as a tool to help Federal agencies and other project proponents decide if their proposed action has the potential to adversely affect TE species and CH and covers certain routine and predictable projects for all species in Michigan.

Some projects may be outside the scope of this key. The key does not cover wind energy development; aerial or other large-scale application of any chemical (such as insecticide or herbicide); projects for which there are less than 30 days prior to action occurring; and approval of long-term permits or plans (e.g., FERC licenses). Activities that fall outside the scope of this key will require additional evaluation and/or consultation outside of the IPaC application; please contact the Michigan Ecological Service Field Office if you have questions.

If your project qualifies for use of this Dkey, you will be prompted to answer questions about your project to help you evaluate the effects of your action on Federally listed species and designated CH. If your completed TE review indicates a "No Effect" (NE) determination for all listed species, print your IPaC output letter for your files to document your compliance with the Endangered Species Act. For Federal projects with a “Not Likely to Adversely Affect” determination, our concurrence becomes valid if you do not hear otherwise after a 30-day review period, as indicated in your letter. If your output letter indicates additional coordination with the Michigan Ecological Services Field Office is necessary (i.e., you get a May Affect Consistency letter), you will be provided additional guidance on contacting the Service to continue ESA coordination outside of this key; ESA compliance cannot be concluded using the key for “May Affect” determinations unless otherwise indicated in your output letter.

Please note that only one assisted determination key may be completed per species for each project. Please carefully review the descriptions of all available determination keys to select the

most appropriate key for your project. For instance, federal transportation projects with potential effects to listed bats may be advised to complete the determination key entitled, FHWA, FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat, although the Michigan Determination Key does cover Federal and non-Federal transportation activities. The Rangewide determination key for northern long-eared bat is included in the All-Species Michigan Determination key as an option (effective March 2023).

Finally, be advised that 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 authorize any activities that are otherwise prohibited by the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other Federal or state statutes.

For a video demonstration of this DKey, click the link below.
Demo: All Species Michigan Determination Key Video

Species covered by this key

This key covers the following species, and critical habitat for these species, expected to occur in this project area:

BIRDS
Whooping Crane Grus americana

INSECTS
Monarch Butterfly Danaus plexippus

MAMMALS
Indiana Bat Myotis sodalis

REPTILES
Eastern Massasauga (=rattlesnake) Sistrurus catenatus

The following species, also covered by this key, are not expected to occur in this project area:

American Hart's-tongue Fern Asplenium scolopendrium var. americanum
Canada Lynx Lynx canadensis
Clubshell Pleurobema clava
Copperbelly Water Snake Nerodia erythrogaster neglecta
Dwarf Lake Iris Iris lacustris
Eastern Prairie Fringed Orchid Platanthera leucophaea
Gray Wolf Canis lupus
Hine's Emerald Dragonfly Somatochlora hineana

Houghton's Goldenrod Solidago houghtonii
Hungerford's Crawling Water Beetle Brychius hungerfordi
Karner Blue Butterfly Lycaeides melissa samuelis
Lakeside Daisy Hymenoxys herbacea
Michigan Monkey-flower Mimulus michiganensis
Mitchell's Satyr Butterfly Neonympha mitchellii mitchellii
Northern Long-eared Bat Myotis septentrionalis
Northern Riffleshell Epioblasma rangiana
Piping Plover Charadrius melodus
Pitcher's Thistle Cirsium pitcheri
Poweshiek Skipperling Oarisma poweshiek
Rayed Bean Villosa fabalis
Round Hickorynut Obovaria subrotunda
Rufa Red Knot Calidris canutus rufa
Salamander Mussel Simpsonaias ambigua
Snuffbox Mussel Epioblasma triquetra
Tricolored Bat Perimyotis subflavus

Critical habitats covered by this key

This key covers the critical habitats for the following species expected to occur in this project area:

None

For more information about this determination key, including a list of all potential questions, refer to the detailed overview.

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?

   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.

⊘ No

You have determined that your project will have no effect on listed species or critical habitat. The Endangered Species Act does not require coordination with the Service if the proposed action and other activities that are caused by the proposed action will result in *no effect whatsoever* to listed species or critical habitat. For example, if a listed species or its suitable habitat is not present in the action area and the project does not otherwise present any effects to the species, action agencies typically conclude “no effect, species not present”. Document your finding for your records. **If you are not certain that your project will have no effect to all listed species on your species list, we recommend you change your answer to this question and continue answering questions about your project** in our Michigan determination key so that we can assist you in making an effects determination.

If you no longer wish to use this key for your project, you can delete your evaluation.

14 Adjacent Property Owners

ADJACENT PROPERTY OWNERS

IMPACT AREA 'A'

33-02-02-29-251-010
Meridian Charter Township
5151 Marsh Rd
Okemos, MI 48864

33-02-02-29-176-003
Meridian Charter Township LP
5151 Marsh Rd
Okemos, MI 48864

33-02-02-29-376-901
Bennett Road Holding LLC
1650 Kendale Blvd, Ste 200
East Lansing, MI 48823

33-02-02-29-402-100
Champion Woods Condo Association
4137 Benham Way
Okemos, MI 48864

IMPACT AREA 'B'

33-02-02-29-402-100
Champion Woods Condo Association
4137 Benham Way
Okemos, MI 48864

33-02-02-29-402-059
Andre Dai-Anphuong & Bachtrac Tieu Tu
4159 Benca Cir
Okemos, MI 48864

33-02-02-29-402-060
Trebesh Hong
4158 Benca Cir
Okemos, MI 48864

33-02-02-29-431-001
Stanley W. & Ann Mutersbaugh
2575 Capside Dr
Okemos, MI 48864

33-02-02-29-431-003
Eyde Company
P.O. Box 4218
East Lansing, MI 48826

To: **Environmental Commissioners**

From: **Jack Hughes, Project Engineer**
Department of Public Works and Engineering

Date: **February 27, 2026**

Re: **Resolution in Support of Meridian Township's FY27 CDS Grant Application**

As a member of the Senate Appropriations Committee, Senator Peters helps draft legislation that allocates federal funding to local, state, and national agencies and organizations each year. The Committee also reviews the President's budget requests, oversees federal spending, and develops supplemental funding bills for emergencies.

Senator Peters' role on the Committee allows him to advocate for priorities important to Michiganders. Constituents can help shape those priorities by submitting federal appropriations requests. The Office of Senator Gary Peters has released their Congressionally Directed Spending (CDS) account list for fiscal year (FY) 2027. Applications are due by March 27. Therefore, this will be the only regular meeting of the Environmental Commission prior to the application deadline.

The township plans to submit this application to both the office of Senator Peters and Senator Slotkin this year in order to improve the chance of acceptance. For context, this project was submitted to the office of Senator Peters last year while a different project was submitted to Senator Slotkin. While the office of Senator Peters did select this project for committee review, it was not successful in receiving funding. It should be noted that being one of the 10-15 selected projects amongst state-wide competition is a good sign that the application is strong. The Township reviewed other critical infrastructure needs and found them to be ineligible for this program and thus decided to re-submit this project for another chance at being fully accepted.

The proposed project for which we are seeking funding is the addition of solar arrays to the roof of the Public Safety Building and the parking lot to the north of this building. This project would include a 204.22 kilowatt system, producing 244,677 kilowatt-hours annually. Upon completion of this project, we estimate that we would be able to produce just over 100% of the annual energy consumption of the Public Safety Building. This project would tie into the existing Public Safety Building solar infrastructure, which is connected to the electrical grid, so we can supply the grid when we produce more energy than we consume.

Staff considered recommending the Municipal Building or the Public Safety Building solar plan for this grant request as they are the two largest solar concept plans that we have developed. These two plans are nearly equal in cost and will help us secure as much federal funding as possible.

From there, staff ultimately decided recommend the Public Safety Building solar concept plan as it includes fewer carports and we want to ease into the carports as there can be very strong public opinion regarding the aesthetics of carports. Additionally, while Sen. Peters' office couldn't assure

us that this project would meet all eligibility requirements, they did share a list of similar solar projects funded through the Subcommittee on Energy and Water Development. This list included a solar project for a police department building. For these reasons, we felt this was the most appropriate project among all of the solar concept plans we have developed for Township facilities.

This would help move us toward our goal in the 2023 Climate Sustainability Plan of obtaining 50% of electricity used for Township operations from renewable energy sources by 2025 and 100% by 2035.

We are looking to apply for $400,000 in funding for this project. We are still waiting for clarification from Sen. Peters' staff, but we currently believe the Township would have to provide a 50% local match for this project.

We look forward to answering any questions the Commission may have.

The following motion has been prepared for the Commission's consideration:

> **MOVE TO APPROVE THE RESOLUTION IN SUPPORT OF MERIDIAN TOWNSHIP'S FISCAL YEAR 2027 CONGRESSIONALLY DIRECTED SPENDING GRANT APPLICATION.**

Attachments:

1. Resolution in Support of Meridian Township's FY27 CDS Grant Application
2. Solar Concept Plan for Meridian Township Public Safety Building

RESOLUTION IN SUPPORT OF MERIDIAN TOWNSHIP'S FISCAL YEAR 2027 CONGRESSIONALLY DIRECTED SPENDING GRANT APPLICATION

At a regular meeting of the Environmental Commission of the Charter Township of Meridian, Ingham County, Michigan, held at the Meridian Township Municipal Building, 5151 Marsh Road, Okemos, Michigan 48864-1198, (517) 853-4000, on Wednesday, March 4th, 2026, at 6:30 p.m.

PRESENT: _____

_____

ABSENT: _____

The following resolution was offered by _____ and supported by _____.

WHEREAS, Meridian Township has a long history of striving to be at the forefront of environmental sustainability; and

WHEREAS, Meridian resolved to achieve the goals of existing U.S. Multilateral Environmental Agreements and adopted a Climate Sustainability Plan; and

WHEREAS, Ten years later, Meridian resolved to achieve the goals of the Paris Climate Accord and adopted a Climate Sustainability Plan; and

WHEREAS, Meridian Township's Climate Sustainability Plan established a goal for the Township to obtain 50% of electricity used for Township operations from renewable energy sources by 2025 and 100% by 2035; and

WHEREAS, To work toward this goal, the Township has established plans to construct grid-interconnected solar photovoltaic arrays for all Township facilities; and

WHEREAS, The Township has established a plan to construct a 204.22 kilowatt system, producing 244,677 kilowatt-hours annually to supply 100 percent of the energy use of the Township's Public Safety Building;

NOW, THEREFORE, BE IT RESOLVED BY THE ENVIRONMENTAL COMMISSION OF THE CHARTER TOWNSHIP OF MERIDIAN, INGHAM COUNTY, MICHIGAN, MOVES TO ADOPT A RESOLUTION IN SUPPORT OF MERIDIAN TOWNSHIP'S FISCAL YEAR 2027 CONGRESSIONALLY DIRECTED SPENDING GRANT APPLICATION TO HELP FUND THE TOWNSHIP'S SOLAR PROJECT AT THE PUBLIC SAFETY BUILDING.

ADOPTED:

YEAS: _____

_____

NAYS: _____

Resolution declared adopted.

STATE OF MICHIGAN)

)ss.

COUNTY OF INGHAM)

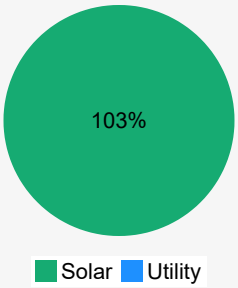
I, the undersigned, the duly qualified and acting Chair of the Environmental Commission of the Charter Township of Meridian, Ingham County, **DO HEREBY CERTIFY**, that the foregoing is a true and complete copy of proceedings taken by the Environmental Commission at a regular meeting held on Wednesday, March 4th, 2026.

Yu Man Lee, Chair
Environmental Commission
Charter Township of Meridian

ABSOLUTE SOLAR

Site Assessment

Customer:	Public Safety Building
Address:	5147 Marsh Rd Okemos, MI 48864
System size:	204.22 kW
Yr 1 Production:	244,677 kWh
Total Price	$549,352
Designer:	Absolute Solar
Date:	June 8th, 2023



To: **Environmental Commissioners**

From: **Jack Hughes, Project Engineer**
Department of Public Works and Engineering

Date: **February 27, 2026**

Re: **Marshall Park – Two Concept Plans**

The Columbia St Neighborhood Drainage Improvements project is continuing to develop conceptual plans for addressing the flooding issues present at Marshall Park. There are now two approaches being considered to rectify the drainage problem and improve the quality of the park. One retains a balance of park and ecological incentives while the other primarily focuses on the ecological aspect.

The first plan utilizes all perennial vegetation. 'The perennials would be established using seed and/or plugs. Including plugs provides a greater variety of species and quicker establishment than seed alone but is more expensive. This would create a naturalized wetland of native species. It would provide openness and plenty of habitat. The aesthetic would be colorful at certain times of year. The dormant vegetation would provide lots of textural interest in the winter. This approach is popular and, at a glance, appears simple but establishment from seed takes at least 3 years. During the first three years the area will look very weedy. Maintenance is very important as unwanted plants will colonize over time and regular burning, mowing or spot treating will be necessary.'

The second plan strives to 'naturalize the entire area with a combination of floodplain trees and wetland shrubs with a background seeding of native perennials. Once established, it would require the less maintenance and deliver the greatest overall ecological benefit. Once established, woody invasives would need to be controlled which is not expensive and can be contracted out or done internally (performed every 2-3 years). This would also enhance the stormwater capacity as the greater biomass enhances dewatering during the growing season. In this scenario, focus on the perennial vegetation would be deemphasized which comes with acceptance that portions may tend to evolve into "old field" over time which would be a combination of native and non-native species.'

Directors Dan Opsommer and Courtney Wisinkski presented the attached concept plans to the Park Commission in February. The Park Commission is highly supportive of the project, expressing a strong preference for Option 1. They would like some trees planted around the new playground to provide shade in the future once the trees mature and possibly some trees planted around the bioswales. The Park Commission's reasoning for supporting Option 1:

1. Safety- they don't want the views in the park to be too obstructed for Police and EMS by the additional tree plantings
2. They want open space for recreation instead of the 'Planted Woodland', and

3. They don't want to significantly change the view of the homes on Marsh Rd that face the Lake.

Any feedback that the Environmental Commission has on this project and its two options is highly welcomed. Ideally the recommendations would not conflict with the Park Commission's feedback. One potential inclusion has already been suggested by our Chair to account for animal migration to and from the newly created habitats.

For additional consideration, the Lake Lansing Advisory Committee is also highly supportive of the project and has committed up to $10,000 in funding from the Special Assessment District that is funded in large part by property owners (Tier 1 and Tier 2 around the Lake). The Township believes it is telling that property owners around the Lake who serve on the LLAC want to invest their own special assessment revenue into the project.

Attachments:

1. Columbia Neighborhood Drainage - Marshall Park Concept Plans-1 – Perennial Wetland
2. Columbia Neighborhood Drainage - Marshall Park Concept Plans-2 – Naturalized Wetland

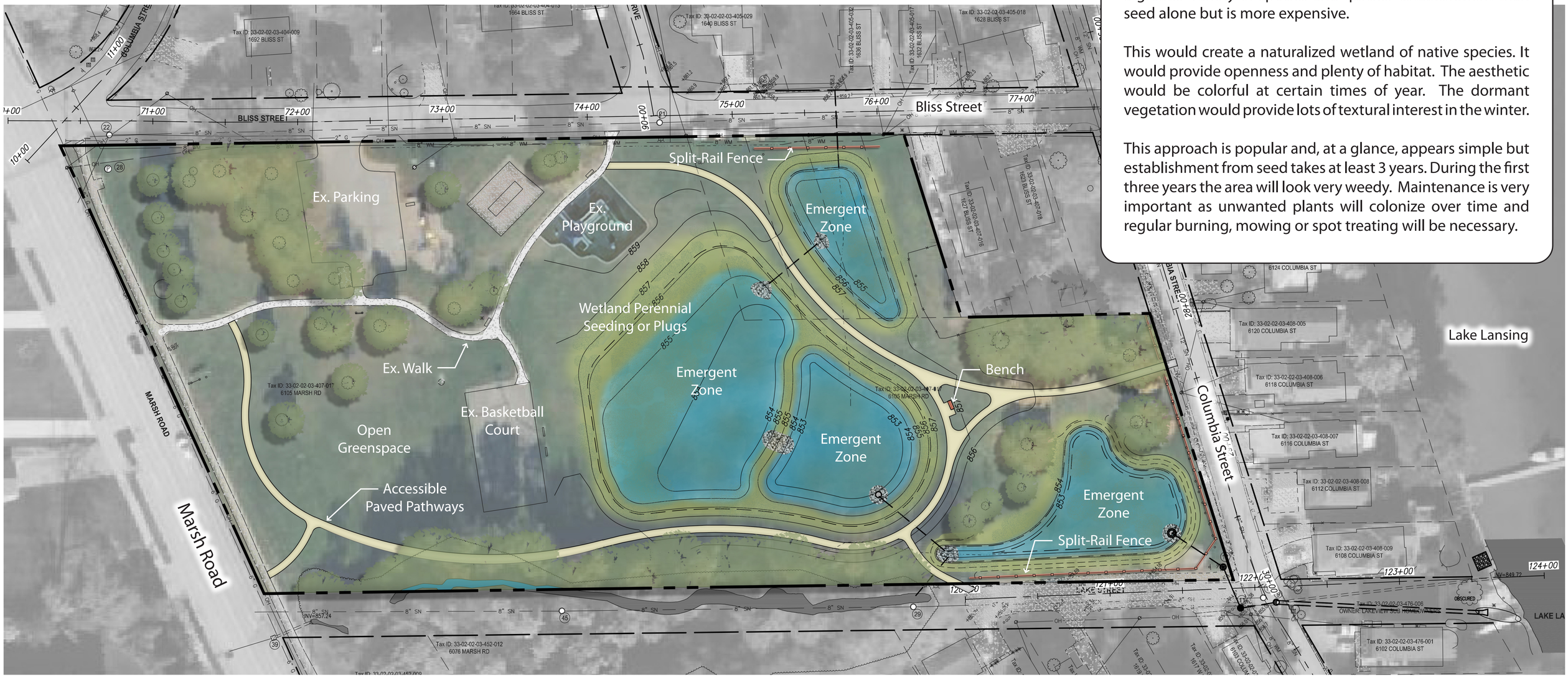
COLUMBIA STREET NEIGHBORHOOD DRAINAGE IMPROVEMENTS
MARSHALL PARK CONCEPT PLANS

Concept 1: Perennial Wetlands

This concept utilizes all perennials. The perennials would be established using seed and/or plugs. Including plugs provides a greater variety of species and quicker establishment than seed alone but is more expensive.

This would create a naturalized wetland of native species. It would provide openness and plenty of habitat. The aesthetic would be colorful at certain times of year. The dormant vegetation would provide lots of textural interest in the winter.

This approach is popular and, at a glance, appears simple but establishment from seed takes at least 3 years. During the first three years the area will look very weedy. Maintenance is very important as unwanted plants will colonize over time and regular burning, mowing or spot treating will be necessary.



SPALDING DEDECKER

COLUMBIA STREET NEIGHBORHOOD DRAINAGE IMPROVEMENTS
MARSHALL PARK CONCEPT PLANS

Concept 2: Naturalized Wetland

This concept seeks to naturalize the entire area with a combination of floodplain trees and wetland shrubs with a background seeding of native perennials.

Once established, it would require the less maintenance and deliver the greatest overall ecological benefit. Once established, woody invasives would need to be controlled which is not expensive and can be contracted out or done internally (performed every 2-3 years). This would also enhance the stormwater capacity as the greater biomass enhances dewatering during the growing season.

In this scenario, focus on the perennial vegetation would be deemphasized which comes with acceptance that portions may tend to evolve into "old field" over time which would be a combination of native and non-native species.

2026 Environmental Commission

YU MAN LEE - CHAIR (12/31/26, 3 year term) Land Preservation Advisory Board Liaison
WILLIAM MCCONNELL – VICE CHAIR (12/31/28, 3 year term)
LAURA BELISLE (12/31/27)
TOM FRAZIER (12/31/2027, 3 year term) Brownfield Redevelopment Authority Liaison
RICHARD MIKSICEK (12/31/28)
NICKOLAS LENTZ (Trustee Liaison)
HARRISON BATTEN (6/31/26, 1 year term) Student
OPEN POSITION
OPEN POSITION
STAFF: **JACK HUGHES**
Student and Student Alternate Position – 1 year position
OPEN: Project Engineer/Env. Commission Representative.