



Environmental Commission Meeting Packet January 9, 2019

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Commission Applications	see additional attachments
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Staff Response/Comments to Wetland Ordinance Revisions (coming soon).....	see additional attachments

PLEASE READ: To make best use of our time before, during, and after our meeting, I'd like to draw your attention to agenda items 1, 2, and 3 (along with the supplemental reading related to these items). Peter Menser from Planning will join to discuss the Permits and the Ordinance. Planning staff responses/comments Note: The Chimney Oaks permit seems to be a good example of a "Minor Permit."

Environmental Commission Meeting

AGENDA: January 9, 2018

Nelson Room – Public Safety Building 5151 Marsh Rd. Okemos

GREEN THEME PRESENTATION: Garry Rowe

“Ingham County Groundwater Survey and Important Issues for Well Head Protection”

Garry Rowe has been a sanitarian, program specialist in groundwater protection and a supervisor of the on-site wastewater treatment and well water system programs with the Ingham County Health Department. Garry serves on the Ingham County Board of Health and does volunteer work with the Groundwater Management Board and Groundwater Technical Advisory Committee for Tri-County Regional Planning.

REGULAR MEETING

1. WETLAND PERMIT(S) - tentative
 - A. Chimney Oaks (culvert/driveway)
 - B. Newton Park
2. WETLAND ORDINANCE UPDATES ([see latest draft and comments](#))
3. Goals for 2019
4. 2019 COMMITTEE LIAISON APPOINTMENTS (in Bold Below)
5. Environmental Commission Applications (see attached)
6. RELATED UPDATES & ANNOUNCEMENTS
 - A. Chair
 - B. Planning – David Premoe**
 - C. Land Preservation – James Kielbaso**
 - D. Energy – John Sarver**
 - E. Brownfield Redevelopment Authority – Ned Jackson**
 - F. Green Team – Aparna Krishnamurthy**
 - G. Staff
 - H. Others
7. OTHER
 - A. Joint Board Meeting (January 15)
 - B. Other
8. PUBLIC REMARKS
9. ADJOURN

Environmental Commission Minutes: December 12, 2018

Attending: Kirk Masten, Ned Jackson, Jim Kielbaso, Aparna Krishnamurthy, Kirk Lapham, Bill McConnell, Sarver, Harvey (staff)

Guests: David Premoe, Dave Batten, and Tom Cary (interested in Env. Commission)

Minutes: Approved as Amended

Calendar for 2019: Jan 9, Feb 6, Mar 6, Apr 3, May 1, Jun 5, **Jul 10**, Aug 7, Sep 4, Oct 2, Nov 6, Dec 4

The Commission discussed a number of minor changes to the Wetland Protection Ordinance (see attached).

The Commission asks that staff develop a draft revised ordinance including new language concerning:

- A permit requirement for signage alerting property owners to the presence of protected wetlands (what is the origin of the graphic at right?).
- Wetland banking in conformance with State law, initially to facilitate public works projects through wetland restoration on land preservation property.



In addition, the Commission asked staff for guidance on:

- The state requirement concerning Essentiality Determination – please cite the statute
- The extent of historic and current mining operations and grazing (including poultry notifications) in the Township

The Commission will review the relevant State definition of “minor projects” that may be exempt from permitting https://www.michigan.gov/documents/deq/wrd-minor-project-categories_555829_7.pdf

Planning Update:

- Township Farmers Market: Planning approved a land swap with Meridian Mall.
- Car Dealership developments at Grand River and Powell were approved, including many accommodations to allay concerns of the neighbors.

Land Preservation Update: Harvested 52 deer including a huge buck at Towar woods

Energy Team: No urgent update.

Brownfield Authority: meets next Thursday

Green Team: no report

Staff: Staff distributed a “[Green Infrastructure Audit Tool Report Card](#)” which might be used to encourage, protect, and enhance green infrastructure in existing and future developments.

Adjourned: 9:15 pm

Wetland Ordinance Review Discussion Points

See latest draft here: <http://www.meridian.mi.us/Home/ShowDocument?id=15368>

Wetland Banking Update

Mike Pennington, with the Water Resources Division at DEQ, recently informed us that local municipalities can establish a local wetland bank. Here is a link to DEQ's banking page. https://www.michigan.gov/deq/0,4561,7-135-3313_3687-10426--,00.html. He writes: The document entitled "Process for developing mitigation banks in Michigan factsheet" provides a pretty good overview of the steps required to establish a bank site. Our community would have to identify one or more sites that total 10 acres (once were wetlands to be restored). To help determine sites, there's an on-line wetlands map viewer <https://www.mcgi.state.mi.us/wetlands/mcgiMap.html>" If you open the map and zoom to your township and then click on the "wetland" tab and "high potential restoration" tab you can see suitable restoration areas in your township. The red and yellow areas are the best for restoration. There is \$100,000 available to help with design, purchase, signing, etc. Also low interest loans are available.

Minor Projects

There is the potential to streamline permitting of project approval where approval is likely. The State has two documents that define examples where disruption is minimal. Projects would still receive staff review. However, time, \$\$, and energy could be reduced (delineation, essentiality determination, and Environmental Commission review)

We are still exploring whether our Township has the ability to grant minor permits.

The State Documents detailing minor and general projects can be found here:

- https://www.michigan.gov/documents/deq/wrd-minor-project-categories_555829_7.pdf
Applicable to wetlands: 10, 16, 17, 18, 29, 31, 32, 34, 38, 39, 40, 44, 45, 47, 48
- https://www.michigan.gov/documents/deq/wrd-general-permit-categories_555828_7.pdf
Applicable to wetlands: G, H, M, N, P, S, U, V, Y, CC, DD

Response and edits from Planning: *coming soon*

Longer Term Issue (related to items mentioned in prior packet): How do we provide incentives/encouragement for blue/green infrastructure (and other ecological landscaping, green building, LEED-related amenities, low-impact development, etc.) in future development projects?

2019 Goals

What are our Goals for 2019?

What are our accomplishments in 2018?

2018 Goals

1. Collaborate with the Park Commission and Transportation Commission on wayfinding
2. Review progress on the Greenspace Plan
3. Actualize the Climate Sustainability Plan and review ordinances related to the Climate Sustainability Plan
4. Work with the Economic Development Director to discuss how greening the Township might attract green businesses
5. Collaborate with the Land Preservation Advisory Board

The above goals will not preclude the Environmental Commission from working on other projects; they simply provide a guide for activities for the year. The following motion is included to formally adopt the 2018 Environmental Commission Strategic Plan.

Topics to consider:

- Economic: Place-making
- Public Welfare: Wayfinding
- Water conservation practices
- Collaboration: Climate Sustainability Plan
- Stewardship: Green Themes Presentation
- Administration: College student involvement
- Planning: environmental amenities
- Planning: environmental incentives
- Native plant recommendations
- Solar incentives
- Greenspace plan
- Green buildings
- Pathway connections
- Educational outreach
- Recycling outreach and incentive partnerships
- Transportation partnerships
- Street Tree ordinance
- Irrigation practices
- Landscape requirements
- Pervious and Impervious requirements
- Lighting/ Dark Sky requirements

STAFF UPDATE/RELATED ISSUES

	Summary
Preparing for Joint Board Meeting	LeRoy will work with Bill and others to help prepare a list of Goals and Accomplishments of the Environmental Commission, Green Team, and Energy Team
Recycling	Spring Recycling Event: Apr 27 – Sponsors will be approached in early ‘19 Rain barrel and compost bin sale is being planned for the spring Home & Garden Show with Regional Recycling Groups Developed recycling outreach campaign with Grange Acres
Rain Garden & Native Plantings	Discussed native landscaping with John Anderson of Conservation Connection. He may help convert mowed areas to pollinators/low maintenance landscapes. Bids were received for a small rain garden in front of the solar array.
Energy	A 1-yr report on the climate action plan is underway. A draft is pasted below . The Energy Team meets to discuss pathways to 100% renewables in January. There is a lot of interest in the new solar array http://bit.ly/meridiansolar LeRoy and John recently met to discuss issues with a condo association.
PAH Memo	Derek attended a presentation with Rebecca Essleman this month. Language for RPS was provided to Dennis (Facilities) and Derek (Engineering)
Outreach	A “green” outreach campaign will be planned for 2019 to include utility bill inserts.
Wetland Research	LeRoy’s made some connections with wetland experts at the State level who have been helpful identifying resources for the Township.
Green Gazette	Current issue: http://bit.ly/GreenGazetteJan2019 <ul style="list-style-type: none"> ▪ 10 Green Resolutions ▪ Free Home Energy Analysis ▪ What's in Your Backyard? ▪ Plan Your Eco-Landscape ▪ Green Infrastructure Key to Sustainability ▪ Benefits of Green Infrastructure ▪ Climate: A New Story Subscribe here . Story ideas to Harvey@meridian.mi.us

GREEN THEME SCHEDULE AND TOPICS

Jan 9 Nelson Room	Garry Rowe	"An Update on the Ingham County Groundwater Survey and Important Issues for Well Head Protection Management."
Feb 6	Karim Chatti	Pavement Preservation
Mar 6	Tom Frazier (MI Twp Assoc./MTA)? - invited	Green Communities (tentative)
Apr 3		
May 1	Wanda Bloomquist (Williamstown Twp)	Green Initiatives in Williamstown Twp. (Green Zone District, Red Cedar Clean-Up, Green Burial)
Jun 5		
Jul 10	Aparna Krishnamurthy (tentative)	Student Environmental Initiatives (tentative)
Aug 7		
Sep 4		
Oct 2		
Nov 6		
Dec 4		
		<p>Ideas</p> <ul style="list-style-type: none"> • Green Infrastructure • Wetland Issues Person – model ordinances – Elise Tripp? State Bank Program (Mark Pennington) • Blue Trails -- (large county grant) • Salt: Suggested by Rebecca Essleman • Radon (Susan) • EL's Sustainable Building Ordinance – Green Building, Low Impact Development • 100% Renewable Goal of Traverse City – Kate Madigan (John) • Ecological Landscaping – Bill Schneider – WildType; John Anderson – Conservation Connection • Wayfinding: (related to our 2018 goals) • Greenspace Plan • Climate Sustainability - review ordinances • Relation between Greening and Economic Development/ attracting green businesses – incentives for green development • Collaboration with the Land Preservation Advisory Board • Green chemistry (Ned) • Green Businesses <ul style="list-style-type: none"> ○ (Hopcat has a landfill/waste diversion is 90%) ○ Buddies' composting food waste https://livegreenlansing.org/scraps-to-soil/ <p>Others? Possibly a "Green Panel" of business people</p>

View Past Green Themes: <https://www.youtube.com/watch?v=6qFiWiZQA9A&list=PLYCL9BFEG5RX5LMXKoAde3LCmdRhwrCF>

ENVIRONMENTAL COMMISSION ROSTER (2019)

BILL MCCONNELL (Chair) (12/31/19, 3 year term) mconn64@msu.edu

Dr. William McConnell is a faculty member in MSU's Department of Geography, Environmental, and Spatial Sciences. He currently manages an international multi-institution research project related to food security with the Center for Global Change and Earth Observations. More <http://geo.msu.edu/people/mcconnell-william/>

NED JACKSON (Vice Chair) (12/31/20, 3 year term) jackson@chemistry.msu.edu

Ned Jackson teaches and performs research at MSU in the Department of Chemistry.

<https://www.chemistry.msu.edu/faculty-research/faculty-members/james-e-ned-jackson>

J. JAMES KIELBASO (12/31/19, 3 year term) kielbas3@msu.edu

Jim Kielbaso is a Professor Emeritus from Urban Forestry and Arboriculture in MSU's Department of Forestry. He currently serves on the Land Preservation Board. https://www.canr.msu.edu/people/james_kielbaso

APARNA KRISHNAMURTHY (12/31/19, 1 year term) (Student) aparnakrish9@gmail.com

Aparna Krishnamurthy is a junior at Okemos High School. She serves as Okemos Action Captain for Eco-friendliness. She also is active on the Meridian Green Team.

KIRK LAPHAM (12/31/21, 1 year term) laphamK@gmail.com

Kirk Lapham is a Legal Policy Specialist and Regulatory Affairs Officer at Michigan Department of Natural Resources.

<https://www.linkedin.com/in/kirk-lapham-6a723661>

SUSAN MASTEN (12/31/21, 3 year term) masten@msu.edu

Dr. Susan Masten is on the faculty of MSU's Department of Civil and Environmental Engineering.

<https://www.egr.msu.edu/masten/home>

JOHN SARVER (12/31/20, 3 year term) johnsarver3@gmail.com

John Sarver serves on the Environmental Commission and the Meridian Energy Team. He is a retiree who worked for the Michigan Energy Office for 35 years developing programs and policies related to renewable energy and energy efficiency. John has been a township resident for over 40 years.

Vacant (3 year term)

Vacant (1 year term) (Student)

STAFF:

LEROY HARVEY 517-505-2809 5151 Marsh Rd. Okemos, MI 48864 harvey@meridian.mi.us

LeRoy Harvey serves as an Environmental Program Manager with Meridian Township and is engaged in a variety of energy, recycling, and other initiatives. www.re-news.net

Application Form: <http://bit.ly/commission-app>

Meridian Climate Sustainability Report (draft)

The Meridian Township Board approved a Climate Sustainability Plan in October 2017. The following is a report on progress during the first year of implementation.

Energy Efficiency

Energy efficiency improvements included both lighting and improvements to the heating, ventilation, and air conditioning systems (HVAC). For example, twenty-four 250 watt soffit lights with 21.7 watt LEDs in the Municipal Building. Currently, Meridian is also replacing older computers and monitors. This process is 1/3 complete (50 of 150 computers). Newer monitors are approximately 15% more efficient with increased size. Newer CPUs are about 50% more efficient based upon watt-meter testing. Finally, a new condensing unit and coil were installed in the public safety building.

Energy efficiency improvements have continued in the Meridian streetlighting system. Older mercury vapor are being replaced with high pressure sodium and LEDs are being considered in other locations. Meridian is also partnering with a “Municipal Coalition” to help ensure desirable pricing for more efficient, longer lasting, and brighter replacements. This coalition included Grant Rapids, Kentwood, East Lansing, Flint, Meridian Twp., and others.

The installation of smart meters was largely completed during 2018. Smart meters allow many benefits including the potential to better track and manage energy usage. Smart meters are also an important step toward creating a Smart Grid, improving utility-wide reliability and ability to avoid the use of less efficient power plants, especially when coupled with time-of-use rates and other demand management technologies. In 2019, an engineering study is planned for the Municipal Building HVAC system.

Renewable Energy

The Plan includes a commitment to obtain 100% of the township government’s electricity from renewable energy by 2035 and 25% of the total community electricity from renewable energy by 2025. In pursuit of the community goal, the Meridian Energy Team developed a workshop program to encourage and make it easier for homeowners, businesses, and churches to install solar electric systems on their buildings.

The Meridian Energy Team worked with the Lansing Area Solar Users Network (LaSUN) and local civic organizations and houses of worship. There were 11 workshops held in Meridian Township, East Lansing, and Lansing that reached 272 persons. In addition, there was a workshop in Delta Township that reached 18 persons. There was a significant increase, 19 new solar projects (88.6 kW), in residential solar electric systems in Meridian Township in 2018. The number of residential solar systems doubled. While not all the new installations should probably be attributed to the Solarize Meridian project, it is reasonable to assume that the project was a major influence in increasing the number of solar installations in the township.

Recycling & Waste Reduction

Meridian Green Team was active in planning and coordinating two major regional recycling events during the spring and the fall. Each event drew hundreds of participants and resulted in the recycling,

reuse, and proper disposal of 100,000 lbs of materials. 1600 vehicles dropped off recyclables and over 180 volunteer shifts were filled.

The Green Team also promoted recycling in the broader community including multi-family apartment buildings and complexes. Surveys were distributed to owners and managers to gain insight on recycling views, barriers, and opportunities.

Participation in curbside recycling continues to grow slowly. Global markets for certain materials have put a strain on recycling processors and have resulted in a push to reduce contamination through programs like “Recycle Right” and others.

Specific details on the quantities of materials recycled at our Recycling Center and through curbside recycling are forthcoming.

Transportation

In 2018, a major focus has been upon maintain Meridian’s 80+ miles of pedestrian and bicycle pathways. This includes repair of bridges and installation of culverts. Planning is underway to connect several key pathways along Marsh Rd., Okemos Rd., and Towner Rd. A “road diet” (4- to 3-lane, plus 2 bike lanes) is being planned for Lake Lansing Rd. as well.

Capital Area Transportation Authority and Meridian will explore efficiency improvements and a millage renewal for Redi-Ride services in 2019. Bike parking requirements and a [complete streets ordinance](#) remain in effect to guide development and infrastructure improvements.

In regards to vehicles, Meridian purchased two electric mowers in 2018 which help emission reductions. Another electric mower purchase is planned for 2019.

Water Management

Meridian was involved with several initiatives to enhance green infrastructure in the township. Perhaps most significantly, land preserves exceeded parks in total acreage. Over 900 acres of land preserves have been made possible by a Land Preservation Millage.

In addition, the Township has engaged in several educational and demonstration projects including:

- Buffer strips near the edge of the Lake Lansing.
- Plantings in the Hidden River Rain Garden
- Invasive species mitigation in area parks and land preserves
- Tree planting
- Utility bill inserts (lawn care for water conservation and pollution reduction; fats, oil, and grease reduction; flushable wipes reduction)

Meridian is also a partner in the East Lansing Meridian Water and Sewer Authority. Significant renovation will greatly boost efficiency and provide waste reduction and renewable energy production (methane generator)

Supplemental Attachments:

Commission Applications

Note: I received an additional email from Linda Burghardt elaborating on her enviro interest....

Dear Mr. Harvey,

Thank you very much for letting me know about the Environmental Commission's meeting next Wednesday. I am very interested in the Commission's work in protecting the Township's environmental interests and would like to help any way that I can.

My involvement in environmental concerns began many years ago when I was the Michigan Senate Fiscal Agency's analyst for the Natural Resources and Environmental Affairs Committee and wrote the analyses of legislation reported out by the Committee.

When I left the Agency I joined the Environmental Division of Zurich US, an international insurance carrier, as a Manager/Senior Underwriter. The Division handled policies covering underground petroleum storage tank systems and was responsible for cleaning up many contaminated sites. I was responsible for reading contamination reports and interpreting maps to determine the extent of the contamination and its effect on groundwater sources.

I am currently on the Steering Committee and Board of Directors for Art in the Wild, a nonprofit dedicated to the task of educating the public on the detrimental effect that our everyday activities can have on our water resources and changes that we can make in our behavior to mitigate the damage.

I hope this helps explain my interest in the Commission's work on behalf of our environment. I will be at the meeting next Wednesday.

Linda

Linda Burghardt, MPA, CAE

517-420-3706 (cell) 517-347-1077 (home) LBurghardt@comcast.net

Wetland Use Permits

Staff Response/Comments to Wetland Ordinance Revisions (coming soon)

Riley Millard

From: webmaster@meridian.mi.us
Sent: Thursday, November 29, 2018 12:55 AM
To: Michelle Prinz; Deborah Guthrie; Erin Cornett; Brett Dreyfus; Riley Millard
Subject: Public Service Form Received

A new entry to a form/survey has been submitted.

Form Name: Public Service Application Form
Date & Time: 11/29/2018 12:55 AM
Response #: 12
Submitter ID: 8268
IP address: 172.25.96.105
Time to complete: 35 min. , 0 sec.

Survey Details

Page 1

CHARTER TOWNSHIP OF MERIDIAN

Ronald J. Styka
Brett Dreyfus
Julie Brixie
Frank L. Walsh

Supervisor
Clerk
Treasurer
Manager



Phil Deschaine
Patricia Herring Jackson
Dan Opsommer
Kathy Ann Sundland

Trustee
Trustee
Trustee

I am interested in service on one or more of the following public bodies as checked below:

***Special conditions restrict eligibility for appointment**

1.

Brownfield Redevelopment Authority*

Corridor Improvement Authority*

Downtown Development Authority*

Economic Development Corporation

Environmental Commission

Planning Commission

Township Board (Elected/Appointed)

2. Occupation:

Currently unemployed -- previously executive director of several nonprofits, manager and senior underwriter for insurance carrier, legislative analyst and fiscal analyst

3. Indicate areas not included above which may warrant special attention or study that are of interest to you:

Mental Health services and community discussions
Safe, affordable assisted living options and other services and supports for seniors

4. Describe education, experience or training which will assist you if appointed:

During my tenure with the Michigan State Senate I wrote the analyses for a number of legislative initiatives that pertain to economic development and municipal finance initiatives including tax increment financing, downtown development authorities, economic growth zones, brownfield redevelopment, revenue sharing, urban land assembly fund, surplus funds investment pools for municipalities, land use inventory reports, principal shopping areas redevelopment, plant rehabilitation tax credit, enterprise zones, and zoning of day care homes.

As a Senior Underwriter/Manager in the Environmental Division of a major insurance carrier I was responsible for evaluating environmental contamination reports and maps and remediation reports.

I have served on a number of coalitions, committees and task forces as part of the mental health and aging advocacy communities and as an executive branch appointee. I also have served on the Boards of Directors for two non-profits.

As the executive director of several nonprofits I have worked with Boards of Directors and committees of volunteers and have facilitated effective meetings and strategic planning sessions.

This summer I ran for public office for the first time and came in second in a four-person primary race for Ingham County Commissioner for the 12th District..

5. Contact Information:

Name:	Linda Burghardt	Occupation:	Not answered
Place of Employment:	Not answered	Home Address:	1907 Atherton Way, Okemos, MI 48864
Phone (days):	517-347-1077 (home)	Phone (evenings):	517-420-3706 (cell)
Date:	11-29-18		

6. Attach Resume and Cover Letter

Resume is attached [Linda Burghardt Resume 11-26-18.doc](#)

Thank you,
Meridian Township, MI

This is an automated message generated by the Vision Content Management System™. Please do not reply directly to this email.

LINDA P BURGHARDT

1907 Atherton Way • Okemos, MI 48864 • 517.347.1077 (h) • 517.420.3706 (c) • LBurghardt@comcast.net

PROFILE

- **Public Speaking** – Over 300 presentations across the state to legislators, faculty, students, professionals, and the general public. Presentations involved training, advocacy, public education on issues, classroom lectures, and testifying before legislative committees.
- **Writing** - Over 3,000 legislative analyses on a wide range of topics; briefing and public policy materials; testimony on legislation; budget bills and decision documents; training and advocacy materials; responses to questions from Governor’s Task Force on Licensure; Appropriations Manual for Senate Fiscal Agency; articles for newsletters and agency publications; communications with regulatory agencies; marketing materials. Editor of business plan for non-profit.
- **Liaison/Collaborations/Networking** - Liaison to legislators, staff, government agencies, business and community groups, association members and national offices, nonprofit and other organizations. Collaborations with, or member of, over 20 coalitions /committees, including Behavioral Health Advisory Council, the Board of Directors for Enroll Michigan and MMAP, the Lt. Governor’s Section 298 Large Work Group and 298 Next Steps Workgroup, Partners for Parity, MI Coalition for Children and Families, Michigan Voice/America Votes.
- **Events** - Trained NASW-MI members on licensure issues for Lobby Day. For eight years planned and conducted annual Legislative Education and Advocacy Day for over 400 college students, faculty, and social workers. Speakers included issue experts, state legislators, and representatives from the Governor’s office and various state agencies. Planned all content and speakers for NAMI Michigan and AAAAM annual conferences.
- **Social Media/Communications** - Worked with NASW-MI Communications Director on web advocacy tools, including a Legislative Action Web Page for communication with legislators. Worked with Deputy Director at NAMI MI to provide information to members through social media. Authored AAAAM newsletter. Have done radio, phone, and print interviews. Led and participated in press conferences. Use of website, Facebook, LinkedIn, and Twitter in disseminating information.
- **Analysis** - Policy, fiscal, and/or program analysis of budget and non-budget legislation, administrative rules, departmental program operations and staffing priorities; insurance accounts and regulations. Identified, analyzed, and communicated legislative/policy initiatives for MHAM, NAMI MI, NASW MI, and AAAAM.
- **Capacity Building** - Educated members, staff, and boards on legislative issues, advocacy techniques, appropriations processes, functions of political action committees. Worked with MHAM, NAMI MI, NASW MI, and AAAAM public policy committees on legislative and policy issues and testimony on bills. Obtained training for NAMI Board Members and sent employees to various trainings and workshops.
- **Fiscal Responsibility** – Responsible for total NAMI MI, MHAM, and AAAAM budgets, including membership dues, donations, bequest, investment portfolio, sponsorship funds, foundation grants, and federal grant through Michigan Department of Health and Human Services. Led \$250 million budget bill through the State budget process. Responsible for disbursement of political action committee (PAC) funds, compliance with state campaign finance/lobbying laws and government and private foundation grant reporting requirements.
- **Management** – Supervised staff at NAMI MI, MHAM, and AAAAM. Oversaw all daily operations of associations. Trained and directly supervised 15 employees at Zurich US East Lansing office. Drafted update of NAMI Michigan’s Strategic Plan and worked with MHAM Board and outside consultant on revised MHAM strategic plan. Developed all documents/policies/systems necessary for the chartering of state office by NAMI

National.

LINDA P BURGARDT

- **Teaching** – Instructor of Legislative Relations class for Masters in Public Administration (MPA) degree program for Western Michigan University. Guest lecturer at a number of colleges and universities.
- **Additional course work** – Have taken courses toward Microsoft Certified Systems Engineer and A+ certification; courses in financial management and accounting for nonprofits; and seminars in grant seeking and government contracting.
- **Credential** -- Completed Michigan Society of Association Executives' (MSAE) Academy of Association Management classes for nonprofit executives and the Certified Association Executive (CAE) exam preparation course. Earned CAE credential in 2014. Invited member of MSAE CEO Circle.
- **International Experience** – Lived in and attended school in five countries and traveled extensively overseas (33 countries).

EMPLOYMENT HISTORY

EXECUTIVE DIRECTOR Area Agencies on Aging Association of Michigan • Lansing, MI • 2017 to 2018

PRESIDENT AND CEO Mental Health Association in Michigan • Okemos, MI • 2014 to 2016

EXECUTIVE DIRECTOR National Alliance on Mental Illness – Michigan Chapter • Lansing, MI • 2010 to 2014

GOVERNMENT RELATIONS DIRECTOR National Association of Social Workers - Michigan Chapter • Lansing, MI • 2002 to 2010

IT STUDENT Career Quest Learning Center • Lansing, MI • 2000 to 2002

MANAGER/SENIOR UNDERWRITER Zurich U.S. • East Lansing, MI • 1997 to 2000

LEGISLATIVE/FISCAL ANALYST Michigan Senate Fiscal Agency • Lansing, MI • 1986 to 1997

LEGISLATIVE ANALYST Michigan Senate Analysis Section • Lansing, MI • 1980 to 1986

EDUCATION

MASTER OF PUBLIC ADMINISTRATION Emphasis on Public Policy and Program Evaluation • Michigan State University • East Lansing, MI

BACHELOR OF ARTS Major in Government • Cornell University • Ithaca, NY

Riley Millard

From: webmaster@meridian.mi.us
Sent: Friday, December 7, 2018 9:42 AM
To: Michelle Prinz; Deborah Guthrie; Erin Cornett; Brett Dreyfus; Riley Millard
Subject: Public Service Form Received

A new entry to a form/survey has been submitted.

Form Name: Public Service Application Form
Date & Time: 12/07/2018 9:42 AM
Response #: 16
Submitter ID: 8282
IP address: 172.25.96.105
Time to complete: 22 min. , 2 sec.

Survey Details

Page 1

CHARTER TOWNSHIP OF MERIDIAN

Ronald J. Styka
Brett Dreyfus
Julie Brixie
Frank L. Walsh

Supervisor
Clerk
Treasurer
Manager



Phil Deschaine
Patricia Herring Jackson
Dan Opsommer
Kathy Ann Sundland

Trustee
Trustee
Trustee

I am interested in service on one or more of the following public bodies as checked below:

***Special conditions restrict eligibility for appointment**

- 1.
- Community Resources Commission
 - Environmental Commission
 - Land Preservation Advisory Board
 - Township Board (Elected/Appointed)
 - Zoning Board of Appeals
 - East Lansing-Meridian Water & Sewer Authority
 - Park Commission (Elected/Appointed)
 - Planning Commission

2. **Occupation:**
Attorney

3. Indicate areas not included above which may warrant special attention or study that are of interest to you:

Any areas involving legal concerns and/or areas of involving the monitoring of the upkeep of township owned property for things like trees that need removing or trash being dumped or drains that need clearing

4. Describe education, experience or training which will assist you if appointed:

I have been a licensed attorney in the state of Michigan since May 2011. I have a background in criminal law as well as civil practice with a focus on landlord-tenant law, contract law, and real property law. I have called the greater Lansing Area since 2006 and specially Meridian Township since January 2018. However, prior to moving to Meridian Township I re-located my law office, Doering Law, PLLC, to Meridian Township in November 2015. In November 2016 I completed the Meridian Township Police Department's Citizens' Academy as a Meridian Township business owner where I met now Trustee Patricia Herring Jackson. At the close of the Academy I signed up for and later engaged in a ride-along with Officer Erin Linn in December 2016. At that time my now husband and I were already looking to move to Meridian Township and participating in the Academy only strengthened that desire.

5. Contact Information:

Name:	Erin K. Schroeder	Occupation:	Attorney
Place of Employment:	Doering Law, PLLC	Home Address:	2348 Sower Blvd., Okemos, MI 48864
Phone (days):	5173477739	Phone (evenings):	8105317017
Date:	12/07/2018		

6. Attach Resume and Cover Letter

Resume is attached [LEGAL RESUME.doc](#)

Thank you,
Meridian Township, MI

This is an automated message generated by the Vision Content Management System™. Please do not reply directly to this email.

Erin K. Schroeder

Business Address: 2295 Sower Blvd., Okemos, MI 48864

Business Phone: (517) 347-7739

erin@doeringlawpllc.com

LEGAL EXPERIENCE

Doering Law, PLLC, Okemos, MI

Owner & Managing Attorney, December 2015—present

- Provide legal counsel to clients in criminal and civil matters including: land contract transactions; landlord-tenant; criminal defense; probate; divorce; and estate planning.
- Managing the day-to-day operations of a private legal practice.
- Supervising interns.

30th Circuit Mental Health Court, Lansing, MI

Public Defense Attorney, October 2014—present

- Provide legal counsel to Mental Health Court participants in criminal matters where mental health has been determined to be a factor.
- Assisting in the promotion of the Mental Health Court.

Ingham County Court Services, Lansing, MI

Court Appointed Attorney, September 2011—present

- Provide legal counsel to indigent defendants in felony and misdemeanor cases including: domestic violence; aggravated stalking; fleeing and eluding police; larceny; drug possession; violations of probation; food stamp fraud; CCW violations; false police reports; felony failure to pay child support; operating while intoxicated; and welfare fraud.
- Represent clients in court proceedings including: Preliminary Exams; Friend of the Court hearings; Personal Protection Order violation hearings; and Probation Violation hearings.

Nichol & Doering, PLLC, East Lansing, MI

Managing Attorney, October 2012—November 2015

- Provide legal counsel to clients in criminal and civil matters including:
- operating while intoxicated; leaving the scene of an accident; debt collection; dog bite; minor in possession; expungement; divorce; and estate planning.
- Assist in the day-to-day operations of a private legal practice.

Washtenaw County Public Defender Clinic, Ann Arbor, MI

Student Attorney, May 2010—November 2010

- Interviewed, counseled, and represented indigent defendants in a variety of felony matters including: drug possession; shoplifting; probation violations; criminal sexual conduct; breaking and entering; fleeing and eluding police; and domestic violence.
- Engaged in the practice of law and conducted legal research under the supervision of experienced attorneys.

Open Door Ministry, Lansing, MI

Student volunteer, February 2009—December 2009

- Provided clients with community resources information for services such as drug and alcohol abuse counseling.

- Assisted indigent or homeless clients in the handling of medical bills, divorces, and child custody and contact with children.

Prison Legal Services of Michigan, Lansing, MI

Student volunteer, January 2008—May 2008

- Provided general legal advice to prisoners regarding Michigan Department of Corrections' Policies on: personal possessions; injuries incurred while in custody; access to legal materials while in prison; and eligibility for rehabilitation programs and education.

Ingham County 30th Judicial Circuit Court, Lansing, MI 05/2006-08/2006

Juvenile Court Officer—Intern

- Contacted probationers three times a week.
- Kept case notes and detailed records.
- Assisted with transport of probationers and the intake and release from detention center.

MEMBERSHIPS AND ACTIVITIES

State Bar of Michigan - Member in Good Standing, May 2011—present

Not Just Protect and Serve Anymore, Mason, MI
Certificate of Achievement for Participation, May 2018

Mental Health First Aid USA, Lansing, MI
Certified in Mental Health First Aid USA, May 2018

Youth Mental Health First Aid USA, Lansing, MI
Certified in Youth Mental Health First Aid USA, March 2018

Meridian Township Police Department Citizens' Academy Session #18, Okemos, MI
Certificate of Completion, November 2016

Michigan Civil Service Commission - Entry-Level Law Enforcement Examination
Passed, December 2014

Resolution Services Center of Central Michigan, Lansing, MI
Certificate of Completion - General Civil Mediator Training, October 2013

Michigan Commission on Law Enforcement Standards
A - Band Certified in Reading & Writing, 2006

EDUCATION

Western Michigan University Cooley Law School, Lansing, MI
Juris Doctor, September 2010
Concentration in Litigation
Melissa Mitchell Memorial Scholarship Recipient
Dean's List

Michigan State University, East Lansing, MI
Bachelor of Arts in Criminal Justice, December 2006
Dean's List



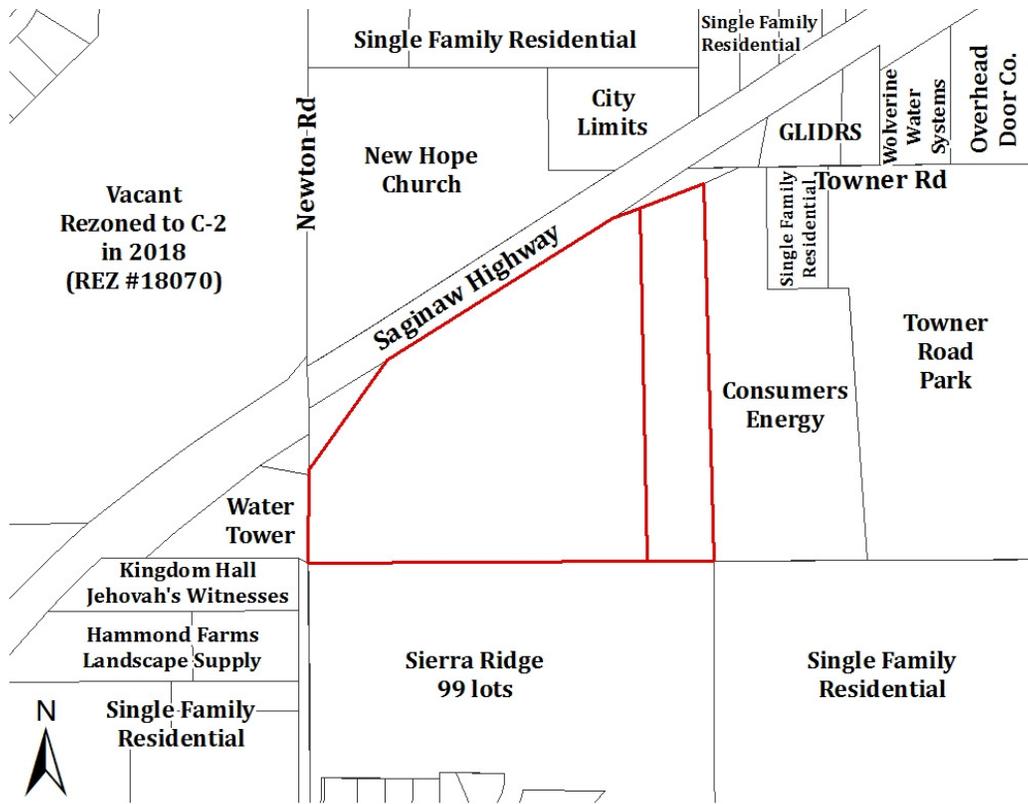
To: Environmental Commission

From: Peter Menser, Principal Planner

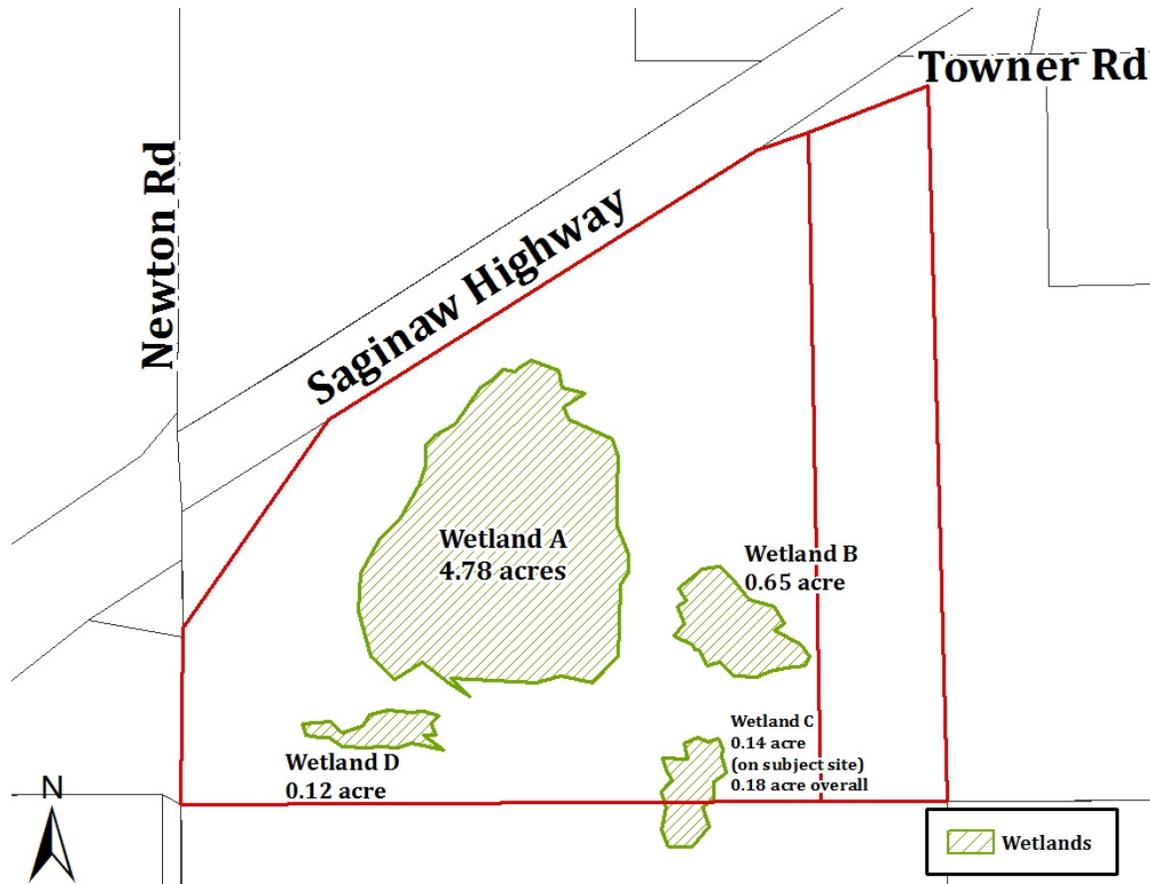
Date: January 4, 2019

Re: Wetland Use Permit #18-03 (DTN), discharge storm water to regulated wetlands to facilitate construction of mixed use project at the southeast corner of Saginaw Highway and Newton Road.

Newton Pointe, LLC has submitted a mixed use planned unit development (MUPUD) proposal for a project identified as Newton Park. The approximate 23.97 acre project site is located at the southeast corner of Saginaw Highway and Newton Road and consists of two parcels, a property addressed as 6276 Newton Road (17.97 acres) and a property recognized as Tax I.D. #04-252-005 (six acres). The site is zoned C-2 (Commercial). The proposal includes the construction of a new 86,468 square foot mixed use building with 85 multiple family dwelling units and 19,367 square feet of commercial space, 10, 10-unit multiple family buildings, six, four-unit single family attached buildings, nine single family dwellings, and a 4,778 square foot clubhouse. The map below depicts the site location and surrounding land uses.



Wetlands



Four wetlands are located on the subject property. A wetland delineation was conducted by the applicant's wetland consultant to determine the boundary, regulatory status, and size of the wetlands. The delineation was verified by the Township's wetland consultant in July of 2018. Wetland A on the submitted plans is 4.78 acres in size and regulated by the Township. Wetland B is 0.65 acres in size and, while under the 0.25 acre threshold for Township regulation, was deemed to be essential by the Township Board at its December 4, 2018 meeting and is therefore regulated. Wetlands C and D are 0.18 and 0.12 acres in size and are not subject to Township regulation as they fall below the 0.25 acre threshold.

Section 86-471 of the Code of Ordinances requires all structures and grading activities be set back 20 feet (Wetland B) or 40 feet (Wetland A) from a delineated wetland boundary depending on the size of the wetland, and that a natural vegetation strip be maintained within 20 feet of the wetland boundary.

Wetland Use Permit #18-03 (DTN)
Environmental Commission (January 9, 2018)
Page 3

The applicant proposes to discharge storm water to Wetlands A and B, which requires approval of a wetland use permit. The wetland use permit is being processed concurrently with the MUPUD and SUP requests. Wetland use permit applications submitted in conjunction with a related land development activity are decided by the same entity that decides the related land development activity; therefore the Township Board will make the decision regarding the wetland use permit. The Township Board will hold a public hearing on the wetland use permit request at the same time it holds its public hearing for the MUPUD request.

After the initial review of the proposal the Township's consultant requested additional information, which was provided by the applicant. Based on the additional information the Township's environmental consultant has reviewed the request and has recommended approval of the request with conditions. Details of the wetland use permit review and the list of suggested conditions of approval are included in the attached report.

Environmental Commission Options

The Environmental Commission may recommend approval, approval with conditions, or denial of the proposed wetland use permit. A motion to recommend approval in accordance with the conditions proposed by Township's wetland consultant is provided.

- **MOTION to recommend approval of Wetland Use Permit #18-03 to discharge storm water into regulated wetlands subject to the conditions proposed by the Township's wetland consultant in the report dated January 3, 2019.**

Attachments

1. Joint permit application.
2. Site plans prepared by Kebs, Inc. dated November 22, 2017 (Revision Date November 19, 2018) and received by the Township on November 19, 2018.
3. Wetland delineation report prepared by Voice Environmental Group, LLC dated February 22, 2018.
4. Letter of Essentiality prepared by Township wetland consultant dated November 28, 2018.
5. Updated wetland report and supporting materials prepared by Voice Environmental Group, LLC dated December 12, 2018.
6. Application review letter prepared by Township wetland consultant dated October 24, 2018.
7. Final wetland report prepared by Township wetland consultant dated January 3, 2018

G:\Community Planning & Development\Planning\WETLAND USE PERMITS (WUP)\2018\WUP 18-03 (DTN)\WUP 18-03 Env Comm review.env1.docx



Joint Permit Application

For Work in Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams,
 High Risk Erosion Areas and Critical Dune Areas

www.mi.gov/jointpermit

<p>What is the purpose of the Joint Permit Application?</p>	<p>This Joint Permit Application was developed to facilitate the state and federal permit application process administered by the Michigan Department of Environmental Quality (DEQ) and the U.S. Army Corps of Engineers (USACE).</p> <p>The Joint Permit Application is a multi-purpose application used to describe and quantify proposed activities regulated by the DEQ and/or the USACE. This application is for those activities regulated by the following Parts of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended by the State of Michigan.</p> <ul style="list-style-type: none"> • Part 301, Inland Lakes and Streams • Part 325, Great Lakes Submerged Lands • Part 303, Wetlands Protection • Floodplain Regulatory Authority found in Part 31, Water Resources Protection • Part 315, Dam Safety • Part 323, Shorelands Protection and Management (High Risk Erosion Areas) • Part 353, Sand Dunes Protection and Management (Critical Dune Areas) <p>The regulated activities are summarized in Appendix D. The statutes and rules are available at www.mi.gov/jointpermit.</p> <p>This application is also for those activities regulated by the USACE within the waters of the United States under Section 10, Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404, Clean Water Act of 1977 (33 U.S.C. 1344).</p> <p><u>Preapplication Meeting:</u> This is an optional service available for activities proposed in inland lakes and streams (Part 301), wetlands (Part 303), and critical dune areas (Part 353). A preapplication meeting can answer many questions regarding whether or not a permit is required and the review process. The application form and fee schedule are available at www.mi.gov/jointpermit.</p>
<p>How do I complete the Joint Permit Application?</p> <p><i>An accurate and complete application package is required for processing; inaccurate or missing information will delay processing.</i></p>	<p>There are three parts to a complete Joint Permit Application package:</p> <ol style="list-style-type: none"> 1. Application Form 2. Maps and Drawings 3. Fee <p>Follow the checklists on the following page for each part of the application package.</p> <p>When you have questions or need assistance in completing the application package refer to the following information on our website www.mi.gov/jointpermit or you may contact the appropriate district office, page iii, or through the website link “Who to Contact.”</p> <ul style="list-style-type: none"> • Joint Permit Application Training Manual • EZ Guides for small projects • Acronyms in Appendix A • Sample drawings in Appendix B • Minor Project and General Permit Categories in Appendix C • Fee schedule in Appendix C • State and Federal Authority and Penalties in Appendix D • Glossary in Appendix E



Application Checklist

The following website will provide township, range, section, latitude and longitude information:

www.mcgi.state.mi.us/wetlands/

In each section check all boxes that apply to your project.

Show and label property lines on the site plan.

Label existing and proposed contours, dimensions, excavation and/or fill on the site plans and cross sections.

Provide tables for multiple impact areas.

1. Application Form

- Complete Sections 1 through 9 of the application form.
- An authorization letter from the property owner if someone other than the property owner is signing the application.
- Complete those Sections 10 through 20 that apply to your project. Follow the instructions at the beginning of each section. For additional information, the instructions for each sample drawing in Appendix B indicate the application sections you will most likely need to complete. Complete the application form as much as possible before adding attachments. Label each attachment with the applicant's name.
- Stake or flag the area for site inspection including the property corners, proposed road or driveway centerlines, and areas of proposed impacts. The site must be flagged when the application is submitted.

2. Maps and Drawings

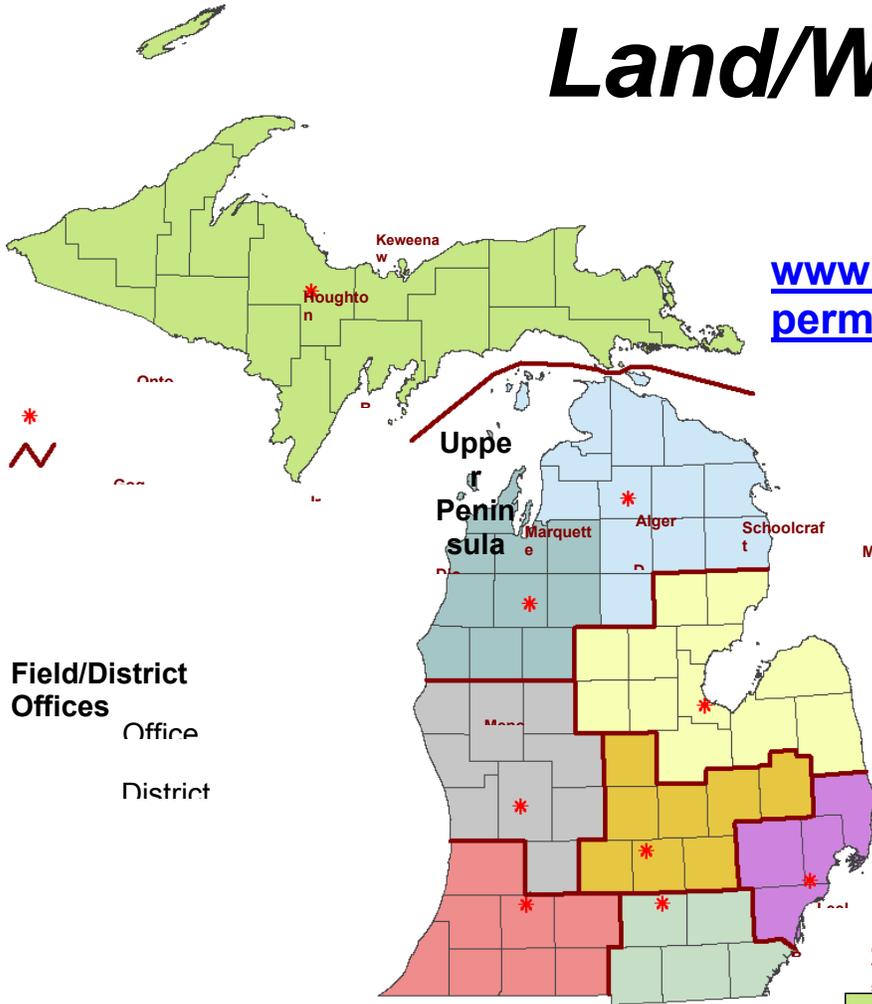
- All maps and drawings must be black and white, legible, reproducible, and sized to 8.5" x 11". Aerial photographs do not substitute for site plans. If larger drawings or blueprints are required to show adequate detail for review, you may also submit one full size copy.
- Vicinity Map: A map to the proposed project location that includes ALL streets, roads, intersections, highways, or cross-roads to the project. Do not assume review staff knows your project location.
- Project Site Plan: Overhead drawings to scale or with dimensions, length and width, of the proposed project are required. Show and label property lines on the site plan.
- Cross-section drawings are required. Provide the cross-sections and profile views to scale or with dimensions, length, width, and height.
- Elevation data must include a description of the reference point or benchmark used and its corresponding elevation. For projects on the Great Lakes or Section 10 Waters, elevations must be provided in IGLD 85. For observed Great Lake water elevations in IGLD, visit the USACE website under "water levels". If elevations are from still water, provide the observation date and water elevation. On inland sites, elevations can use NGVD 29, NAVD 88, a local datum or an assumed bench mark.
- Provide descriptive photographs of the proposed work site showing vegetation if wetlands are involved or the shoreline for shore protection projects. All photographs must be labeled with your name and the date of the photograph, indicate what they show, and be referenced to the site plan. Proposed activities or structure(s) may be indicated directly on the photographs using indelible markers or ink pens. Provide aerial photographs 1:400 or larger for major projects.

3. Fee

- Payment to the **State of Michigan**. Fees typically range from \$50 to \$4,000 depending on the type of project. Refer to Appendix C of the application and/or visit www.mi.gov/jointpermit to determine the appropriate fee for your project and for directions to pay by credit card or electronic fund transfer payment.
- Applications should be sent directly to the district offices. Please refer to page iii, or refer to www.mi.gov/jointpermit "who to contact" for address and/or phone number. Applications that cross county boundaries should be sent to the district containing the primary work effort.
- Applications for dams regulated under Part 315 or from public agencies eligible to receive federal and/or state transportation funding for a project involving public roadways, non-motorized paths, airports, or related facilities should be mailed to: DEQ, WRD, P.O. BOX 30458, LANSING, MI 48909-7958.



Land/Water Water Resource



www.mi.gov/jointpermit

Field/District Offices

Office

District

Cadillac

Saginaw Bay

Grand Rapids

Lansing

SE Michigan

Kalamazoo

Jackson

Upper Peninsula: 906-228-4853

Gaylord: 989-731-4920
1504 W. Washington St.,
Marquette, MI 49855

Saginaw Bay: 989-960-49735
2100 West M-32, Gaylord

Cadillac: 231-960-49601
120 W. Chapin St., Cadillac

Saginaw Bay: 989-894-6200
401 Ketchum Street, Suite

Grand Rapids: 616-356-0500
Bay City 46708

Lansing: 517-284-6851
5th Fl. 350 Ottawa Ave. NW,
Grand Rapids 49503

SE Michigan: 586-753-3700
27700 Donald Court, Warren

Kalamazoo: 269-567-3500
48092
7953 Adobe Road,

Jackson: 517-780-7690
Kalamazoo 49009
301 E. Louis Glick Hwy,

Jackson 49201



APPENDICES

Appendix A:	Acronyms and Abbreviations	A-1
Appendix B:	Sample Drawings	
	1. General Instructions for all Drawings and Sample Site Location Maps	B-1
	2. Inland Lake Shore Protection	B-2
	3. Bulkhead/Seawall	B-2
	4. Pond Construction	B-3
	5. Floodplain Fill.....	B-3
	6. Wetland Boardwalk.....	B-4
	7. Dredging	B-4
	8. Driveway Across Wetland	B-5
	9. Residential Wetland Fill and Boardwalk Construction	B-5
	10. Docks - Piers - Mooring Piles	B-6
	11. Beach Sanding	B-6
	12. Pipe/Utility Crossings in a Trench.....	B-7
	13. Pipe/Utility Crossings using Directional Bore.....	B-7
	14. Bridge or Culvert (4 drawings).....	B-8
	15. Dam Construction	B-12
	16. Water Intake	B-12
	17. Great Lakes Shore Protection	B-13
	18. Maintenance Dredge Channel.....	B-13
	19. Proposed Residence in a High Risk Erosion Area	B-14
	20. Proposed Residence in a Critical Dune Area	B-14
	21. Marina Site Plan	B-15
	22. Outlet Pipe.....	B-16
	23. Temporary Logging Road Crossing.....	B-16
Appendix C:	Fees and Categories for Minor Project and General Permit for Minor Activities	C-1
Appendix D:	State Authority, Federal Authority, Privacy Act Statement, and State and Federal Penalties	D-1
Appendix E:	Glossary (listed words are italicized in the application package)	E-1

Application status can be viewed on the Water Resources Division (WRD) website at www.michigan.gov/miwaters. During the application period, if any information is missing from the application or if any clarification is needed regarding materials provided, the application is incomplete and staff will request the information from the applicant/agent by letter, email, fax or phone call. If a complete response is not provided within 30 days, the application will be closed. Some regulatory parts allow extensions if requested within the 30 day time frame. Once the WRD has received the information necessary for review of the project, including a thoroughly completed application, consistent drawings that have adequate detail for review and the full application fee, the file will be reviewed for final processing. A mailed postcard or a public notice will provide the file number and the telephone number of the office where the application is being processed. The review time to determine if an application is complete for processing ranges from 15 to 30 days. Technical processing times, after the application is administratively complete, may range from 60 to 90 days. Processing times will be longer if a public hearing is held. Staff from your local District/Field Office may visit the project site and may request additional information prior to a decision on the application. Application fees are not refundable or transferable.

If a federal permit will also be required, a copy of the permit application will be sent to the Detroit District Office, USACE, for processing at the federal level. Additional copies of this application form can be downloaded from the WRD website at www.mi.gov/jointpermit or can be photocopied from the original. If you have any questions about the permitting process or if you need to modify your application, you can contact the WRD by phone or fax at the addresses on the previous page, or email at DEQ-WRD-MiWaters@michigan.gov.



AGENCY USE	Previous USACE File Number	Date Received	DEQ File Number
	USACE File Number		Fee received \$

Validate that all parts of this checklist are submitted with the application package. Fill out application and additional pages as needed.

- All items in Sections 1 through 9 are completed.
- Project-specific Sections 10 through 20 are completed.
- Dimensions, volumes, and calculations are provided for all impact areas.
- All information contained in the headings for the appropriate Sections (1-20) are addressed, and identified attachments (➔) are included.
- Map, site plan(s), cross sections; one set must be black and white on 8 ½ by 11 inch paper; photographs.
- Application fee is attached.

1 Project Location Information For Latitude, Longitude, and TRS info anywhere in Michigan see www.mcgi.state.mi.us/wetlands/

Project Address (road, if no street address) 6276 NEWTON ROAD	Zip Code 48840	Municipality (Township/Village/City) HASLETT	County INGHAM
Property Tax Identification Number(s) 32-02-02-04-252-004	Latitude 42.762983 N	Township/Range/Section (TRS) T 4 N or S; R 1 E or W; Sec 4 OR Private Claim # _____	
Subdivision/Plat and Lot Number	Longitude -84.430909 W		

2 Applicant and Agent Information

Owner/Applicant (individual or corporate name) NEWTON POINTE, LLC	Agent/Contractor (firm name and contact person) CHUCK HOLMAN
Mailing Address 2502 LAKE LANSING ROAD, STE C	Mailing Address 2502 LAKE LANSING ROAD
City LANSING State MI Zip Code 48912-3661	City LANSING State MI Zip Code 48912-3661
Contact Phone Number Fax 517-371-5326 517-371-5326	Contact Phone Number Fax 517-371-5300 517-371-5326
Email cholman@dtmgt.com	E-mail cholman@dtmgt.com
<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes Is the applicant the sole owner of all property on which this project is to be constructed and all property involved or impacted by this project? ➔ If no, attach letter(s) of authorization from all property owners including the owner of the disposal site.	
Property Owner's Name (If different from applicant)	Mailing Address
Contact Phone Number	City State Zip Code

3 Project Description

Project Name NEWTON PARK MUPUD	Preapplication File Number - - -P																				
Name of Water body MERIDIAN TWP. REGULATED WETLAND	Date project staked/flagged JUNE AND JULY 2017																				
The proposed project is on, within, or involves (check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> an inland lake (5 acres or more)</td> <td><input type="checkbox"/> a Great Lake or Section 10 Waters</td> </tr> <tr> <td><input type="checkbox"/> a pond (less than 5 acres)</td> <td><input checked="" type="checkbox"/> a wetland</td> </tr> <tr> <td><input type="checkbox"/> a stream, river, ditch or drain</td> <td><input type="checkbox"/> a 100-year floodplain</td> </tr> <tr> <td><input type="checkbox"/> a legally established County Drain</td> <td><input type="checkbox"/> a dam</td> </tr> <tr> <td>Date Drain was established</td> <td><input type="checkbox"/> a designated high risk erosion area</td> </tr> <tr> <td><input type="checkbox"/> a channel/canal</td> <td><input type="checkbox"/> a designated critical dune area</td> </tr> <tr> <td><input type="checkbox"/> 500 feet of an existing water body</td> <td><input type="checkbox"/> a designated environmental area</td> </tr> </table>	<input type="checkbox"/> an inland lake (5 acres or more)	<input type="checkbox"/> a Great Lake or Section 10 Waters	<input type="checkbox"/> a pond (less than 5 acres)	<input checked="" type="checkbox"/> a wetland	<input type="checkbox"/> a stream, river, ditch or drain	<input type="checkbox"/> a 100-year floodplain	<input type="checkbox"/> a legally established County Drain	<input type="checkbox"/> a dam	Date Drain was established	<input type="checkbox"/> a designated high risk erosion area	<input type="checkbox"/> a channel/canal	<input type="checkbox"/> a designated critical dune area	<input type="checkbox"/> 500 feet of an existing water body	<input type="checkbox"/> a designated environmental area	Project Use <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> private</td> </tr> <tr> <td><input checked="" type="checkbox"/> commercial</td> </tr> <tr> <td><input type="checkbox"/> public/government</td> </tr> <tr> <td><input type="checkbox"/> project is receiving federal/state transportation funds</td> </tr> <tr> <td><input type="checkbox"/> Wetland Restoration</td> </tr> <tr> <td><input type="checkbox"/> other</td> </tr> </table>	<input type="checkbox"/> private	<input checked="" type="checkbox"/> commercial	<input type="checkbox"/> public/government	<input type="checkbox"/> project is receiving federal/state transportation funds	<input type="checkbox"/> Wetland Restoration	<input type="checkbox"/> other
<input type="checkbox"/> an inland lake (5 acres or more)	<input type="checkbox"/> a Great Lake or Section 10 Waters																				
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<input type="checkbox"/> private																					
<input checked="" type="checkbox"/> commercial																					
<input type="checkbox"/> public/government																					
<input type="checkbox"/> project is receiving federal/state transportation funds																					
<input type="checkbox"/> Wetland Restoration																					
<input type="checkbox"/> other																					

Indicate the type of permit being applied for: General Permit Minor Project Individual (All other projects.) ➔ See Appendix C.

Written Summary of All Proposed Activities **CONSTRUCT SINGLE AND MULTIPLE RESIDENTIAL UNITS WITH ATTACHE GARAGES, PARKING AREAS. CONSTRUCT SANITARY AND STORM SEWERS, AND STORM WATER PRE-TREATMENT AND STORM DETENTION OUTLET CONTROL STRUCTURE FROM WETLANDS WITH OUTLET TO PUBLIC STORM SEWERS.**

Construction Sequence and Methods **CONSTRUCT UNDER GROUND FACILITIES, APPROACHES FOR VEHICLES TO NEWMAN ROAD, UNDERGROUND FACILITIES AND BUILDINGS. COSTRUCT**

**4 Project Purpose, Use and Alternatives** *Attach additional sheets as necessary.*

Describe the purpose of the project and its intended use; include any new development or expansion of an existing land use.

CONSTRUCT SINGLE AND MUTIFAMILY RESIDENTIAL UNITS WITH GARAGES AND PARKING AREAS.

Describe the alternatives considered to avoid or minimize resource impacts. Include factors such as, but to limited to, alternative locations, project layout and design, and construction technologies. For utility crossings include alternative routes and construction methods.

PROVIDE PRE-TREATMENT FOR FOR STORM RUN OFF TO THE WETLANDS AND CONSTRUCT STORM WATER DETENTION OUTLET STRUCTURES FROM THE WETLANDS WITH STORM WATER OUTLET TO PUBLIC STORM SEWERS.**5 Locating Your Project Site** *Attach a legible black and white map with a North arrow.*Names of roads of closest intersection **NEWTON ROAD AND M-78 (E.SAGINAW STREET)**Directions from main intersection to the project site, with distances from the best and nearest visible landmark and water body **EXISTING DRIVEWAY IS LOCATED SOUTH IF INTERSECTION ON E. SIDE OF NEWTON ROAD .**Description of buildings on the site (*color; 1 or 2 story, other*)**SITE IS VACANT**Description of adjacent landmarks or buildings (*address; color; etc*)**MERIDIAN WATER TOWER IS LOCATED ON WEST SIDE OF NEWTON ROAD**How can your site be identified if there is no visible address? **OPPISITE SIDE OF WATER TOWER ON NEWMAN ROAD****6 Easements and Other Permits** No Yes Is there a conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property?

➔ If yes, attach a copy. Provide copies of court orders and legal lake levels if applicable.

List all other federal, interstate, state, or local agency authorizations including required assurances for Critical Dune Area projects.

Agency	Type of Approval	Number	Date Applied	Date approved /denied	Reason for denial

7 ComplianceIf a permit is issued, when will the activity begin? (M/D/Y) **MARCH, 2019**Proposed completion date (M/D/Y) **NOVEMBER 2019** No Yes Has any construction activity commenced or been completed in a regulated area?

➔ If Yes, identify the portion(s) underway or completed on drawings or attach project specifications and give completion date(s).

 No Yes Were the regulated activities conducted under a DEQ and/or USACE permit?

➔ If Yes, list the permit numbers

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

➔ If Yes, attach explanation.

8 Adjoining Property Owners *Provide current mailing addresses. Attach additional sheets/labels for long lists.* Established Lake Board

Contact Person

Mailing Address

City

State and Zip Code

 Lake Association

List all adjoining property owners.

If you own the adjoining lot, provide the requested information for the first adjoining parcel that is not owned by you.

Property Owner's Name	Mailing Address	City	State and Zip Code
MERIDIAN CHARTER TOWNSHIP	5151 MARSH ROAD	OKEMOS	MI, 48864
HAMMOND, L. LEE	5834 M-99	DIMONDALE	MI, 48821



9 Applicant's Certification		<i>Read carefully before signing.</i>	
<p>I am applying for a permit(s) to authorize the activities described herein. I certify that I am familiar with the information contained in this application; that it is true and accurate; and, to the best of my knowledge, that it is in compliance with the State Coastal Zone Management Program. I understand that there are penalties for submitting false information and that any permit issued pursuant to this application may be revoked if information on this application is untrue. I certify that I have the authority to undertake the activities proposed in this application. By signing this application, I agree to allow representatives of the DEQ, USACE, and/or their agents or contractors to enter upon said property in order to inspect the proposed activity site before and during construction and after the completion of the project. I understand that I must obtain all other necessary local, county, state, or federal permits and that the granting of other permits by local, county, state, or federal agencies does not release me from the requirements of obtaining the permit requested herein before commencing the activity. I understand that the payment of the application fee does not guarantee the issuance of a permit.</p>			
<input checked="" type="checkbox"/> Property Owner <input type="checkbox"/> Agent/Contractor <input type="checkbox"/> Corp. or Public Agency / Title	Printed Name CHUCK HOLMAN	Signature	Date



10 Projects Impacting Inland Lakes, Streams, Great Lakes, Wetlands or Floodplains

- Complete only those sections A through M applicable to your project.
- If your project impacts wetlands also complete Section 12. If your project impacts regulated floodplains also complete Section 13.
- To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27. Example: (25 ft long x 10 ft wide x 2 feet deep) / 27 = 18.5 cubic yards
- Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness.
 - Provide a black and white overall site plan, with cross-section and profile drawings. Show existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures, land change activities and soil erosion and sedimentation control measures. Review Appendix B and EZ Guides for aid in providing complete site-specific drawings.
 - Provide tables for multiple impact areas or multiple activities such as multiple fill areas or multiple culverts. Include your calculations.

Water Level Elevation
 On inland waters NGVD 29 NAVD 88 other Observed water elevation (ft) date of observation (M/D/Y)
 On a Great Lake IGLD 85 surveyed converted from observed still water elevation.

A. PROJECTS REQUIRING FILL (See All Sample Drawings)
 ➤ Attach a site plan and cross-section views to scale showing maximum and average fill dimensions with calculations.
 ➤ For multiple impact areas on a site provide a table with location, dimensions and volumes for each fill area.

Purpose bioengineered shore protection boat ramp boat well bridge or culvert crib dock
 riprap seawall swim area other

Dimensions of fill (ft)			Total volume (cubic yards)	Volume below OHWM (cubic yards)
Length	Width	Maximum Depth		
Maximum water depth in fill area (ft)			Area filled (sq ft)	Will filter fabric be used under proposed fill? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, type)

Fill will extend _____ feet into the water from the shoreline and upland _____ feet out of the water.

Type of clean fill peastone % sand % gravel % other

Source of clean fill commercial on-site other
 ➤ If on-site, show location on site plan.
 ➤ If other, attach description of location.

B. PROJECTS REQUIRING DREDGING OR EXCAVATION (See Sample Drawings)
 • Refer to www.mi.gov/jointpermit for spoils disposal and authorization requirements.
 ➤ Attach a site plan and cross-section views to scale showing maximum and average dredge or excavation dimensions with calculations.
 ➤ For multiple impact areas on a site provide a table with location, dimensions and volumes for each dredge/excavation area.

Purpose boat ramp boat well bridge or culvert maintenance dredge
 navigation pond/basin other

Dimensions (ft)			Total volume (cu yds)	Volume below OHWM (cu yds)
Length	Width	Maximum Depth		

Has this same area been previously dredged? No Yes If Yes, provide date and permit number:

Will the previously dredged area be enlarged? No Yes If Yes, when and how much?

Is long-term maintenance dredging planned? No Yes If Yes, how often?

Dredge or Excavation Method Hydraulic Mechanical other

Spoils Disposal	Dredged or excavated spoils will be placed <input type="checkbox"/> on-site <input type="checkbox"/> landfill <input type="checkbox"/> USACE confined disposal facility <input type="checkbox"/> other upland off-site For disposal, provide a ➤ Detailed spoils disposal area location map and site plan with property lines. ➤ Letter of authorization from property owner of spoils disposal site, if disposed off-site.
	For volumes less than 5,000 cu yards, has proposed dredge material been tested for contaminants within the past 10 years? <input type="checkbox"/> No <input type="checkbox"/> Yes ➤ If Yes, provide test results with a map of sampling locations.

C. PROJECTS REQUIRING RIPRAP (See Sample Drawings 2, 3, 8, 12, 14, 22, and 23)

Riprap water ward of the ordinary high water mark: dimensions (ft) length width depth	Volume(cu yd)
Riprap landward of the ordinary high water mark: dimensions (ft) length 20 width 15 depth 0.5 TO 2.0	Volume(cu yd) 15CYD X 16 = 240 CYD

Type and size of riprap (inches)
 field stone **3" - 6"** angular rock **3" - 6"** other
 Will filter fabric or pea stone be used under proposed riprap?
 No Yes, Type



<input type="checkbox"/> D. SHORE PROTECTION PROJECTS (See EZ Guides and Sample Drawings 2, 3, and 17. Complete Sections 10A, B, and/or C.)			
➔ For bioengineering projects include the list of native plants/seeds, if available.			
Type and length (ft)	<input type="checkbox"/> bioengineering (ft)	<input type="checkbox"/> revetment (ft)	<input type="checkbox"/> riprap (ft) <input type="checkbox"/> seawall/bulkhead (ft)
Structure is <input type="checkbox"/> new <input type="checkbox"/> repair <input type="checkbox"/> replacement of an existing structure		Will the existing structure be removed? <input type="checkbox"/> No <input type="checkbox"/> Yes	
Proposed Toe Stone (linear feet)		Distance of project from adjacent property lines (ft)	
Distance of project from an obvious fixed structure (example - 50 ft from SW corner of house)			
For bioengineering projects indicate the structure type <input type="checkbox"/> brush bundles <input type="checkbox"/> coir log <input type="checkbox"/> live stakes <input type="checkbox"/> tree revetment <input type="checkbox"/> other			
<input type="checkbox"/> E. DOCK - PIER – MOORING PILINGS (See Sample Drawing 10)			
➔ Attach a copy of the property legal description, mortgage survey, or a property boundary survey report.			
Dock Type <input type="checkbox"/> open pile <input type="checkbox"/> filled <input type="checkbox"/> crib <input type="checkbox"/> floating <input type="checkbox"/> cantilevered <input type="checkbox"/> spring piles <input type="checkbox"/> piling clusters <input type="checkbox"/> other			
Is the structure within the applicant's riparian area interest area? <input type="checkbox"/> No <input type="checkbox"/> Yes ➔ Show parcel property lines on the site plan.			
Proposed structure dimensions (ft) length width		Use <input type="checkbox"/> private <input type="checkbox"/> public <input type="checkbox"/> commercial	
Dimensions of nearest adjacent structures (ft) length width		Distance of dock from adjacent property lines (ft)	
<input type="checkbox"/> F. BOAT WELL (See EZ Guide. Complete Sections 10A and 10B)			
Dimensions (ft) length width depth		Number of boats	
Type of sidewall stabilization <input type="checkbox"/> concrete <input type="checkbox"/> riprap <input type="checkbox"/> steel <input type="checkbox"/> vinyl <input type="checkbox"/> wood <input type="checkbox"/> other			
Volume of backfill behind sidewall stabilization (cu yd)		Distance of boat well from adjacent property lines (ft)	
<input type="checkbox"/> G. BOAT RAMP (See EZ Guide. Complete sections 10A, 10B, and 10C for mattress and pavement fill, dredge, and riprap)			
Type <input type="checkbox"/> new <input type="checkbox"/> existing <input type="checkbox"/> maintenance/improvement		Use <input type="checkbox"/> private <input type="checkbox"/> public <input type="checkbox"/> commercial	
Existing overall boat ramp dimensions (ft) length width depth		Type of construction material <input type="checkbox"/> concrete <input type="checkbox"/> wood <input type="checkbox"/> stone <input type="checkbox"/> other	
Proposed overall ramp dimensions (ft) length width depth		Proposed ramp dimensions (ft) below ordinary high water mark length width depth	
Number of proposed skid piers	Proposed skid pier dimensions (ft) length width		Distance of ramp from adjacent property lines (ft)
<input type="checkbox"/> H. BOAT HOIST – ROOFS (See EZ Guide)			
Type <input type="checkbox"/> cradle <input type="checkbox"/> side lifter <input type="checkbox"/> other		Located on <input type="checkbox"/> seawall <input type="checkbox"/> dock <input type="checkbox"/> bottomlands	
Hoist dimensions, including catwalks (ft) length width			
Area occupied, including cat walks (sq ft)		Distance of hoist from adjacent property lines (ft)	
Permanent Roof <input type="checkbox"/> No <input type="checkbox"/> Yes ➔ If Yes, how is the roof supported?		Maximum Roof Dimensions (ft): length width height	
<input type="checkbox"/> I. BOARDWALKS and DECKS in WETLANDS or FLOODPLAINS (See Sample Drawings 5 and 6. Complete Sections 12 and/or 13)			
➔ Provide a table for multiple boardwalks and decks proposed in one project; include locations and dimensions.			
Wetlands		Floodplains	
Boardwalk <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	Deck <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	Boardwalk <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	Deck <input type="checkbox"/> on pilings <input type="checkbox"/> on fill
Dimensions (ft) length width	Dimensions (ft) length width	Dimensions (ft) length width	Dimensions (ft) length width
<input checked="" type="checkbox"/> J. INTAKE PIPES (See Sample Drawing 16) or OUTLET PIPES (See Sample Drawing 22)			
If outlet pipe, discharge is to <input type="checkbox"/> inland lake <input type="checkbox"/> stream, drain or river <input type="checkbox"/> overland flow <input type="checkbox"/> Great Lake <input checked="" type="checkbox"/> wetland <input type="checkbox"/> other			
Number of pipes	Pipe diameters and invert elevations	Does pipe discharge below the OHWM?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes
7	12" 24"	Is the water treated before discharge?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes
Type <input type="checkbox"/> headwall <input checked="" type="checkbox"/> end section <input type="checkbox"/> other	Dimensions of headwall OR end section (ft) length 2' TO 3.5' width 2' TO 4' height 12" TO 24"		



<input type="checkbox"/> K. MOORING and NAVIGATION BUOYS (See EZ Guide for Sample Drawing)			
➔ Provide a site plan showing the distances between each buoy and from the shore to each buoy, and depth (ft) of water at each location. ➔ Provide cross-section drawing(s) showing anchoring system(s) and dimensions.			
Purpose of buoy <input type="checkbox"/> mooring <input type="checkbox"/> navigation <input type="checkbox"/> scientific structures <input type="checkbox"/> swimming <input type="checkbox"/> other			
Number of buoys	Dimensions of buoys (ft)		Boat Lengths
	width	height	swing radius
			chain length
Buoy Location: Latitude . N Longitude -- . W. ➔ Provide a table for multiple buoys.			
Do you own the property along the shoreline?		<input type="checkbox"/> No <input type="checkbox"/> Yes	➔ If No, attach an authorization letter from the property owner(s).
Do you own the bottomlands?		<input type="checkbox"/> No <input type="checkbox"/> Yes	➔ If No, attach an authorization letter from the property owner(s).
<input type="checkbox"/> L. FENCES			
➔ Provide an overall site plan showing the proposed fencing through streams, wetlands or floodplains. ➔ Provide a drawing of fence profile showing the design, dimension, post spacing, mesh, and distance from ground to bottom of fence.			
Purpose of fence <input type="checkbox"/> Airport <input type="checkbox"/> Cervidae <input type="checkbox"/> Livestock <input type="checkbox"/> Residential <input type="checkbox"/> Security <input type="checkbox"/> Other			
Total length (ft) of fence through		Fence height (ft)	Fence type and material
streams wetlands floodplains			
<input type="checkbox"/> M. OTHER - e.g., structure removal, maintenance or repair, aerator, dry fire hydrant, gold prospecting, habitat structures, scientific measuring devices, soil borings, or survey activities.			
Structure description, dimensions and volumes. Complete Sections 10A-C as applicable.			
11 Expansion of an Existing or Construction of a New Lake or Pond (See Sample Drawings 4 and 15)			
➔ Complete Section 10J for outlets and Section 17 for water control structures. ➔ Provide elevations, cross-sections and profiles of outlets, dams, dikes, water control structures and emergency spillways to nearest water bodies.			
Which best describes your proposed water body use (check all that apply)			
<input type="checkbox"/> mining <input type="checkbox"/> recreation <input type="checkbox"/> storm water retention basin <input type="checkbox"/> wastewater basin <input type="checkbox"/> wildlife <input type="checkbox"/> other			
Water source for lake/pond			
<input type="checkbox"/> groundwater <input type="checkbox"/> natural springs <input type="checkbox"/> Inland Lake or Stream <input type="checkbox"/> storm water runoff <input type="checkbox"/> pump <input type="checkbox"/> sewage <input type="checkbox"/> other			
Location of the lake/basin/pond <input type="checkbox"/> floodplain <input type="checkbox"/> wetland <input type="checkbox"/> stream (inline) <input type="checkbox"/> upland			
Maximum dimensions (ft)		Maximum Area: <input type="checkbox"/> acres <input type="checkbox"/> sq ft	
length width depth			
Has the there been a hydrologic study performed on the site?		<input type="checkbox"/> No <input type="checkbox"/> Yes	➔ If Yes, provide a copy.
Has the DEQ conducted a wetland assessment for this parcel?		<input type="checkbox"/> No <input type="checkbox"/> Yes	➔ If Yes, provide a copy or WIP number:
Has a professional wetland delineation been conducted for this parcel?		<input type="checkbox"/> No <input type="checkbox"/> Yes	➔ If Yes, provide a copy with data sheets.
Spoils Disposal	Dredged or excavated spoils will be placed <input type="checkbox"/> on-site <input type="checkbox"/> landfill <input type="checkbox"/> USACE confined disposal facility <input type="checkbox"/> other upland off-site For disposal, provide a ➔ Detailed spoils disposal area location map and site plan with property lines. ➔ Letter of authorization from property owner of spoils disposal site, if disposed off-site.		



12 Activities That May Impact Wetlands (See Sample Drawings 8 & 9). Complete other Sections as applicable.

- Locate your site and wetland information with the DEQ Wetlands Map Viewer at www.mcgi.state.mi.us/wetlands/
- For information on the DEQ's Wetland Identification Program (WIP) visit www.mi.gov/wetlands.
 - ➔ Provide a detailed site plan with labeled property lines, upland and wetland areas, and dimensions and volumes of wetland impacts.
 - ➔ Complete the wetland dredge and wetland fill dimension information below for each impacted wetland area.
 - ➔ Attach tables for multiple impact areas or activities.
 - ➔ Attach at least one cross-section for each wetland dredge and/or fill area; show wetland and upland boundaries on the cross-section.

Has the DEQ conducted a wetland assessment for this parcel?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	➔ If Yes, provide a copy or WIP number:	
Has a professional wetland delineation been conducted for this parcel?		<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	➔ If Yes, provide a copy with data sheets	
Is there a recorded DEQ easement on the property?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	➔ If Yes, provide the easement number	
Did the applicant purchase the property before October 1, 1980?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	➔ If Yes, provide documentation.	
Is any grading or mechanized land clearing proposed?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	➔ If Yes, label the locations on the site plan.	
Has any of the proposed grading or mechanized land clearing been completed?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	➔ If Yes, label the locations on the site plan	
Proposed Activity				
<input type="checkbox"/> boardwalk or deck (Section 10I)		<input type="checkbox"/> bridges and culverts (Section 14)	<input type="checkbox"/> designated environmental area	
<input type="checkbox"/> dewatering		<input checked="" type="checkbox"/> draining surface water	<input type="checkbox"/> driveway / road	
<input type="checkbox"/> fences (Section 10L)		<input type="checkbox"/> fill or dredge	<input type="checkbox"/> restoration	
<input type="checkbox"/> septic system		<input checked="" type="checkbox"/> stormwater discharge (Section 10J)	<input type="checkbox"/> other	
FILL	Dimensions	Area	Average depth (ft)	Volume (cu yd)
	maximum length (ft) maximum width (ft)	<input type="checkbox"/> acres <input type="checkbox"/> sq ft		
DREDGE	Dimensions	Area	Average depth (ft)	Volume (cu yd)
	maximum length (ft) maximum width (ft)	<input type="checkbox"/> acres <input type="checkbox"/> sq ft		
Spoils Disposal	Dredged or excavated spoils will be placed <input type="checkbox"/> on-site <input type="checkbox"/> landfill <input type="checkbox"/> USACE confined disposal facility <input type="checkbox"/> other upland off-site			
	For disposal, provide a ➔ Detailed spoils disposal area location map and site plan with property lines. ➔ Letter of authorization from property owner of spoils disposal site, if disposed off-site.			
Septic System	The proposed project will be serviced by: <input checked="" type="checkbox"/> public sewer <input type="checkbox"/> private septic system ➔ Show system on plans.		If a private septic system is proposed, has an application for a permit been made to the County Health Department? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, has a permit been issued? <input type="checkbox"/> No <input type="checkbox"/> Yes ➔ Provide a copy of the permit.	
	Describe the wetland impacts, the proposed use or development, and the alternatives considered: <i>SURFACE RUN OFF WILL BE INTERCEPTED BY STORM SEWERS AND CURB SPILLWAYS, FOREBAYS WILL BE CONSTRUCTED AT EACH OUTLET AND SIZED FOR THE SIZE OF THE DRAINAGE AREA FROM EACH STORM PIPE OR CURB SPILLWAY.</i>			
Does the project impact more than 1/3 acre of wetland? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes ➔ If Yes, submit a Mitigation Plan with the type and amount of mitigation proposed. For more information go to www.mi.gov/wetlands				
Describe how impacts to waters of the United States will be avoided and minimized:				
Describe how the impact to waters of the United States will be compensated. OR Explain why compensatory mitigation should not be required for the proposed impacts.				



13 Floodplain Activities (See Sample Drawing 5 and others. Complete other applicable sections.)

- For more information go to www.mi.gov/floodplainmanagement. This site also lists the projects and requirements for an expedited floodplain review under "Expedited Review Information for Minor Floodplain Projects."
- Examples of projects proposed within the non-floodway portions of the 100-year-floodplain which may qualify for an expedited review: Open pile decks and boardwalks; residences, commercial/industrial facilities, garages and accessory structures; parking lots; pavilions, gazebos, large community playground structures; residential swimming pools
- Examples of projects proposed within the floodway portions of the floodplain which may qualify for an expedited review: Open pile decks and boardwalks, (non-enclosed) that are anchored to prevent floatation and that do not extend over the bed and bank of a watercourse; parking lots constructed at grade or resurfacing that is no more than 4 inches above the existing grade; dry hydrants that do not require fill placement; scientific structure such as staff gauges, water monitoring devices, water quality testing devices, and core sampling devices which meet specific design criteria and fish structures that meet specific design criteria.
- For expedited review include:
 - Photographs of the work site labeled to identify what is being shown and with the direction of the photo clearly indicated. Include photographs of any river or stream adjacent to the project.
 - A letter or statement from the local unit of government acknowledging your proposed application. See the website for sample wording.
- A hydraulic analysis or hydrologic analysis may be required to fully assess floodplain impacts.
- The state building code requires an Elevation Certificate for any building construction or addition in a floodplain. A sample form can be found at www.fema.gov/nfip/elvinst.shtm.
 - Attach additional sheets or tables for multiple proposed floodplain activities and provide hydraulic calculations.
 - Show reference datum used on plans.

Proposed Activity	<input type="checkbox"/> fill <input type="checkbox"/> excavation or cut <input type="checkbox"/> other	100-year floodplain elevation (ft) (if known) Datum <input type="checkbox"/> NGVD 29 <input type="checkbox"/> NAVD 88 <input type="checkbox"/> other
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Site is _____ feet above ordinary high water mark (OHWM) OR observed water level. Date of observation (M/D/Y)

Fill volume below the 100-year floodplain elevation (cu yds)	Compensating cut volume below the 100-year floodplain elevation (cu yds)
--	--

Buildings and/or Additions	Type of construction is <input type="checkbox"/> residential <input type="checkbox"/> garage/pole barn <input type="checkbox"/> non residential <input type="checkbox"/> other	
	Construction is <input type="checkbox"/> new <input type="checkbox"/> addition AND Serviced by <input type="checkbox"/> public sewer <input type="checkbox"/> private septic <input type="checkbox"/> other	
	Lowest adjacent grade (ft): existing proposed datum <input type="checkbox"/> NGVD 29 <input type="checkbox"/> NAVD 88 <input type="checkbox"/> other	
	Existing Structure Information	Proposed Structure Information
	Foundation type <input type="checkbox"/> basement <input type="checkbox"/> concrete slab on grade <input type="checkbox"/> pilings <input type="checkbox"/> crawl space <input type="checkbox"/> other	Foundation type <input type="checkbox"/> basement <input type="checkbox"/> concrete slab on grade <input type="checkbox"/> pilings <input type="checkbox"/> crawl space <input type="checkbox"/> other
	Foundation floor elevation (ft)	Foundation floor elevation (ft)
	Height of crawl space/basement from finished foundation floor to bottom of floor joists (ft)	Height of crawl space/basement from finished foundation floor to bottom of floor joists (ft)
	Elevation of 1st floor above basement floor/crawl space (ft)	Elevation of 1st floor above basement floor/crawl space (ft)
	For enclosed areas below the flood elevation, such as a crawl space, garages and accessory structures: Area of proposed foundation (sq ft) Elevation of proposed enclosed area (ft) datum <input type="checkbox"/> NGVD 29 <input type="checkbox"/> NAVD 88 <input type="checkbox"/> other	
	Number of flood vents	net opening of each vent (sq inches)



14	Bridges and Culverts Including Foot and Cart Bridges. (See EZ Guides and Sample Drawings 5, 14A, 14B, 14C, 14D.)			
<ul style="list-style-type: none"> • Complete other applicable Sections, including 10A-C. • A hydraulic analysis or hydrologic analysis may be required to fully assess impacts. → Attach hydraulic calculations. • High Water Elevation - describe reference point and highest known water level above or below reference point and date of observation. <ul style="list-style-type: none"> → Attach additional sheets for multiple bridges and/or culverts. → Provide detailed site-specific drawings of existing and proposed Plan and Elevation View at a scale adequate for detailed review. → Provide all information in the boxes below; do not write in a reference to plan sheets. Show reference datum used on plans. 				
Stream Information	The site has a high water elevation (ft) <input type="checkbox"/> above or <input type="checkbox"/> below the Reference Point of _____ Date observed _____			
	Reference datum used <input type="checkbox"/> NGVD 29 <input type="checkbox"/> NAVD 88 <input type="checkbox"/> IGLD 85 (Great Lakes coastal areas) <input type="checkbox"/> other			
	Average stream width (ft) at the ordinary high water mark (OHWM) outside the influence of any ponding or scour holes around the structure		Upstream _____ Downstream _____	
	Cross-sectional area of primary channel (sq ft) _____ (See Sample Drawing 14C for more information)			
	The width of the stream where the water begins to overflow its banks. Bankfull width (ft)			
	The invert of the stream 100-feet from structure (ft)		Upstream _____ Downstream _____	
	Is the existing culvert perched? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, provide a profile of the channel bottom at the high and low points for a distance of 200 feet upstream and downstream of the culvert.			
Complete this form for each bridge / culvert location.			Existing	Proposed
Bridge	Number of bridge spans			
	Bridge type (concrete box beam, concrete I-beam, timber, etc.)			
	Bridge span (length perpendicular to stream) (ft)			
	Bridge width (parallel to stream) (ft)			
	Bottom of bridge beam (ft)		Upstream _____ Downstream _____	
	Stream invert elevation at bridge (ft)		Upstream _____ Downstream _____	
	Bridge rise from bottom of beam to streambed (ft)			
	Culvert	Number of culverts		
Culvert type (arch, bottomless, box, circular, elliptical, etc.)				
Culvert material (concrete, corrugated metal, plastic, etc.)				
Culvert length (ft)				
Culvert <input type="checkbox"/> width <input type="checkbox"/> diameter (ft)				
Culvert height prior to any burying (ft)				
Depth culvert will be buried (ft)				
Elevation of culvert crown (ft)		Upstream _____ Downstream _____		
Higher elevation of <input type="checkbox"/> culvert invert OR <input type="checkbox"/> streambed within culvert (ft)		Upstream _____ Downstream _____		
Complete for both Bridges and Culverts		Entrance design (mitered, projecting, wingwalls, etc.)		
	Total structure waterway opening above streambed (sq ft)			
	Total structure waterway area below the 100-year elevation (sq ft) (if known)			
	Elevation of road grade at structure (ft)			
	Elevation of low point in road (ft)			
	Distance from low point of road to mid-point of bridge crossing (ft)			
	Length of approach fill from edge of bridge/culvert to existing grade (ft)			
	<p>A Licensed Professional Engineer may certify that your project will not cause a harmful interference for a range of flood discharges up to and including the 100-year flood discharge. The "Required Certification Language" is found under "forms" on the "maps, forms and documents" link from the www.mi.gov/jointpermit page or a copy may be requested by phone, email, or mail. A hydraulic report supporting this certification may also be required.</p> <p>Is Certification Language attached? <input type="checkbox"/> No <input type="checkbox"/> Yes</p>			

**15 Stream, River, or Drain Construction , Relocation and Enclosure Activities**

- Complete Section 10C for riprap activities.
- If side casting or other proposed activities will impact wetlands or floodplains, complete Sections 12 and 13, respectively.
 - Provide a scaled overall site plan showing existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures and land change activities.
 - Provide scaled cross-section (elevation) drawings necessary to clearly show existing and proposed conditions.
 - For activities on legally established county drains, provide original design and proposed dimensions and elevations.

Stream Information	Water elevation (ft) datum <input type="checkbox"/> NGVD 29 <input type="checkbox"/> NAVD 88 <input type="checkbox"/> IGLD 85 (Great Lakes coastal areas) <input type="checkbox"/> other ➤ Show elevation on plans with description.	
	Dimensions (ft) of existing stream/drain channel (ft)	length width depth
	Existing channel average water depth in a normal year (ft)	
Proposed Activity <input type="checkbox"/> enclosure <input type="checkbox"/> improvement <input type="checkbox"/> maintenance <input type="checkbox"/> new drain <input type="checkbox"/> relocation <input type="checkbox"/> wetlands <input type="checkbox"/> other		
If an enclosed structure is proposed, check material type <input type="checkbox"/> concrete <input type="checkbox"/> corrugated metal <input type="checkbox"/> plastic <input type="checkbox"/> other		
Dimensions (ft) of the structure: diameter length		Volume of fill (cu yds)
Will old/enclosed stream channel be backfilled to top of bank grade? <input type="checkbox"/> No <input type="checkbox"/> Yes		
Length of channel to be abandoned (ft)		Volume of fill (cu yds)
Dimensions (ft) of improved, maintained, new, relocated or wetland stream/drain channel. length width depth		Volume of dredge/excavation (cu yds)
How will slopes and bottom be stabilized?		Proposed side slopes (vertical / horizontal)
Spoils Disposal	Dredged or excavated spoils will be placed <input type="checkbox"/> on-site <input type="checkbox"/> landfill <input type="checkbox"/> USACE confined disposal facility <input type="checkbox"/> other upland off-site For disposal, provide a ➤ Detailed spoils disposal area location map and site plan with property lines. ➤ Letter of authorization from property owner of spoils disposal site, if disposed off-site.	

16 Drawdown of an Impoundment

- If wetlands will be impacted, complete Section 12.

Type of drawdown <input type="checkbox"/> over winter <input type="checkbox"/> temporary <input type="checkbox"/> one-time event <input type="checkbox"/> annual event <input type="checkbox"/> permanent (dam removal) <input type="checkbox"/> other		
Reason for drawdown		
Has there been a previous drawdown? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, provide date (M/D/Y)		Previous DEQ permit number, if known
Does waterbody have established legal lake level? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Not Sure		Dam ID Number, if known
Extent of vertical drawdown (ft)	Impoundment design head (ft)	Number of adjoining or impacted property owners
Date drawdown would start (M/D/Y)	Date drawdown would stop (M/D/Y)	Rate of drawdown (ft/day)
Date refilling would start (M/D/Y)	Date refill would end (M/D/Y)	Rate of refill (ft/day)
Type of outlet discharge structure to be used <input type="checkbox"/> surface <input type="checkbox"/> bottom <input type="checkbox"/> mid-depth	Impoundment area at normal water level (acres)	Sediment depth behind impoundment discharge structure (ft)



17 Dam, Embankment, Dike, Spillway, or Control Structure Activities (See Sample Drawing 15)

- For more information go to www.mi.gov/damsafety. If wetlands will be impacted, complete Section 12.
- Information on removing a dam is available at www.mi.gov/damsafety and following the Related Link –Dam Management.
 - ➔ Attach detailed signed and sealed engineering plans for a Part 315 dam repair, dam alteration, dam abandonment, or dam removal.
 - ➔ Part 315 Dam Safety application fees are added to all other application fees.
 - ➔ Mail applications for dams regulated under Part 315 to DEQ, WRD, P.O. BOX 30458, LANSING, MI 48909-7958, attention Dam Safety.

Proposed Activity	<input type="checkbox"/> abandonment	<input type="checkbox"/> alteration	<input type="checkbox"/> enlargement of an existing dam
	<input type="checkbox"/> removal	<input type="checkbox"/> repair	<input type="checkbox"/> reconstruction of a failed dam
	<input type="checkbox"/> new dam construction	<input type="checkbox"/> other	

Dam ID Number, if known	Type of outlet discharge structure <input type="checkbox"/> surface <input type="checkbox"/> bottom <input type="checkbox"/> mid-depth
-------------------------	--

Will proposed activities require a drawdown of the waterbody to complete the work? No Yes ➔ If Yes, complete Section 16.

Structural height (difference between embankment top elevation and streambed elevation at downstream embankment toe) (ft) _____

Hydraulic Height (difference between design flood elevation and streambed elevation at downstream embankment toe) (ft) _____	Impoundment size at design flood elevation (acres) _____
--	--

Does dam meet the criteria for regulation under Part 315? (i.e. hydraulic height of 6 feet or more and an impoundment size at the design flood of 5 surface acres or more) No Yes

Dredging/excavation volume (cu yd)	Fill volume (cu yd)	Riprap volume (cu yd)
------------------------------------	---------------------	-----------------------

Will a water diversion during construction be required? No Yes

If Yes, describe how the stream flow will be controlled through the dam construction area during the proposed project activities:

Complete the following for a new dam, reconstruction of a failed dam or enlargement of an existing dam

For Part 315 regulated dams, the following must be attached:

- ➔ Site-specific conceptual plans of the dam for resource impact review (An engineering report and detailed engineering plans are not required until the project has been determined to be permissible).
- ➔ A description and evaluation of the loss of natural resources associated with the project.
- ➔ A description of the natural resources that are associated with or created by the impoundment and how they offset the natural resources lost by the creation of the impoundment.
- ➔ An assessment of all known existing and potential adverse effects within the scope of the project.

Embankment dimensions	length (ft)	top width (ft)	bottom width (ft)	slopes (vertical / horizontal)	Upstream Downstream
-----------------------	-------------	----------------	-------------------	--------------------------------	------------------------

Have soil borings been taken at dam location? No Yes ➔ If Yes, attach results.

Do you have flowage rights to all proposed flooded property at the design flood elevation? No Yes ➔ If No, provide a letter of authorization from the property owner.

Applications for Part 315 regulated dam removal projects must also include the following:

- An evaluation of the capacity of the remaining structure to pass flood flows.
- An evaluation of the quantity and quality of the sediments behind the impoundment.
- A description of the methods to be employed to control sediments.
- An assessment of all known existing and potential adverse impacts within the scope of the project.



18 Utility Crossings (See Sample Drawings 12 and 13, and EZ Guide)

- If side casting is proposed, complete Sections 10A and 10B. If spoils will be placed in or impact wetlands, complete Section 12.
 - ➔ Attach additional sheets or tables with the requested information as needed for multiple crossings.
 - ➔ For wetland crossings using the open trench method show clay plugs at the wetland/upland boundaries on the plans.

Crossing of Inland Lake or Stream floodplain Great Lake wetlands (also complete Section 12)

What method will be used to construct the crossings? directional boring jack and bore open trench plow / knife flume

Utility Type	Number of lake or stream crossings	Number of wetland crossings	Pipe diameter with casing (in)	Pipe length per crossing (ft)	Distance below streambed or wetland (in)	Trench width (ft)
<input type="checkbox"/> sanitary sewer						
<input type="checkbox"/> storm sewer						
<input type="checkbox"/> watermain						
<input type="checkbox"/> cable						
<input type="checkbox"/> electric						
<input type="checkbox"/> fiber optic cable						
<input type="checkbox"/> oil/gas pipeline						

19 Marina Construction, Expansion and Reconfiguration (See Sample Drawing 21)

- For more information go to www.mi.gov/marinas
- Marinas located on the Great Lakes, including Lake St. Clair, may be required to secure leases or conveyances from the state of Michigan to place structures on the bottomlands. If a conveyance is necessary, an application must be submitted before the Joint Permit Application can be determined complete.
 - ➔ Fully complete Section 10 E. For multiple structures provide a table with the requested information.
 - ➔ Enclose a copy of any current pump-out agreement with another marina facility, if on-site sanitary pump out facilities are not available.
 - ➔ Attach a copy of the property legal description, mortgage survey, or a property boundary survey to your application.
 - ➔ The WRD may require a riparian interest area (RIA) estimate survey, sealed by a licensed surveyor, in order to determine whether the proposed project will adversely impact riparian rights. Include any available sealed RIA estimate survey and/or written authorizations from affected adjoining riparian owners with your application.

Proposed Marina Activity New construction Expansion Reconfiguration

Do you have an existing Great Lake Conveyance? No Yes For more information visit www.mi.gov/deqgreatlakes.

Are sanitary pump-out facilities available? No Yes Is there a pump out agreement? No Yes If Yes, provide a copy.

Marina Description	Current Count	Final Count
Number of boat slips/wells (do not include broadside dockage or mooring buoys)		
Lineal feet of broadside dockage		
Maximum number of boats at broadside dockage		
Number of mooring buoys		
Number of launch ramps/lanes		



20 Critical Dune Areas and High Risk Erosion Areas (See Sample Drawings 19 and 20)

Critical Dune Areas (See Sample Drawing 20)

- Although not required, submitting **PHOTOGRAPHS** of the site may provide for a faster application review.
- For more information go to www.mi.gov/jointpermit, select "Sand Dune Protection" under "Related Links."
- All property boundaries and proposed structure corners, including decks, septic systems, water wells, driveways, grading, and terrain alteration locations must be staked before the WRD site inspection.
- Scaled overhead and cross-section plans must include all property boundaries, locations, and dimensions of all existing structures and impacted areas, and all proposed structures, terrain alterations, and construction access. Cross-sections must show existing and proposed grades, including foundations.
- Construction in critical dune areas on slopes greater than 33 percent (1 vertical: 3 horizontal) is prohibited without a special exception.
- Construction in critical dune areas on slopes that measure from 25 percent (1 vertical: 4 horizontal) to less than 33 percent requires sealed plans prepared by a registered architect or licensed professional engineer.

High Risk Erosion Areas (See Sample Drawing 19)

- For more information go to www.mi.gov/jointpermit, select "HREA" under "Related Links."
- All property boundaries, proposed structure corners, and septic system locations must be staked before the WRD site inspection.
- Scaled overhead plans must include all property boundaries, and the location and dimensions of all structures and septic systems must be included.
- Additional information, including the building construction plans, may be required to complete the application review.

Critical Dune Areas	Parcel dimensions (ft) width _____ depth _____		Date project staked (M/D/Y) _____	
	Property is a <input type="checkbox"/> platted lot <input type="checkbox"/> unplatted parcel		Year current property boundaries created _____	
	Dune habitat present in Building Site and access route (check all that apply): <input type="checkbox"/> Wooded <input type="checkbox"/> Open Dune <input type="checkbox"/> Shrubs <input type="checkbox"/> Bare Sand <input type="checkbox"/> Lakefront Lot <input type="checkbox"/> MNFI Community if known: _____			
	Type of construction activities <input type="checkbox"/> addition <input type="checkbox"/> driveway <input type="checkbox"/> garage <input type="checkbox"/> new home <input type="checkbox"/> renovation <input type="checkbox"/> septic <input type="checkbox"/> deck(s) <input type="checkbox"/> other			
	<input type="checkbox"/> Provide a sand relocation plan with location and dimensions of disposal area. Indicate <input type="checkbox"/> on-site OR <input type="checkbox"/> off-site If on-site show location and how the disposal site will be accessed on the plans. Indicate the depth of the disposed sand on the plans.			
	<input type="checkbox"/> Provide the permit or letter from the County Enforcing Agent stating the project complies with Part 91 (Soil Erosion and Sedimentation Control).			
	The proposed project will be serviced by <input type="checkbox"/> public sewer <input type="checkbox"/> private septic system. ♦ On the plans, show the location and dimensions of the private septic system. If a private septic system is proposed, has a permit been issued by the health department? <input type="checkbox"/> No <input type="checkbox"/> Yes ♦ If Yes, provide a copy of the permit for all Critical Dune Area projects.			
	<input type="checkbox"/> Provide a copy of the vegetation assurance letter. <input type="checkbox"/> Provide a re-vegetation plan, including # _____ of trees to be removed and # _____ of trees to be replanted.			
	Proposed Utility Installation		Proposed New Construction	
	Utility Installation Method <input type="checkbox"/> directional bore <input type="checkbox"/> plowing in <input type="checkbox"/> open trench <input type="checkbox"/> other		Foundation type <input type="checkbox"/> concrete slab <input type="checkbox"/> pilings <input type="checkbox"/> crawl space <input type="checkbox"/> other	
	♦ Show utility locations and dimensions on the site plan.		Area of existing structure (sq ft)	
	♦ Show construction access route on the site plan.		Area of proposed structure (sq ft)	
	♦ Show existing and proposed grades on the cross-section.		Area of existing deck (sq ft)	
	♦ Show locations of vegetation to be removed on the site plan.		Area of proposed deck (sq ft)	
Provide the following information for special use projects: (a) Lot size, width, density, and front and side setbacks. (b) Storm water drainage that provides for disposal of drainage water without serious erosion. (c) Methods for controlling erosion from wind and water. (d) Re-stabilization plan. (e) Environmental Impact Statement.				

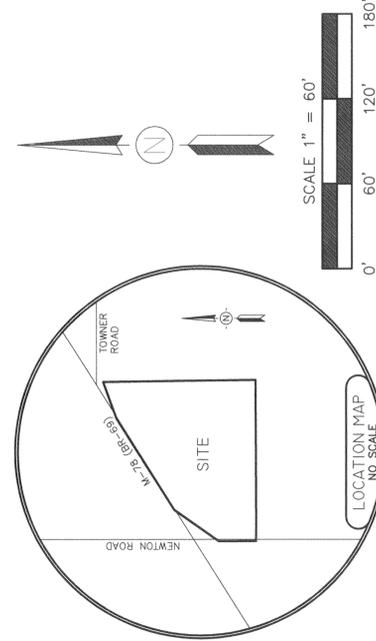


High Risk Erosion Areas	Parcel dimensions (ft) width depth		Date project staked (M/D/Y)	
	Existing Structure Information		Proposed New Construction	
	Foundation type <input type="checkbox"/> basement <input type="checkbox"/> concrete slab <input type="checkbox"/> pilings <input type="checkbox"/> crawl space <input type="checkbox"/> other		Foundation type <input type="checkbox"/> basement <input type="checkbox"/> concrete slab <input type="checkbox"/> pilings <input type="checkbox"/> crawl space <input type="checkbox"/> other	
	Material above foundation wall <input type="checkbox"/> block <input type="checkbox"/> log <input type="checkbox"/> stud frame <input type="checkbox"/> other		Material above foundation wall <input type="checkbox"/> block <input type="checkbox"/> log <input type="checkbox"/> stud frame <input type="checkbox"/> other	
	Siding material <input type="checkbox"/> block <input type="checkbox"/> vinyl <input type="checkbox"/> wood <input type="checkbox"/> other		Siding material <input type="checkbox"/> block <input type="checkbox"/> vinyl <input type="checkbox"/> wood <input type="checkbox"/> other	
	Area of the foundation, excluding attached garage (sq ft)		Area of the foundation, excluding attached garage (sq ft)	
	Area of the garage foundation (sq ft)		Area of the garage foundation (sq ft)	
	If renovating or restoring an existing structure, indicate the renovation or restoration cost \$			
	Current structure replacement value \$			
	Tax assessed value of existing structure excluding land value \$		Assessment Year	
Provide the number of individual living units in the proposed building				

MUPUD PLAN Newton Park MUPUD MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

CLIENT:
DTN MANAGEMENT COMPANT
2502 LAKE LANSING RD. STE C
NEWTON, MI 48840
PH: (517) 371-5300
FAX: (517) 371-5356

ENGINEER/SURVEYOR:
KEBS, INC.
415 HASLETT RD.
NEWTON, MI 48840
PH: (517) 339-1014
FAX: (517) 339-8047



LEGAL DESCRIPTION:
(As provided)
TAX ID: 33-02-02-04-252-004
S 88 DEG 13' 47" E ALONG E-W 1/4 LINE OF SEC. 4 1079.47 FT TO PT. OF BEG. N 01 DEG 24' 18" E 1196.35 FT TO PT. ON SLY COM. AT CEN. OF SEC. 4, S 88 DEG 13' 47" E ALONG E-W 1/4 LINE OF SEC. 4 1079.47 FT TO PT. OF BEG. N 01 DEG 24' 18" E 1196.35 FT TO PT. ON SLY COM. AT CEN. OF SEC. 4, S 88 DEG 13' 47" E ALONG E-W 1/4 LINE OF SEC. 4 1079.47 FT TO PT. OF BEG. N 01 DEG 24' 18" E 1196.35 FT TO PT. ON SLY COM. AT CEN. OF SEC. 4, S 88 DEG 13' 47" E ALONG E-W 1/4 LINE TO PT. OF BEG. SEC. 4, 1/4 N 1/4 R/W.

DENSITY CALCULATIONS
AREA "A" = 65 UNITS
BLDG. = 10 UNITS/ACRE (GROSS AREA)
100,000 S.F. / 100,000 S.F. = 1.00
AREA "B" = 24 UNITS
BLDG. = 10 UNITS/ACRE (GROSS AREA)
100,000 S.F. / 100,000 S.F. = 1.00
AREA "C" = 100 UNITS
BLDG. = 10 UNITS/ACRE (GROSS AREA)
100,000 S.F. / 100,000 S.F. = 1.00
TOTAL UNITS ALLOWED = 189 UNITS

MAXIMUM ALLOWED UNITS ENTIRE PROJECT = 189 UNITS
GROSS AREA = 1,137,021 S.F. = 26.11 AC.
EXISTING RIGHT OF WAY NEWTON & TOWER ROADS (100' WIDE)
PROPOSED RIGHT OF WAY NEWTON & TOWER ROADS (100' WIDE)
NET AREA 1,043,357 S.F. = 23.95 AC.
23.95 X 10 = 239.5 UNITS ALLOWED

BUILDING INFORMATION:
AREA A - FIRST FLOOR COMMERCIAL = 13,280 S.F.
BLDG. A = 10 UNITS/ACRE (GROSS AREA) = 65,873 S.F.
RESIDENTIAL = 65,873 S.F.
MAIL KIOSK = 66,468 S.F.
TOTAL = 132,800 S.F.

AREA B - CLUBHOUSE = 4,778 S.F.
MAINTENANCE GARAGE & POOL HOUSE = 1,586 S.F.
RESIDENTIAL = 1,586 S.F.
TOTAL = 8,950 S.F.

AREA C - ALL RESIDENTIAL = 114,636 S.F.
TOTAL ENTIRE PROJECT = 254,664 S.F.
TOTAL BLDG. COVERAGE = 164,802 S.F.
164,802 / 1,043,357 = 15.80% BLDG. COVERAGE

SECTION	REQUIREMENT	REASON	WAIVER REQUESTED	COMPARISON TO EX. NO. COMPARISSONS
86-404 (6)(3)	RESIDENTIAL ZONED PROPERTY	RESIDENTIAL ZONED PROPERTY	70.51' WAIVER SETBACK 28.40'	NO COMPARISSONS
86-755	637 PARKING SPACES REQUIRED	410 PROPOSED SPACES	227 SPACE WAIVER	
86-367	25' BLDG. SETBACK FROM R.O.W.	NEWTON RD. PROP. BLDG. SETBACK 0.5'	24.5' WAIVER	
86-367	100' BLDG. SETBACK FROM C/L	SAGINAW HWY. PROP. BLDG. SETBACK 75.5'	24.5' WAIVER	
86-756 (10)	40' PARKING SETBACK FROM RESIDENTIAL ZONED PROPERTY	PROP. PARKING SETBACK 10'	30' WAIVER	
86-756 (11)	20' PARKING SETBACK FROM ROAD RIGHT-OF-WAY	1.5'	18.5' WAIVER	
86-471(6)(1)	SETBACK FROM WETLAND	PROPOSED WALKING TRAIL IN SETBACKS (SEE AMENITY PLAN)	VARIES	

PERVIOUS/IMPERVIOUS CALCULATIONS:
TOTAL SITE AREA = 1,043,357 S.F.
TOTAL IMPERVIOUS AREA SHOWN ON OPEN SPACE PLAN = 370,306 S.F. = 35.68%
TOTAL IMPERVIOUS AREA = 671,051 S.F. = 64.32%
MAX. IMPERVIOUS AREA ALLOWED 70%

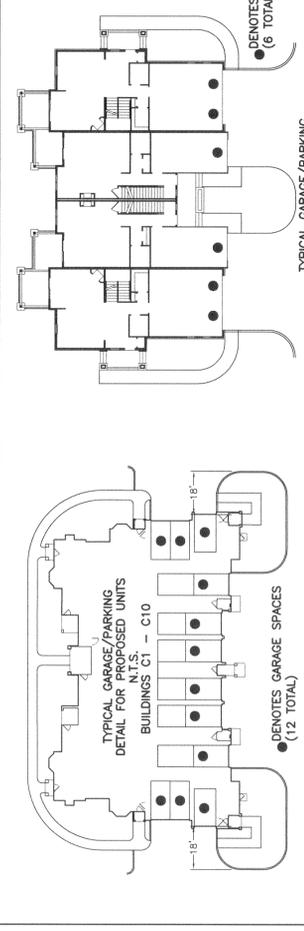
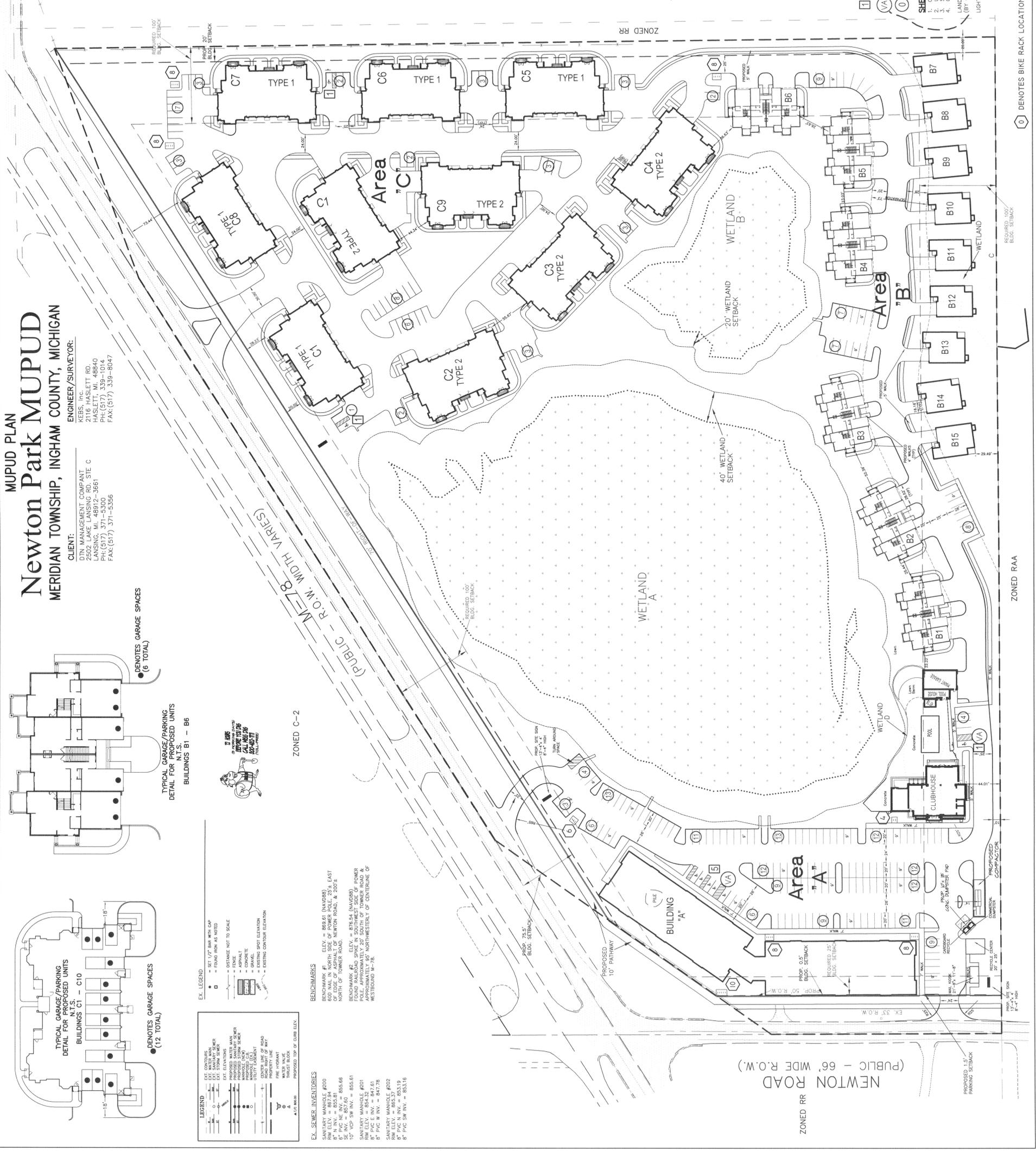
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2116 HASLETT ROAD, HASLETT, MI 48840
PH. 517-339-1014 FAX. 517-339-8047
Marshall Office
Ph. 269-781-9800

Newton Park MUPUD
OVERALL PLAN

DESIGNER: JMK
PROJECT MGR: JMK
SCALE: 1" = 60'
DATE: 11-22-17
APPROVED BY: JMK
SHEET 1 OF 4
JOB #: 92227
DTN MANAGEMENT COMPANT



LEGEND

- EXT. CONTOURS
- EXT. BANKING SWER
- EXT. ELEVATIONS
- PROPOSED WATER MAIN
- PROPOSED STORM SEWER
- PROPOSED GAS
- PROPOSED UTILITY ELEVATION
- PROPERTY LINE
- ROAD RIGHT OF WAY
- WATER WALK
- THREAT BLOCK
- PROPOSED TOP OF CURB ELEV.

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- PROPOSED UTILITY ELEVATION
- PROPERTY LINE
- ROAD RIGHT OF WAY
- WATER WALK
- THREAT BLOCK
- PROPOSED TOP OF CURB ELEV.

BENCHMARKS

BENCHMARK # 6200 (NAVD83) ELEV. = 866.61 (NAVD83) EAST OF EDGE OF ASPHALT OF NEWTON ROAD, 4' 20.15' NORTH OF TOWER ROAD.

BENCHMARK # 6201 (NAVD83) ELEV. = 876.54 (NAVD83) PIONEER POLE, APPROXIMATELY 20' SOUTH OF TOWER ROAD & APPROXIMATELY 95' NORTHWESTERLY OF CENTERLINE OF HIGHWAY M-76.

EX. SEWER INVENTORIES

SANITARY MANHOLE #200
8" N INV. = 855.81
5" P/C NE INV. = 855.66
10" VOP SW INV. = 855.61
8" P/C SW INV. = 855.61

SANITARY MANHOLE #201
8" N INV. = 854.84-81
8" P/C W INV. = 847.78

SANITARY MANHOLE #202
8" N INV. = 865.37
8" P/C SW INV. = 853.16

WAIVER REQUESTS

SECTION: 86-404 (6)(3) REQUIREMENT: RESIDENTIAL ZONED PROPERTY REASON: RESIDENTIAL ZONED PROPERTY WAIVER REQUESTED: 70.51' WAIVER SETBACK 28.40' COMPARISON TO EX. NO. COMPARISSONS: NO COMPARISSONS

SECTION: 86-755 REQUIREMENT: 637 PARKING SPACES REQUIRED REASON: 410 PROPOSED SPACES WAIVER REQUESTED: 227 SPACE WAIVER

SECTION: 86-367 REQUIREMENT: 25' BLDG. SETBACK FROM R.O.W. REASON: NEWTON RD. PROP. BLDG. SETBACK 0.5' WAIVER REQUESTED: 24.5' WAIVER

SECTION: 86-367 REQUIREMENT: 100' BLDG. SETBACK FROM C/L REASON: SAGINAW HWY. PROP. BLDG. SETBACK 75.5' WAIVER REQUESTED: 24.5' WAIVER

SECTION: 86-756 (10) REQUIREMENT: 40' PARKING SETBACK FROM RESIDENTIAL ZONED PROPERTY REASON: PROP. PARKING SETBACK 10' WAIVER REQUESTED: 30' WAIVER

SECTION: 86-756 (11) REQUIREMENT: 20' PARKING SETBACK FROM ROAD RIGHT-OF-WAY REASON: 1.5' WAIVER REQUESTED: 18.5' WAIVER

SECTION: 86-471(6)(1) REQUIREMENT: SETBACK FROM WETLAND REASON: PROPOSED WALKING TRAIL IN SETBACKS (SEE AMENITY PLAN) WAIVER REQUESTED: VARIES

PERVIOUS/IMPERVIOUS CALCULATIONS:
TOTAL SITE AREA = 1,043,357 S.F.
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Marshall Office
Ph. 269-781-9800

Newton Park MUPUD
OVERALL PLAN

DESIGNER: JMK
PROJECT MGR: JMK
SCALE: 1" = 60'
DATE: 11-22-17
APPROVED BY: JMK
SHEET 1 OF 4
JOB #: 92227
DTN MANAGEMENT COMPANT

REVISIONS

1	12-26-17 SUBMITAL MUPUD CONCEPT PLAN
2	10-5-18 MUPUD CONCEPT PLAN
3	11-18-18 MUPUD CONCEPT PLAN
4	P.C. REVIEW

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WETLAND AND JURISDICTION DETERMINATION REPORT

Prepared for: DTN Management Company
2502 Lake Lansing Road
Suite C
Lansing, MI 48912

Project Site: Newton Pointe, LLC property
6276 Newton Road & M-78 Vacant
Tax ID Nos. 33-02-02-04-252-004 and 33-02-02-04-252-005
T4N, R1W, Section 4
Meridian Township
Ingham County, Michigan

Project Number: 17-1554

Investigator: Steven P. Voice, MS, PWS, CSE
Senior Ecologist & Regulatory Specialist

Inspection Dates: June 13-14 and July 18-19, 2017

Report Date: February 22, 2018

INTRODUCTION

This report is intended to follow up the various site inspections listed above of the above-captioned parcels/project site by Voice Environmental Group, LLC. The purpose of these inspections was to conduct a site evaluation and wetland determination of the subject properties/project site and to render an opinion on 1) the presence and location of any wetlands that may occur on the property and 2) the jurisdictional status of any wetlands identified.

SITE LOCATION AND GENERAL CHARACTERISTICS

The project site is located southeast of the intersection of Newton Road and M-78 in Meridian Township, Ingham County, Michigan. It is comprised of two parcels: Parcel (Tax ID) No. 33-02-02-04-252-004 (6276 Newton Road) lies immediately east of and adjacent to Newton Road and immediately south of and adjacent to M-78 and Parcel (Tax ID) No. 33-02-02-04-252-005 (no assigned address) lies immediately to the east the first parcel and also has frontage on M-78. Both parcels, which together encompass approximately 26 acres, are vacant.

The project site supports various highland areas ranging from relatively open fields to shrub-dominated (abandoned) fields to hardwood forests. It also supports four (4) lowland areas which range from marsh/open water areas to scrub-shrub and forested community types.

There are six (6) soil series mapped for the site. Three of these soils series, Capac loam, 0 to 4 % slopes (CaA), Oshtemo-Spinks loamy sands, 0 to 6% slopes (OtB) and Spinks loamy sand, 0 to 6% slopes (SpB), are non-hydric. The other three, Houghton Muck, 0 to 1 percent slopes (Hn), Urban land-Capac-Colwood complex, 0 to 4 percent slopes (UpA) and Urban Land-Marlette complex, 2 to 12% slopes (UtB) are designated as hydric soils.

WETLAND DESIGNATION CRITERIA AND METHODOLOGY

Under Part 303, Wetland Protection, of the Natural Resources and Environmental Protection Act (1994 P.A. 451, as amended), which is commonly referred to as the NREPA, wetland is defined as "land characterized by the presence of water at a frequency and duration sufficient to support and that under normal circumstances does support wetland vegetation or aquatic life and is commonly referred to as a bog, swamp, or marsh..." From a regulatory standpoint, a site must support a predominance of hydrophytic vegetation, a hydric soil and a wetland hydrological regime in order to be appropriately designated as wetland.

Part 303 requires that the state (as well as local units of government) use the federal methodology for wetland determinations. Thus, in determining whether or not a site is appropriately designated as wetland, Meridian Township, the Michigan Department of Environmental Quality (DEQ) and the US Army Corps of Engineers (USACE) must use the federal 1987 Wetland Identification Manual and appropriate regional supplements. Accordingly, the subject property was evaluated using the federal methodology. On-site investigations included various "spot" evaluations of dominant plant species, soils and apparent hydrology as well as detailed evaluations at representative upland and wetland data point locations, herein termed "wetland determination points."

RESULTS AND DISCUSSION

It is the opinion of the investigator as a professional wetland ecologist and regulatory specialist that the subject property supports four (4) areas that are appropriately designated as wetland as shown on the attached Wetland and Jurisdiction Determination Plan prepared by KEBS, Inc. on December 14, 2017 (Appendix A).

Five (5) Wetland Data Forms per the 1987 Corps of Engineers Wetland Determination Manual from various representative "Wetland Determination Points" (WDPs), are attached in Appendix B: Three (3) are from identified upland (non-wetland) areas and two (2) are from identified wetland areas.

Upland Areas

As indicated above, there is a variety of upland ecosystem types present on the project site. A Wetland Determination Point, WDP #1, was established and evaluated on July 19, 2017 to characterize the open field areas that dominate the west side of the property (west of the relatively large lowland area delineated as Wetland A (Appendix A). At this location, both the tree and sapling-shrub layers (strata) are absent. The herbaceous layer is dominated by rough-leaf goldenrod (*Solidago rugosa*), and Kentucky bluegrass (*Poa pratensis*) but daisy fleabane (*Erigeron strigosus*), Queen Anne's lace (*Daucus carota*) and black medic (*Medicago lupulina*) are also present. A soil boring at this location revealed a 14" thick, somewhat mottled (but brightly colored) loam surface soil over a more typical, mottled clay loam sub-soil. The water table was absent in the 20"-deep soil boring. Accordingly, although the soils likely qualify as hydric (which is consistent with the mapping of this area as Urban land-Marlette complex, 2 to 12 percent slopes), their clearly is not a predominance of wetland vegetation nor a wetland hydrological regime. Accordingly, given these observations, a non-wetland (upland) designation for this area is appropriate.

WDP #3 was established and evaluated on the south side of the property immediately to the west of an isolated lowland depression delineated as Wetland C to characterize the upland forest ecosystems present on this and other portions of the site. At this location, the tree stratum is dominated by black oak (*Quercus velutina*) and shagbark hickory (*Carya ovata*), the sapling shrub layer is dominated by shagbark hickory and black cherry (*Prunus serotina*) and herbaceous layer is dominated by black cherry seedlings and somewhat weedy, dwarf enchanter's nightshade (*Circaea alpina*). A soil boring revealed a well-developed, well-drained soil profile consisting of loamy sand surface soils over sand sub-soils. The water table was absent in the 30" deep boring. Given these observations, a non-wetland (upland) designation for these areas is clearly appropriate.

Finally, a third upland Wetland Determination Point, WDP #5 was established and evaluated in the northeast portion of the project site to characterize the shrub-dominated, abandoned field areas undergoing old field succession that are present in this area. At this location the tree layer is absent, the sapling shrub layer is dominated by autumn olive (*Elaeagnus umbellata*), grey dogwood (*Cornus racemosa*) and honeysuckle (*Lonicera tatarica*), and the herbaceous layer is dominated by common blackberry (*Rubus alleghaniensis*), rough leaf goldenrod (*Solidago rugosa*) and perennial rye (*Lolium perenne*). A soil boring at this location revealed a well-drained, well developed profile consisting of relatively brightly colored loamy sand soils and the water table was absent in the 30" deep boring. Again, given these observations, a non-wetland (upland) designation for these areas is clearly appropriate.

Wetland Area

As indicated above, four (4) lowland areas are present on site and these were delineated by the investigator as Wetlands A, B, C and D. Wetland Determination Points were established in the two larger wetland areas, Wetland A (4.78 acres) and Wetland B (0.65 acres). Wetland

data points were not established or evaluated in either Wetland C or Wetland D as both are less than ¼ acre in size.

The majority of Wetland A is best characterized as an open marsh; however, WDP #2 was established in a forested area adjacent to this open marsh community on the south side of the feature and near the delineated upland/wetland boundary. At this location, this tree layer of this wetland is dominated by Eastern cottonwood (*Populus deltoides*) and silver maple (*Acer saccharinum*), the sapling/shrub layer is dominated by glossy buckthorn (*Frangula alnus*), grey dogwood and silver maple, and the herbaceous layer is dominated by grey dogwood and poison ivy (*Toxicodendron radicans*). Although the majority of the feature (i.e. the open marsh areas are mapped as Houghton's muck, a soil boring at WDP #2 revealed a dark, loam surface soil over a dark clay sub-soil. The water table was observed at 8" below the surface during this July 19 evaluation. Given the above, a wetland designation for this area, is clearly appropriate.

In contrast to Wetland A, Wetland B is a forested wetland depression throughout. At WDP #4, which was established roughly in the center of this depression, the tree layer is dominated by red maple (*Acer rubrum*) and Eastern cottonwood, the sapling/shrub layer is dominated by red maple and green ash (*Fraxinus pennsylvanica*) and the herb stratum is dominated by a cover (estimated at 15%) of green ash seedlings and virtually no other species. A soil boring at this location revealed a dark loam surface soil over a dark loamy sand horizon over a dark sandy clay loam horizon. The water table at the time of his July 19 evaluation was observed at 11" below the surface. Given these observations, a wetland designation is clearly appropriate.

JURISDICTIONAL DETERMINATION

State of Michigan (MDEQ) Jurisdiction

By statute, the Michigan Department of Environment Quality regulates wetlands that:

1. Are directly connected to (contiguous with) the Great Lakes, or an inland "lake or pond, river or stream,"
2. Are within 500' of one of the above-mentioned inland water bodies, or within 1000' of a Great Lake - unless the owner/applicant demonstrates that the wetland is hydrologically isolated from the water body. Hydrologically isolated means there is neither a surface water or ground water connection,
3. Have "a seasonal or intermittent direct surface water connection to" one of the above-mentioned water bodies or,
4. Are over 5 acres in size.

Accordingly, it is the investigator's professional opinion that the four (4) wetland areas identified and delineated on the project site are NOT subject to state regulation by the MDEQ as:

- 1) None of these wetlands are contiguous to, within 500' of, or have a seasonal or intermittent direct surface water connection to an inland lake, pond, river or stream,
- 2) None, obviously, are within 100' of any of the Great Lakes, and finally
- 3) None of these wetlands is over 5 acres in size.

NOTE 1: The current properties/project area was formerly part of a much larger project area that was twice the subject of a Level III wetland assessment by the DEQ (the current project area is the northern, approximately 25 acres of the former site evaluated by the DEQ). In both the November 3, 1997 letter from then-District Supervisor Gary F. Marx to Dennis Forsberg and Keith Schroeder, as well as in the October 18, 2002 letter from then-District Supervisor Walter Danyluk to G.S. Fedewa Builders, Inc., the DEQ confirmed that all four (4) wetlands identified and delineated on the current project site, specifically Wetland A (previously Wetland 1), Wetland B (previously Wetland 10), Wetland C (previously Wetland 2) and Wetland D (previously Wetland 2), are NOT subject to state jurisdiction or regulation under Part 303 (Appendix C).

NOTE 2. Prior to completing the current wetland determination for this project site, Voice Environmental asked KEBS, Inc. to confirm and stake the eastern and southern property boundaries of the current project site. They did so, and Voice Environmental subsequently confirmed that the two wetland areas that were identified as Wetlands 13 and 14 in 1997 and 2002 are NOT located on the current project site.

Federal (US Army Corps of Engineers) Jurisdiction

In Michigan, only wetlands that are adjacent to “navigable waters” (waters of the U.S.), as defined by Section 10 of the River and Harbors Act of 1899 (amended), are independently regulated by the U.S. Army Corps of Engineers (USACE) under the federal Clean Water Act of 1972, as amended. Per two Memorandums of Agreement executed in 1984 between the state and the US Environmental Protection Agency (EPA) and the state and the USACE, respectively, the EPA/USACE has suspended its jurisdiction of wetlands that are not adjacent to navigable (“Section 10”) waters as defined by the Rivers and Harbors Act of 1899.

Accordingly, since none of the four wetland areas delineated on the project site are adjacent to a navigable waterway, it is the investigator’s professional opinion that the identified wetland areas are NOT subject to independent federal jurisdiction or regulation.

Local (Meridian Township) Jurisdiction

Meridian Township has a wetland ordinance that authorizes the township to regulate all wetlands that are greater than 2 acres and size and to potentially regulate wetlands as small as 0.25 acres in size. In the latter case, i.e. if the wetland is between 0.25 and 2.0 acres in size, the wetland would be regulated if 1) the township environmental consultant issues a preliminary finding that one or more of ten listed criteria are likely to apply to the wetland and 2) the Township Board, in turn, determines that “a wetland use permit application meeting the requirements of § 22-154 shall be required, based on a finding that the wetland is essential to the preservation of the natural resources of the Township.”

Given the above, it is the investigator's professional opinion that:

- Wetland "A" (4.78 acres) is subject to Meridian Township jurisdiction and regulation.
- Wetland "B" (0.65 acres) is potentially subject to Meridian Township jurisdiction and regulation.
- Wetland "C" (0.18 acre) and Wetland "D" (0.12 acre) are NOT subject to Meridian Township jurisdiction and regulation.

LIMITATIONS

This report serves to confirm the findings and opinions of the principal investigator as a professional wetland ecologist and consultant; it does not constitute a township, state or federal wetland or jurisdiction determination. It should be noted, however, that the evaluations reported herein have been conducted in accordance with both state and federal criteria for wetland designations and jurisdiction determinations. The client may wish to confirm these findings with Meridian Township, the Michigan Department of Environmental Quality (DEQ) and/or the US Army Corps of Engineers (USACE).

This determination is valid for a period of three years from the date of this letter unless additional evidence or new information warrants a revision of these findings prior to that date. This determination does not preclude the necessity to obtain federal, state, and local permits and/or approvals that may be required for use or additional development of the property.

SUMMARY AND CONCLUSIONS

A wetland and jurisdiction determination/upland-wetland boundary delineation was completed for DTN Management Company for the Newton Pointe, LLC property, which is comprised of Parcel Nos. 33-02-02-04-252-004 and 33-02-02-04-252-005 (6276 Newton Road & M-78 Vacant), in Meridian Township, Ingham County, Michigan. It is the professional opinion of the investigator that the parcel supports four wetland areas identified herein as Wetlands A-D, as shown on the attached Wetland and Jurisdiction Determination Plan prepared by KEBS, Inc. on December 14, 2017 (Appendix A).

It is the investigator's professional opinion that none of the identified and delineated wetlands are subject to regulation or jurisdiction by the Michigan Department of Environmental Quality (DEQ), a finding that has been confirmed by the Department on two previous occasions (in 1997 and again in 2002). Furthermore, none of the identified and delineated wetlands are subject to independent federal jurisdiction and regulation by the U.S. Army Corps of Engineers

With respect to Meridian Township jurisdiction and regulation, it is the investigator's professional opinion that:

- Wetland A (4.78 acres) is subject to township jurisdiction and regulation.
- Wetland B (0.65 acres) is potentially regulated by the township under § 22-154 of the Meridian Township Wetland Ordinance since it is between 0.25 and 2.0 acres in size, and
- Wetlands C (0.18 acre) and Wetland D (0.12 acre) are not subject to township jurisdiction or regulation.

Respectfully submitted,

VOICE ENVIRONMENTAL GROUP, LLC



Steven P. Voice, MS, PWS, CSE
Senior Ecologist & Regulatory Specialist

Enclosures

cc: R. Uppal
C. Holton
J. Kyes

REFERENCES AND RESOURCES

Lichvar, R. W. 2012. The National Wetland Plant List. ERDC/CRREL TR-12-11. Hanover, NH:
U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory.
[http://acwc.sdp.sirsi.net/client/search/asset:asset?t:ac=\\$N/1012381](http://acwc.sdp.sirsi.net/client/search/asset:asset?t:ac=$N/1012381)

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of the Michigan Compiled Laws annotated.

Soil Conservation Service, United States Department of Agriculture. 1993. Hydric Soils of the
State of Michigan.

U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center. 2012.
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United States.

APPENDIX A.

**Wetland and Jurisdiction Determination Plan
prepared by KEBS, Inc. on December 14, 2017
showing the location of the delineated upland and wetland ecosystems
on the Newton Property Partnership properties (Tax ID Nos. 33-02-02-04-252-004 and
33-02-02-04-252-005) Meridian Township, Ingham County, Michigan.**

APPENDIX B.

**Wetland Determination Data Forms
(1987 USACE Wetlands Delineation Manual and approved regional supplements)
from five (5) data point locations (three upland and two wetland)
on the Newton Property Partnership properties (Tax ID Nos. 33-02-02-04-252-004 and
33-02-02-04-252-005) Meridian Township, Ingham County, Michigan.**

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: DTN/6276 Newton & M-78 Vacant City/County: Meridian Township/Ingham Co. Sampling Date: 19-Jul-17
 Applicant/Owner: DTN Management Company/Newton Pointe, LLC State: Michigan Sampling Point: WDP #1
 Investigator(s): Steven P. Voice, MS, PWS, CSE Section, Township, Range: S. 4 T. 4W R. 1W
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): flat Slope: 0.0 % / 0.0 °
 Subregion (LRR or MLRA): LRR L Lat.: 42.763871 Long.: -84.431623 Datum: _____
 Soil Map Unit Name: UtB-Marlette Complex NWI classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: (Explain alternative procedures here or in a separate report.) Data point is located in a relatively open field on the southwest corner of the Newton Road/M-78 intersection, to the west of a large and distinct lowland area in the center of the property.	

Hydrology

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Drift deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	
Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____	
Remarks: No water table or evidence thereof observed in the 20" deep boring. Dry clay loam soils encountered at 14"	

VEGETATION - Use scientific names of plants

Sampling Point: WDP #1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	0	<input type="checkbox"/>	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	0	<input type="checkbox"/>	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____	0	<input type="checkbox"/>	_____	Percent of dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
4. _____	0	<input type="checkbox"/>	_____	
5. _____	0	<input type="checkbox"/>	_____	
6. _____	0	<input type="checkbox"/>	_____	
7. _____	0	<input type="checkbox"/>	_____	
	0 = Total Cover			Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: _____)				<u>Total % Cover of:</u> <u>Multiply by:</u>
1. _____	0	<input type="checkbox"/>	_____	OBL species <u>0</u> x 1 = <u>0</u>
2. _____	0	<input type="checkbox"/>	_____	FACW species <u>0</u> x 2 = <u>0</u>
3. _____	0	<input type="checkbox"/>	_____	FAC species <u>95</u> x 3 = <u>285</u>
4. _____	0	<input type="checkbox"/>	_____	FACU species <u>55</u> x 4 = <u>220</u>
5. _____	0	<input type="checkbox"/>	_____	UPL species <u>5</u> x 5 = <u>25</u>
6. _____	0	<input type="checkbox"/>	_____	Column Totals: <u>155</u> (A) <u>530</u> (B)
7. _____	0	<input type="checkbox"/>	_____	Prevalence Index = B/A = <u>3.419</u>
	0 = Total Cover			Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: _____)				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
1. <i>Solidago rugosa</i>	95	<input checked="" type="checkbox"/>	FAC	<input type="checkbox"/> Dominance Test is > 50%
2. <i>Daucus carota</i>	5	<input type="checkbox"/>	UPL	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <i>Erigeron strigosus</i>	10	<input type="checkbox"/>	FACU	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <i>Poa pratensis</i>	40	<input checked="" type="checkbox"/>	FACU	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. <i>Medicago lupulina</i>	5	<input type="checkbox"/>	FACU	
6. _____	0	<input type="checkbox"/>	_____	
7. _____	0	<input type="checkbox"/>	_____	
8. _____	0	<input type="checkbox"/>	_____	
9. _____	0	<input type="checkbox"/>	_____	
10. _____	0	<input type="checkbox"/>	_____	
11. _____	0	<input type="checkbox"/>	_____	
12. _____	0	<input type="checkbox"/>	_____	
	155 = Total Cover			Definitions of Vegetation Strata:
Woody Vine Stratum (Plot size: _____)				Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
1. _____	0	<input type="checkbox"/>	_____	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall.
2. _____	0	<input type="checkbox"/>	_____	Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
3. _____	0	<input type="checkbox"/>	_____	Woody vine - All woody vines greater than 3.28 ft in height.
4. _____	0	<input type="checkbox"/>	_____	
	0 = Total Cover			
				Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: (Include photo numbers here or on a separate sheet.)				

¹Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: DTN/6276 Newton & M-78 Vacant City/County: Meridian Township/Ingham Co. Sampling Date: 19-Jul-17
 Applicant/Owner: DTN Management Company/Newton Pointe, LLC State: Michigan Sampling Point: WDP #2
 Investigator(s): Steven P. Voice, MS, PWS, CSE Section, Township, Range: S. 4 T. 4W R. 1W
 Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): flat` ` Slope: 0.0 % / 0.0 °
 Subregion (LRR or MLRA): LRR L Lat.: 42.763462 Long.: -84.431001 Datum: _____
 Soil Map Unit Name: Houghton muck (Hn) NWI classification: PEM1C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: (Explain alternative procedures here or in a separate report.) Data pointed is located in the southwest "corner" of this large, lowland area near the delineated upland/wetland boundary.	

Hydrology

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Drift deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): <u>8</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): _____	
Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION - Use scientific names of plants

Sampling Point: WDP #2

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. <i>Populus deltoides</i>	60	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That are OBL, FACW, or FAC: <u>7</u> (A)																
2. <i>Acer saccharinum</i>	30	<input checked="" type="checkbox"/>	FACW																	
3. _____	0	<input type="checkbox"/>	_____	Total Number of Dominant Species Across All Strata: <u>7</u> (B)																
4. _____	0	<input type="checkbox"/>	_____																	
5. _____	0	<input type="checkbox"/>	_____	Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
6. _____	0	<input type="checkbox"/>	_____																	
7. _____	0	<input type="checkbox"/>	_____	Prevalence Index worksheet:																
90 = Total Cover					<table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:60%;">Total % Cover of:</th> <th style="width:40%;">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>45</u></td> <td>x 2 = <u>90</u></td> </tr> <tr> <td>FAC species <u>150</u></td> <td>x 3 = <u>450</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>195</u> (A)</td> <td><u>540</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.769</u></td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>45</u>	x 2 = <u>90</u>	FAC species <u>150</u>	x 3 = <u>450</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>195</u> (A)	<u>540</u> (B)	Prevalence Index = B/A = <u>2.769</u>
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>45</u>	x 2 = <u>90</u>																			
FAC species <u>150</u>	x 3 = <u>450</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>195</u> (A)	<u>540</u> (B)																			
Prevalence Index = B/A = <u>2.769</u>																				
Sapling/Shrub Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators:																
1. <i>Ulmus americana</i>	5	<input type="checkbox"/>	FACW																	
2. <i>Frangula alnus</i>	30	<input checked="" type="checkbox"/>	FAC	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation																
3. <i>Cornus racemosa</i>	10	<input checked="" type="checkbox"/>	FAC	<input checked="" type="checkbox"/> Dominance Test is > 50%																
4. <i>Rhamnus cathartica</i>	5	<input type="checkbox"/>	FAC	<input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹																
5. <i>Acer saccharinum</i>	10	<input checked="" type="checkbox"/>	FACW	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)																
6. _____	0	<input type="checkbox"/>	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																
7. _____	0	<input type="checkbox"/>	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
60 = Total Cover				Definitions of Vegetation Strata:																
1. <i>Cornus racemosa</i>	15	<input checked="" type="checkbox"/>	FAC																	
2. _____	0	<input type="checkbox"/>	_____	Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.																
3. _____	0	<input type="checkbox"/>	_____	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall.																
4. _____	0	<input type="checkbox"/>	_____	Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.																
5. _____	0	<input type="checkbox"/>	_____	Woody vine - All woody vines greater than 3.28 ft in height.																
6. _____	0	<input type="checkbox"/>	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>																
7. _____	0	<input type="checkbox"/>	_____																	
8. _____	0	<input type="checkbox"/>	_____	Woody Vine Stratum (Plot size: _____)																
9. _____	0	<input type="checkbox"/>	_____																	
10. _____	0	<input type="checkbox"/>	_____	1. <i>Vitis riparia</i>																
11. _____	0	<input type="checkbox"/>	_____	2. <i>Toxicodendron radicans</i>																
12. _____	0	<input type="checkbox"/>	_____	3. _____																
15 = Total Cover				4. _____																
30 = Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: DTN/6276 Newton & M-78 Vacant City/County: Meridian Township/Ingham Co. Sampling Date: 19-Jul-17
 Applicant/Owner: DTN Management Company/Newton Pointe, LLC State: Michigan Sampling Point: WDP #3
 Investigator(s): Steven P. Voice, MS, PWS, CSE Section, Township, Range: S. 4 T. 4W R. 1W
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): flat Slope: 0.0 % / 0.0 °
 Subregion (LRR or MLRA): LRR L Lat.: 42.762973 Long.: -84.429338 Datum: _____
 Soil Map Unit Name: Oshtemo-Spinks loamy sands (0 to 6 percent slopes) NWI classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: (Explain alternative procedures here or in a separate report.) Data point is located near the southern property line, immediately west of a small, lowland depression.	

Hydrology

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of 2 required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Drift deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No water table or evidence thereof observed in the 32" deep boring.	

VEGETATION - Use scientific names of plants

Sampling Point: WDP #3

	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: _____)				Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>28.6%</u> (A/B)
1. <i>Quercus velutina</i>	60	<input checked="" type="checkbox"/>	UPL	
2. <i>Quercus macrocarpa</i>	10	<input type="checkbox"/>	FACU	
3. <i>Carya ovalis</i>	10	<input type="checkbox"/>	FACU	
4. <i>Carya ovata</i>	30	<input checked="" type="checkbox"/>	FACU	
5. _____	0	<input type="checkbox"/>	_____	
6. _____	0	<input type="checkbox"/>	_____	
7. _____	0	<input type="checkbox"/>	_____	
110 = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. <i>Carya ovata</i>	20	<input checked="" type="checkbox"/>	FACU	
2. <i>Prunus serotina</i>	10	<input checked="" type="checkbox"/>	FACU	
3. <i>Ulmus americana</i>	2	<input type="checkbox"/>	FACW	
4. _____	0	<input type="checkbox"/>	_____	
5. _____	0	<input type="checkbox"/>	_____	
6. _____	0	<input type="checkbox"/>	_____	
7. _____	0	<input type="checkbox"/>	_____	
32 = Total Cover				
Herb Stratum (Plot size: _____)				
1. <i>Prunus serotina</i>	30	<input checked="" type="checkbox"/>	FACU	
2. <i>Circaea alpina</i>	40	<input checked="" type="checkbox"/>	FACW	
3. <i>Rosa multiflora</i>	15	<input type="checkbox"/>	FACU	
4. <i>Cornus racemosa</i>	20	<input type="checkbox"/>	FAC	
5. _____	0	<input type="checkbox"/>	_____	
6. _____	0	<input type="checkbox"/>	_____	
7. _____	0	<input type="checkbox"/>	_____	
8. _____	0	<input type="checkbox"/>	_____	
9. _____	0	<input type="checkbox"/>	_____	
10. _____	0	<input type="checkbox"/>	_____	
11. _____	0	<input type="checkbox"/>	_____	
12. _____	0	<input type="checkbox"/>	_____	
105 = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. <i>Smilax rotundifolia</i>	10	<input checked="" type="checkbox"/>	FAC	
2. _____	0	<input type="checkbox"/>	_____	
3. _____	0	<input type="checkbox"/>	_____	
4. _____	0	<input type="checkbox"/>	_____	
10 = Total Cover				
Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Definitions of Vegetation Strata: Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine - All woody vines greater than 3.28 ft in height.				
Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>				
Remarks: (Include photo numbers here or on a separate sheet.) 				

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: DTN/6276 Newton & M-78 Vacant City/County: Meridian Township/Ingham Co. Sampling Date: 19-Jul-17
 Applicant/Owner: DTN Management Company/Newton Pointe, LLC State: Michigan Sampling Point: WDP #4
 Investigator(s): Steven P. Voice, MS, PWS, CSE Section, Township, Range: S. 4 T. 4W R. 1W
 Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): flat Slope: 0.0 % / 0.0 °
 Subregion (LRR or MLRA): LRR L Lat.: 42.763663 Long.: -84.428968 Datum: _____
 Soil Map Unit Name: Urban land-Capac-Colwood complex, 0 to 4 percent slopes (UpA) NWI classification: PEM1C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: (Explain alternative procedures here or in a separate report.) Data point is located in a smaller lowland area to the east of the lowland at WDP #2.	

Hydrology

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Drift deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of 2 required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): <u>11</u> Saturation Present? (Includes capillary fringe) Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): <u>10</u> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION - Use scientific names of plants

Sampling Point: WDP #4

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <i>Acer rubrum</i>	70	<input checked="" type="checkbox"/>	FAC	Number of Dominant Species That are OBL, FACW, or FAC: <u>5</u> (A)
2. <i>Populus deltoides</i>	25	<input checked="" type="checkbox"/>	FAC	
3. _____	0	<input type="checkbox"/>	_____	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
4. _____	0	<input type="checkbox"/>	_____	
5. _____	0	<input type="checkbox"/>	_____	Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
6. _____	0	<input type="checkbox"/>	_____	
7. _____	0	<input type="checkbox"/>	_____	Prevalence Index worksheet:
95 = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				OBL species <u>0</u> x 1 = <u>0</u>
1. <i>Acer rubrum</i>	5	<input checked="" type="checkbox"/>	FAC	FACW species <u>20</u> x 2 = <u>40</u>
2. <i>Fraxinus pennsylvanica</i>	5	<input checked="" type="checkbox"/>	FACW	FAC species <u>100</u> x 3 = <u>300</u>
3. _____	0	<input type="checkbox"/>	_____	FACU species <u>0</u> x 4 = <u>0</u>
4. _____	0	<input type="checkbox"/>	_____	UPL species <u>0</u> x 5 = <u>0</u>
5. _____	0	<input type="checkbox"/>	_____	Column Totals: <u>120</u> (A) <u>340</u> (B)
6. _____	0	<input type="checkbox"/>	_____	Prevalence Index = B/A = <u>2.833</u>
7. _____	0	<input type="checkbox"/>	_____	
10 = Total Cover				Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: _____)				<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
1. <i>Fraxinus pennsylvanica</i>	15	<input checked="" type="checkbox"/>	FACW	<input checked="" type="checkbox"/> Dominance Test is > 50%
2. _____	0	<input type="checkbox"/>	_____	<input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹
3. _____	0	<input type="checkbox"/>	_____	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____	0	<input type="checkbox"/>	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____	0	<input type="checkbox"/>	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____	0	<input type="checkbox"/>	_____	
7. _____	0	<input type="checkbox"/>	_____	Definitions of Vegetation Strata:
8. _____	0	<input type="checkbox"/>	_____	Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
9. _____	0	<input type="checkbox"/>	_____	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall.
10. _____	0	<input type="checkbox"/>	_____	Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
11. _____	0	<input type="checkbox"/>	_____	Woody vine - All woody vines greater than 3.28 ft in height.
12. _____	0	<input type="checkbox"/>	_____	
15 = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	0	<input type="checkbox"/>	_____	
2. _____	0	<input type="checkbox"/>	_____	
3. _____	0	<input type="checkbox"/>	_____	
4. _____	0	<input type="checkbox"/>	_____	
0 = Total Cover				

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

Hydrophytic Vegetation Present? Yes No

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: WDP #4

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (inoist)	%	Type ¹	Loc ²		
0-18	10YR	2/1					Loam	
18-24	10YR	4/1					Loamy sand	
24-28+	10YR	4/1					Sandy Clay Loam	

¹Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

<p>Hydric Soil Indicators:</p> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Muck Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input checked="" type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<p>Indicators for Problematic Hydric Soils : ³</p> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
---	--	--

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p>Restrictive Layer (if observed): Type: <u>sandy clay loam</u> Depth (inches): <u>24</u></p>	Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
---	---

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: DTN/6276 Newton & M-78 Vacant City/County: Meridian Township/Ingham Co. Sampling Date: 19-Jul-17
 Applicant/Owner: DTN Management Company?Newton Pointe LLC State: Michigan Sampling Point: WDP #5
 Investigator(s): Steven P. Voice, MS, PWS, CSE Section, Township, Range: S. 4 T. 4W R. 1W
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope: 0.0 % / 0.0 °
 Subregion (LRR or MLRA): LRR L Lat.: 42.764946 Long.: -84.429032 Datum: _____
 Soil Map Unit Name: Oshtemo-Spinks loamy sands, 0 to 6 percent slopes (OtB) NWI classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: (Explain alternative procedures here or in a separate report.) Data point is located in a relatively open to shrub dominated field area to the northeast of the large lowland where WDP #2 was evaluated.	

Hydrology

Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) <table style="width:100%; border: none;"> <tr> <td><input type="checkbox"/> Surface Water (A1)</td> <td><input type="checkbox"/> Water-Stained Leaves (B9)</td> </tr> <tr> <td><input type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td><input type="checkbox"/> Saturation (A3)</td> <td><input type="checkbox"/> Marl Deposits (B15)</td> </tr> <tr> <td><input type="checkbox"/> Water Marks (B1)</td> <td><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Drift deposits (B3)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Drift deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		Secondary Indicators (minimum of 2 required) <table style="width:100%; border: none;"> <tr><td><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td><input type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td><input type="checkbox"/> Dry Season Water Table (C2)</td></tr> <tr><td><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td><input type="checkbox"/> Stunted or Stressed Plants (D1)</td></tr> <tr><td><input type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td><input type="checkbox"/> Microtopographic Relief (D4)</td></tr> <tr><td><input type="checkbox"/> FAC-neutral Test (D5)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-neutral Test (D5)
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<input type="checkbox"/> Microtopographic Relief (D4)																																
<input type="checkbox"/> FAC-neutral Test (D5)																																
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____																																
Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>																																
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																																
Remarks: No water table or evidence thereof observed in the 32" deep boring.																																

APPENDIX C.

Copies of the November 3, 1997 letter from then-DEQ District Supervisor Gary F. Marx to Dennis Forsberg and Keith Schroeder and the October 18, 2002 letter from then-DEQ District Supervisor Walter Danyluk to G.S. Fedewa Builders, Inc., confirming that all four (4) of the wetlands identified and delineated on the current project site, specifically Wetland A (previously Wetland 1), Wetland B (previously Wetland 10), Wetland C (previously Wetland 2) and Wetland D (previously Wetland 2), are NOT subject to state jurisdiction or regulation under Part 303 (Appendix C).

STATE OF MICHIGAN



JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48900-7973

INTERNET: <http://www.deq.state.mi.us>

RUSSELL J. HARDING, Director

REPLY TO:

SHIAWASSEE DISTRICT OFFICE
10650 S BENNETT DR
MORRICE MI 48857-9792

November 3, 1997

Dennis Forsberg and Keith Schroeder
Newton Property Partnership
2360 Jolly Oak Road
Okemos, Michigan 48864

Dear Messrs. Forsberg and Schroeder

Subject: Wetland Determination
WD-11-97-70
Ingham County

I have reviewed the materials included in your consultant's July 21, 1997 letter to this office as well as other information to confirm a wetland determination on property located in the west 1/2 of the northeast 1/4 of the southeast 1/4 of Section 4 of Meridian Township, T4N, R1W, in accordance with Section 30321(3) of Part 303, Wetland Protection, of the Natural Resource and Environmental Protection Act, 1994 PA 451. The determination was made in response to your request to the Department.

It was determined that regulated wetlands do exist on the parcel of land as indicated in your determination. We also confirm that the wetlands designated 4 and 14 are state regulated pursuant to the above statute.

Any of the following activities in a regulated wetland area require a permit under Section 5 of the aforementioned act:

- (a) Deposit or permit the placing of fill material in a wetland.
- (b) Dredge, remove, or permit the removal of soil or minerals from a wetland.
- (c) Construct, operate, or maintain any use or development in a wetland.
- (d) Drain surface water from a wetland.

This jurisdictional wetland determination is valid for five (5) years from the date of this letter unless new information warrants a revision of the delineation before the expiration date.

This determination does not obviate the need for any other state, federal, or local permits which may be required by law.

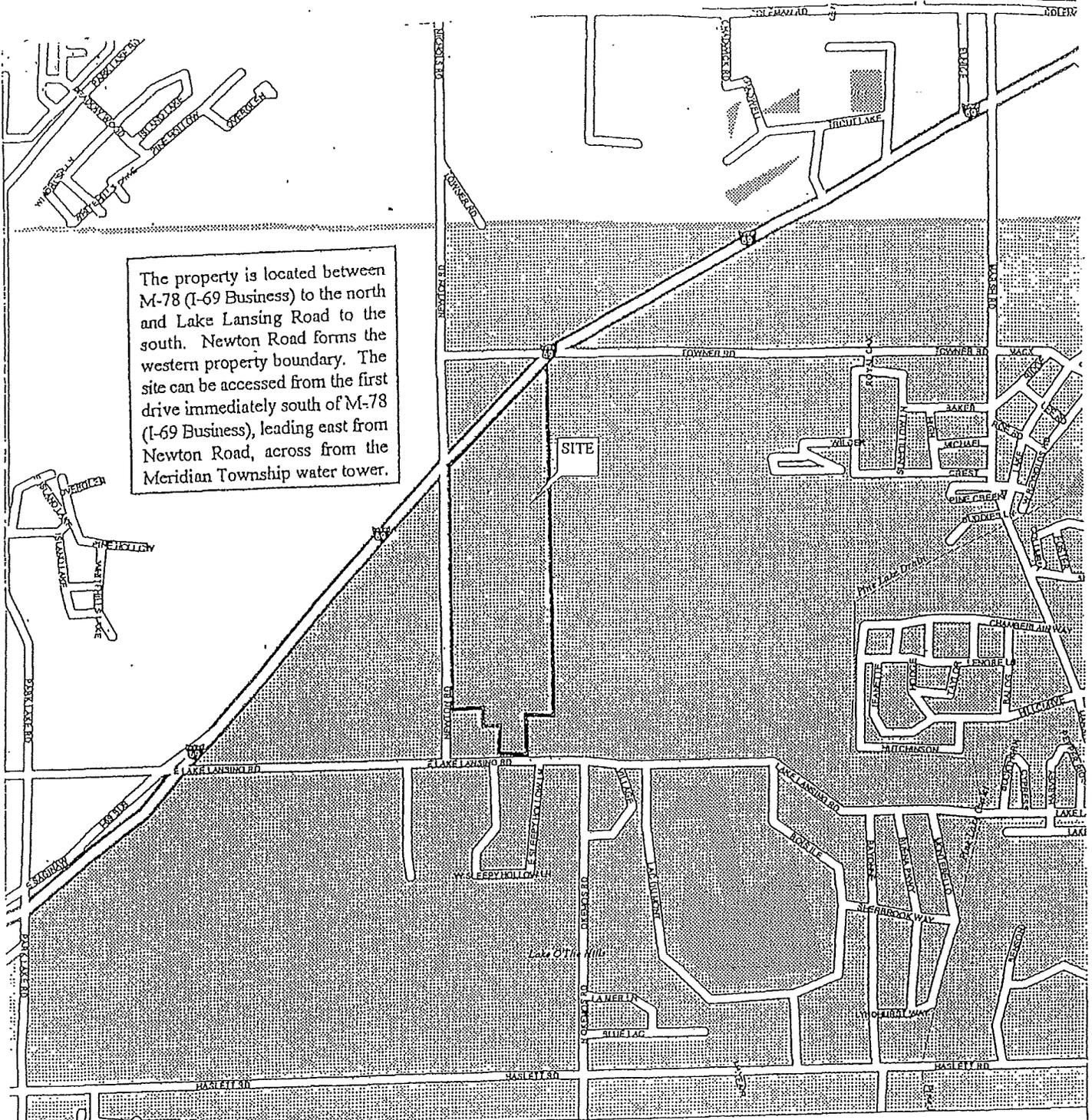
Should you have any questions regarding this determination, please contact this office at 517/625-5515.

Sincerely,

Gary F. Marx
District 11 Supervisor
Land & Water Management Division

cc: LWMD, Lansing
Ingham CEA
Meridian Township
Vital Resources Consulting

The property is located between M-78 (I-69 Business) to the north and Lake Lansing Road to the south. Newton Road forms the western property boundary. The site can be accessed from the first drive immediately south of M-78 (I-69 Business), leading east from Newton Road, across from the Meridian Township water tower.



© 1996 DeLorme-Street Atlas USA

Mag 15.00
 Fri Jul 18 17:05 1997
 Scale 1:15,625 (at center)
 1000 Feet
 500 Meters

- Secondary SR/Road/Hwy Ramp
- Interstate/Limited Access
- ▨ Population Center
- ▨ County Boundary
- ▨ Water
- River/Canal

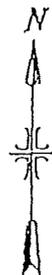


Figure 1

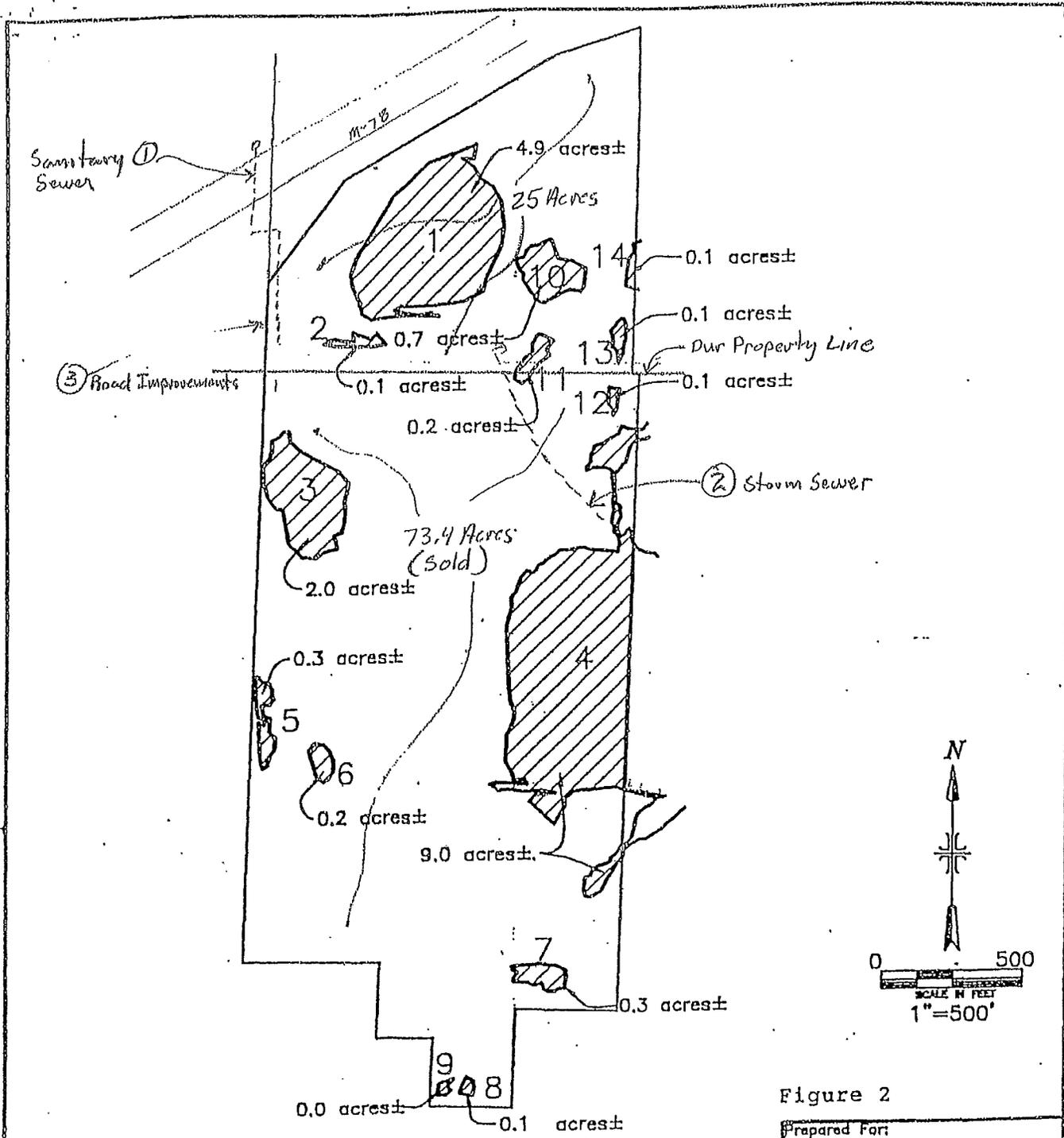


Figure 2

PAUL B. LAPHAM & ASSOCIATES, INC.
 VITAL RESOURCES CONSULTING
 ENGINEERING - SURVEYING - PLANNING - ENVIRONMENTAL
Serving our Customers for 20 Years
 120 NORTH THIRD STREET (517)345-5030
 WEST BRANCH, MI. 48661 FAX: (517)345-7302
 © 1997 COPYRIGHT, PAUL B. LAPHAM AND ASSOCIATES INC.
 UNAUTHORIZED COPYING IS PROHIBITED.

Prepared For: Newton Property Partnership 2360 Jolly Oak Road Okemos, MI 48864	
Sec. 4, T4N, R1W, Meridian Twp., Ingham Co., MI	
Project No.: V-975822	Drawn By: S.E. Bell
Date: July 14, 1997	Sheet No.: 1 of 1
Scale: 1"=500'	Checked By:



JOHN ENGLER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
SHIAWASSEE DISTRICT OFFICE



RUSSELL J. HARDING
DIRECTOR

October 18, 2002

G.S. Fedewa Builders, Inc.
5570 Okemos Road
East Lansing, MI 48823

Dear: Mr. Fedewa

SUBJECT: Wetland Assessment Report - Wetland Assessment File Number: 02-33-0009-WA

The Department of Environmental Quality (DEQ) conducted a Level 3 Wetland Assessment on property (property tax identification number 33-02-02-04-400-005, 009, and 010) located in Town 04N, Range 01W, Section 04, Meridian Township, Ingham County on September 10, September 17, and September 26, 2002. The assessment was conducted in accordance with Part 303, Wetland Protection of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); and Rule 4, Wetland Assessments (R 281.924) of the Administrative Rules for Part 303. This is a report of our findings in response to your wetland assessment application.

The DEQ staff walked the flagged boundaries as requested in your wetland assessment application. Based on our on-site investigation, which included review of plant communities, hydrologic indicators, and soils of the assessment area, and an in-office review of other pertinent information, the DEQ confirms, in part, the wetland boundaries observed during the site inspection. Staff noted a couple of errors in Wetlands 3 and 4. Staff found a small area of wetland coming out of the northern part of Wetland 3. The wetland is along a slope leading into Wetland 3, and catches water from up hill. There is a dominance of wetland vegetation in the area including Reed Canary Grass, Sedges, Red Osier Dogwood, and Poison Ivy. The area was added between Flags D49 and D12. Flags D49a - D49d were added. There were several changes made in Wetland 4. Flags F22a - F22d were added between F22 and F25 to include an area of wetland that had bare soil, shallow roots, and buttressed tree trunks. The plants in the area included American Elm, Green Ash, Rough Avens, and Black Cherry. Flags F23 and F24 were excluded. Flags F29, F30, F31, F32a, and F32b were moved and F32c was excluded to include an area of wetland with watermarks, shallow roots, and buttressed tree trunks. The dominant vegetation in the area included American Elm, Sensitive Fern, Jewelweed, Green Ash, Late Goldenrod, Gray Dogwood, and Crooked Aster. Flags F58, F57, B2, and F59 were moved to include an area of wetland that contained Late Goldenrod, American Elderberry, and Black Ash, which are all indicative to wetlands. Finally, Flags AA19a and AA19b were added between Flags AA19 and AA20, to include an area that contained drainage patterns. Vegetation, including Lanceol Leaf Goldenrod, Reed Canary Grass, Green Rush, and Swamp Aster, were found in the area. East of Wetland 5, a small unflagged wetland was found. It contained Glossy Buckthorn, Green Ash, Narrow Leaf Meadowsweet, Bulrush, Silky Dogwood, and Poison Ivy. Watermarks were also found in the wetland. This wetland is not believed to be regulated by the State, and is marked on the provided map.

517 625-5515
335-6010

G.S. Fedewa Builders, Inc
Page 2
October 18, 2002

We flagged the modified boundaries with pink DEQ flagging tape and documented the new boundaries on the enclosed site map. The site map of the assessment area was created by combining information from your consultant and the DEQ. The new map identifies the areas containing wetland and the upland areas of the assessment area. A new delineation is not necessary.

For those areas identified as State regulated wetland on the site map, specifically Wetlands 4, 5, and 14, please be advised that any of the following activities require a permit under Part 303:

- a) Deposit or permit the placing of fill material in a regulated wetland.
- b) Dredge, remove, or permit the removal of soil or minerals from regulated wetland.
- c) Construct, operate, or maintain any use or development in a regulated wetland.
- d) Drain surface water from a regulated wetland.

For those areas identified as upland and non-regulated wetland on the site map, the DEQ lacks jurisdiction under Part 303 for activities occurring in those areas. The non-regulated wetlands are not regulated since they are not contiguous to the Great Lakes, an inland lake or pond, or a river or stream, and smaller than five acres in size.

You may request the DEQ reassess the subject parcel or any portion of the parcel within 30 days of the date of this report should you disagree with the findings. A written request to reassess the parcel must be accompanied by supporting evidence with regard to wetland vegetation, soils or hydrology different from, or in addition to, the information relied upon by DEQ staff in preparing this report and sent to:

Wetland Assessment Program
Inland Lakes and Wetlands Unit
Land and Water Management Division
Department of Environmental Quality
P.O. Box 30468
Lansing, Michigan 48909-7958

Please be aware that this assessment report does not constitute a determination of the presence of wetland that may be regulated under local ordinances or federal law. The U.S. Army Corps of Engineers (USACE) retains regulatory authority over certain wetlands pursuant to Section 404 of the Clean Water Act (CWA), and specifically those wetlands associated with traditionally navigable waters of the state. Traditionally, navigable waters are generally the Great Lakes, their connecting waters, and river systems and lakes connected to these waters. In other areas of Michigan, the DEQ is responsible for determination of wetland boundaries for purposes of compliance with the CWA under an agreement with the U.S. Environmental Protection Agency.

Your assessment area does not appear to be within those areas also regulated by the USACE. However, should you desire more information, please contact the USACE at 313-226-2218.

This assessment report is limited to findings pursuant to Part 303 and does not constitute a determination of jurisdiction under other DEQ administered programs. Any land use activities

G.S. Fedewa Builders, Inc
Page 3
October 18, 2002

undertaken on the assessed parcel may be subject to regulation pursuant to the NREPA under the following programs:

Floodplain Regulatory Authority found in Part 31, Water Resources Protection
Part 91, Soil Erosion and Sedimentation Control
Part 301, Inland Lakes and Streams

The findings contained in this report do not convey, provide, or otherwise imply approval of any governing act, ordinance, or regulation, nor does it waive the obligation to acquire any applicable state, county, local, or federal approval or authorizations necessary to conduct any possible activities. This assessment report is not a permit for any activity that requires a permit from the DEQ.

The findings contained in this report are binding on the DEQ until September 26, 2006; a period of three years from the date of the assessment unless a reassessment is conducted. Please contact me if you have any questions regarding this assessment report.

Sincerely,

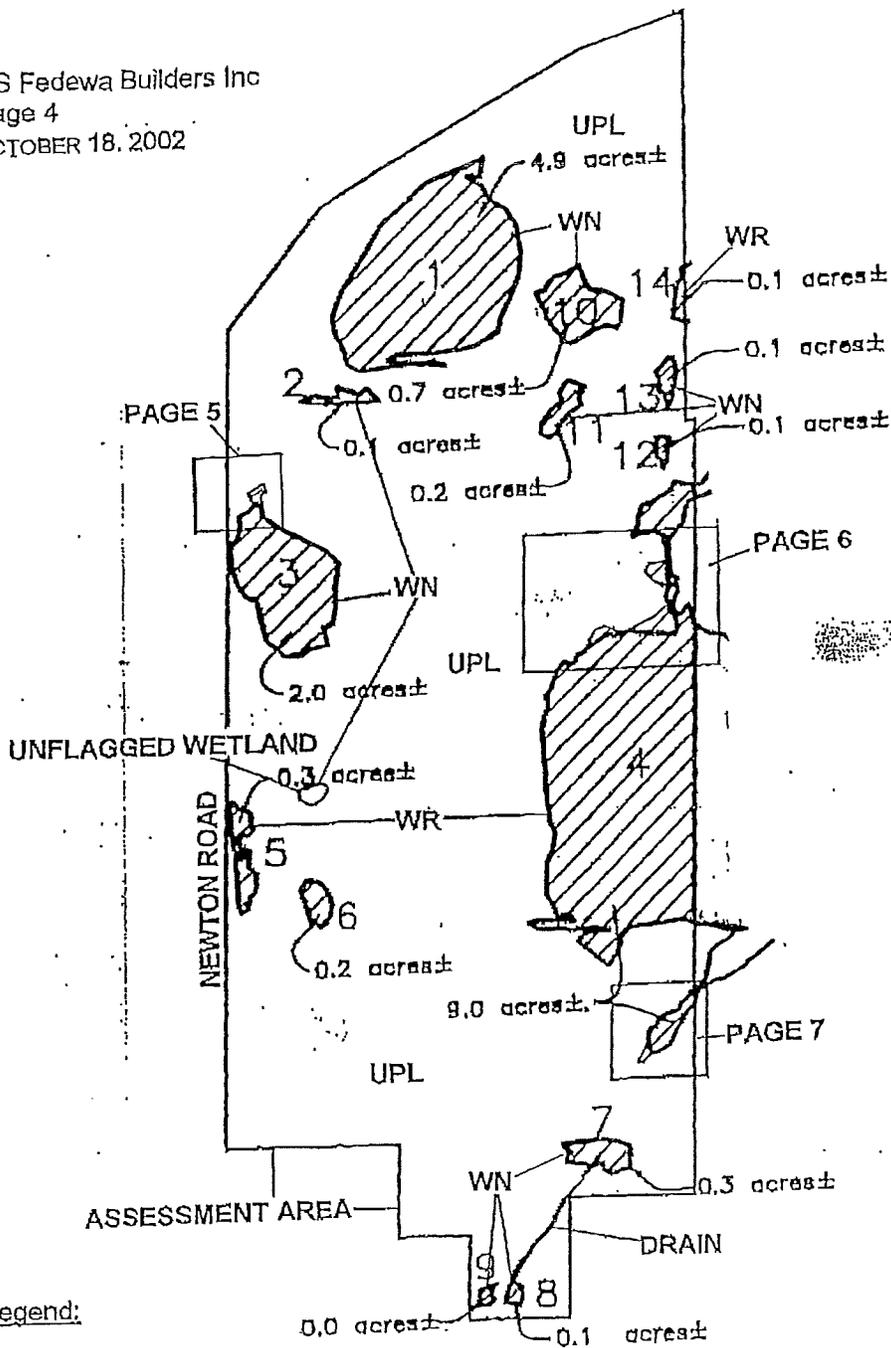


Walter Danyluk
District Supervisor
Geological and Land Management Division
517-625-4655

Enclosure

cc: Meridian Township
Mr. John Skubinna, DEQ
Ms. Wendy Veltman, DEQ

GS Fedewa Builders Inc
Page 4
OCTOBER 18, 2002



Legend:

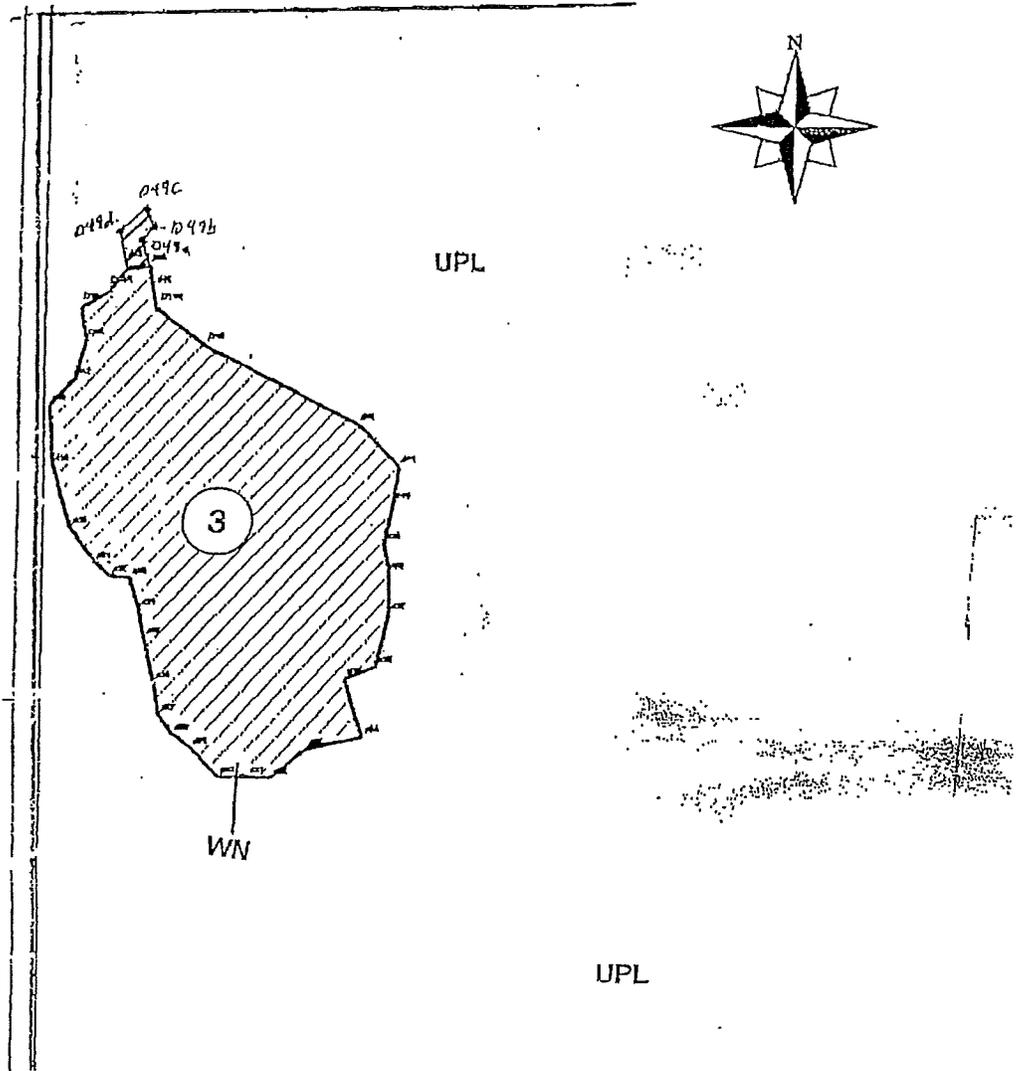
- WR = Wetland- Regulated
- WN =Wetland- Not Regulated
- UPL = Upland (non-wetland)

Approximate Scale: 1 inch = 500 feet

This drawing showing those areas containing wetland and not containing wetland is an approximation of the boundaries flagged on-site.

This drawing does not authorize or permit activities requiring a permit in accordance with Part 303 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

GS Fedewa Builders Inc
Page 5
OCTOBER 18, 2002



Legend:

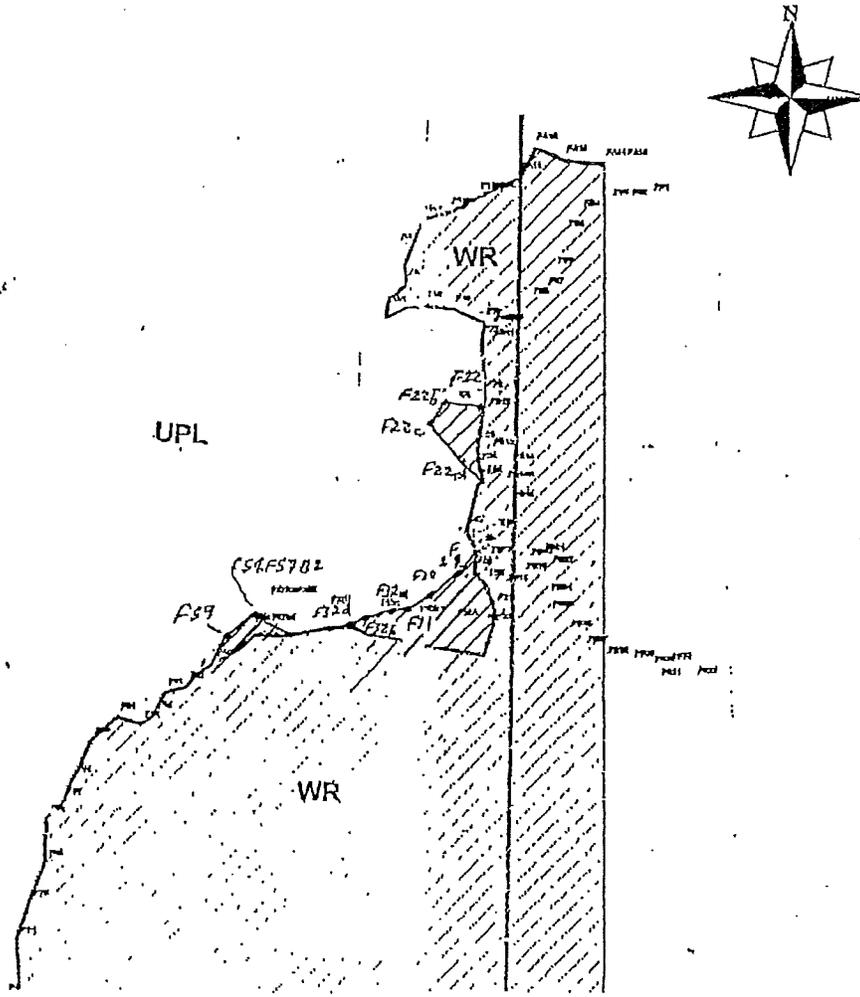
- WR = Wetland- Regulated
- WN =Wetland- Not Regulated
- UPL = Upland (non-wetland)

Approximate Scale: 1 inch = 150 feet

This drawing showing those areas containing wetland and not containing wetland is an approximation of the boundaries flagged on-site.

This drawing does not authorize or permit activities requiring a permit in accordance with Part 303 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

GS Fedewa Builders Inc
Page 6
OCTOBER 18, 2002



Legend:

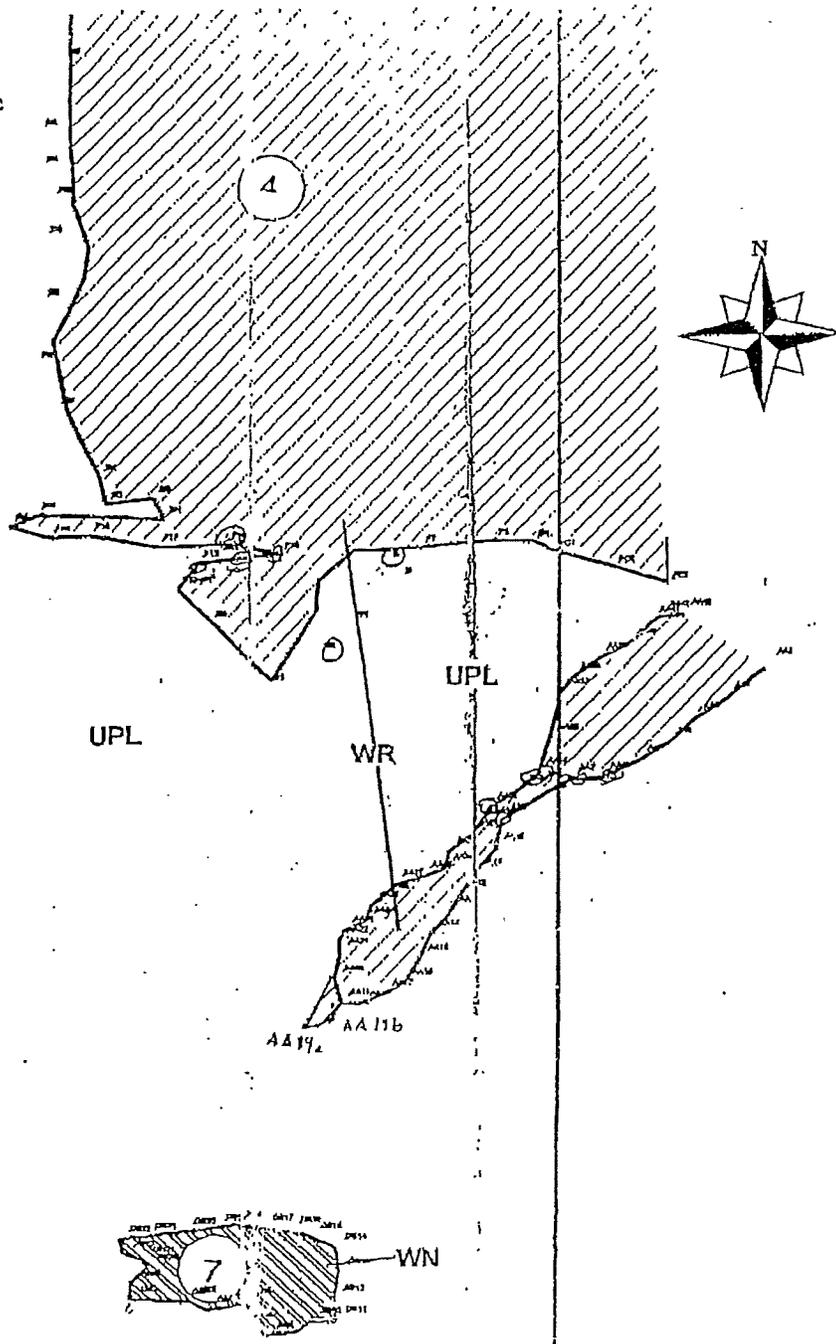
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GS Fedewa Builders Inc
Page 7
October 18, 2002



Legend:

- WR = Wetland- Regulated
- WN =Wetland- Not Regulated
- UPL = Upland (non-wetland)

Approximate Scale: 1 inch = 150 feet

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This drawing does not authorize or permit activities requiring a permit in accordance with Part 303 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.



November 28, 2018
Project No. 181579

Mr. Mark Kieselbach
Director of Community Planning and Development
Charter Township of Meridian
5151 Marsh Road
Okemos, MI 48864-1198

Re: Letter of Essentiality
Wetland Use Permit #18-03
Newton Park MUPUD

Dear Mr. Kieselbach:

As requested by your office, Fishbeck, Thompson, Carr & Huber (FTCH) reviewed application materials from KEBS, Inc. regarding Wetland Use Permit #18-03 to discharge stormwater into two wetlands in Section 4 of the Charter Township of Meridian. The proposed stormwater discharge is in association with a proposed residential housing development located at 6276 Newton Road, Haslett, Michigan. One of the wetlands that would receive stormwater discharge is forested wetland less than 2 acres in size and greater than 0.25 acre in size. This wetland is noted as Wetland 4-20 on the Meridian Township's wetland inventory map and is referred to as Wetland B in the MUPUD Plan provided by KEBS.

Voice Environmental Group, LLC (Voice) delineated Wetland B's boundary in 2017, as described in its February 22, 2018 *Wetland and Jurisdiction Determination Report*. FTCH's subconsultant, Peterson Environmental, verified the wetland boundary on June 4, 2018, and adjusted the boundary. Additional adjustments were made to Wetland B's boundary as a result of additional field studies completed by Voice in late June.

The identified wetland is a depressional forested wetland that is approximately 0.7 acre in size and is not contiguous with a body of water. Therefore, a determination of essentiality is necessary to determine the regulated status of this wetland under Meridian Township's Wetland Ordinance.

The purpose of this letter is to relay to the Township FTCH's preliminary findings as to whether one or more of the essentiality criteria are likely to apply to the identified wetland. The criteria are listed below, followed by our assessment.

(1) The wetland supports state or federal endangered or threatened plants, fish, or wildlife appearing on a list specified in Part 365 of the Natural Resources and Environmental Protection Act (MCL 324.36501 et seq.).

- FTCH did not conduct a thorough inventory of species present within the wetland. However, data obtained by Voice indicated low plant diversity within Wetland B. Historic aerial photographs obtained from Google Earth indicate the surrounding area was farmed. It is unlikely Wetland B supports protected plant or fish species. FTCH has no knowledge of Wetland B supporting protected wildlife.

(2) The wetland represents what is identified as a locally rare or unique ecosystem.

- FTCH has no knowledge that this wetland has been identified as a locally rare or unique ecosystem.

(3) The wetland supports plants or animals of an identified local importance.

- No species of local importance have been identified in Wetland B.

(4) The wetland provides groundwater recharge documented by a public agency.

- FTCH is not aware that a public agency has documented this wetland as providing groundwater recharge.

(5) The wetland provides flood and storm control by the hydrologic absorption and storage capacity of the wetland.

- Wetland B is located in a topographical depression and receives and stores stormwater from the surrounding landscape. KEBS's has completed stormwater calculations which determined the stormwater capacity of Wetland B.
- Stormwater overflow from Wetland B potentially discharges to Wetland A (Meridian Township Wetland 4-19), located approximately 100 feet to the west. KEBS did not provide a topographic map of the site, which would verify the likelihood of this overflow.

(6) The wetland provides wildlife habitat by providing breeding, nesting, or feeding grounds or cover for forms of wildlife or waterfowl, including migratory waterfowl and rare, threatened, or endangered wildlife species.

- Based on Voice's wetland delineation report, Wetland B contains an open understory. It did not contain standing water during wetland delineation on July 17, 2017 but did contain standing water during the wetland boundary verification inspection on June 4, 2018. The presence of seasonal standing water in the spring suggests Wetland B is a vernal pool. Vernal pools provide important habitat for many wildlife species. Because vernal pools lack predatory fish populations, they provide critical breeding habitat for a host of forest-dwelling amphibians and invertebrates. Vernal pools support frogs, toads, salamanders, snakes, turtles, waterfowl, wetland birds, songbirds, and mammals.

(7) The wetland provides protection of subsurface water resources and provision of valuable watersheds and recharging groundwater supplies.

- The wetland provides a limited area (approximately 0.7 acre) of groundwater recharge storage.

(8) The wetland provides pollution treatment by serving as a biological and chemical oxidation basin.

- The wetland has the capacity to provide this service, although no sources of pollution within the surrounding area are evident.

(9) The wetland provides erosion control by serving as a sedimentation area and filtering basin, absorbing silt and organic matter.

- The wetland is surrounded by old fields. No sources of erosion were observed, but if they were present due to land disturbance, the wetland would act as a sedimentation area, due to its landscape position.

(10) The wetland provides sources of nutrients in water food cycles and nursery grounds and sanctuaries for fish.

- It is not likely that fish are present in this wetland because it does not contain standing water year-round and it is not contiguous with a body of water.

We conclude that Wetland B provides stormwater control by its hydrologic absorption and storage capacity, wildlife habitat and pollution treatment, and therefore is determined to be essential.

Mr. Mark Kieselbach
Page 3
November 28, 2018



If you have any questions or require additional information, please contact me at 616.464.3738, 616.446.2269, or ehtripp@ftch.com.

Sincerely,

FISHBECK, THOMPSON, CARR & HUBER, INC.

A handwritten signature in black ink, reading "Elise Hansen Tripp". The signature is written in a cursive style with a large, stylized initial "E".

Elise Hansen Tripp, PWS

By email

cc: Mr. Peter Menser – Charter Township of Meridian



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Boyne City, MI 49712

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December 12, 2018

Mr. Mark Kieselbach
Charter Township of Meridian
5151 Marsh Road
Okemos, MI 48864

Re: October 24, 2017 FTCH Wetland Use Permit #18-03 Application Review
Newton Pointe, LLC
Newton Park MUPUD

Dear Mr. Kieselbach:

As you are aware, on October 5, 2018, Newton Pointe, LLC submitted a Wetland Use Permit (WUP) application to the township, as well as various documents in support of that application, for the proposed Newton Park MUPUD project.

On October 24, 2018, Meridian Township Wetland Consultant Elise Tripp from Fishbeck, Thompson, Carr & Huber, Inc. (FTCH) provided you with a "Wetland Use Permit #18-03 Application Review" document which presented the following:

1. An **Overview of Proposed Wetland Impacts** in which Ms. Tripp provides a basic description of the two township-regulated wetlands present on the site and an overview of proposed wetland impacts,
2. A preliminary **Review of the WUP Application** as submitted in which she outlined various potential concerns and/or identified additional information she felt should be provided by the applicant, and
3. FTCH's **Recommendations** which are as follows:

"Based upon our review of the submitted materials, it is our opinion that insufficient information was submitted in the WUP application to ensure that irreparable harm would not result to site wetlands from proposed stormwater discharge to the wetlands. This harm could result from:

- Altering wetland hydrology to the extent that the wetlands become ponds, instead of wetlands.
- Erosion from water discharging down the slopes between the numerous forebays to the wetlands, resulting in deposition of soil within the wetlands.
- Utilizing the wetlands for water quality treatment and not adequately addressing water quality treatment in the sediment forebays prior to discharging into the wetlands.

FTCH recommends the Applicant provide additional information to ensure the above harm would not result from the proposed project. This information may include design details pertaining to the forebays, storm pipes and outlet structure, and water budgets for site wetlands that reflect both before and after site development conditions. FTCH recommends that a WUP not be issued until the Applicant adequately addresses the concerns noted in this letter.”

Accordingly, the purpose of this letter is to provide the Township and FTCH with as much of the additional information for the project as is possible at this point in time as well as a response to Ms. Tripp’s October 24th WUP Application Review to “ensure that irreparable harm would not result to site wetlands from proposed stormwater discharge to the wetlands.”

STORMWATER PLAN DETAILS & ADDITIONAL INFORMATION

Subsequent to the receipt of Ms. Tripp’s October 24th letter/application review, the applicant, Newton Pointe, LLC, the project Engineer, KEBS, Inc. and the project environmental consultant, Voice Environmental, LLC, collectively reviewed her comments and potential concerns, as well as the additional information being requested.

It should be noted that some of the additional information being requested, specifically design details on the forebays, the storm pipe between Wetland A and B and the outlet structure cannot be fully designed without KEBS, Inc. “engineering” the entire site. While that it is possible to do that, it obviously involves a great deal of time and expense. As such, it realistically only makes sense to do that once the township’s Land Use Committee approves the proposed site plan, so that in the event that there are any changes to the plan the engineering design for the forebays, storm pipe and outlet do not have to be “engineered” twice.

Nonetheless, KEBS has developed and/or revised the following site plans and documents, which I am hereby submitting for the township’s review and consideration, to provide sufficient information to assure the township and FTCH that irreparable harm will not result to site wetlands:

1. An Existing Drainage Area map (Appendix A: Sheet 1 of 3),
2. A Proposed Drainage Area map (Appendix A: Sheet 2 of 3)
3. An updated MUPUD site plan, including the proposed stormwater management plan/system and some additional typical details (Appendix A: Sheet 3 of 3)
4. A Proposed Water Budget with an updated “Detention Requirement and Discharge Allowance for Small Sites” calculation spreadsheet for the project (Appendix B).

The purpose of the above site plans and Proposed Water Budget document is to provide the township and FTCH as much of the additional information being requested as possible and reasonable at this point in the design/site engineering process.

I have reviewed these plans and the Proposed Water Budget in detail in light of the various questions and concerns identified by Ms. Tripp and would like to provide the Township with the following summary and comments relative to the stormwater management plan and design details that are incorporated therein to avoid or minimize potential wetland impacts.

Existing Drainage Area and General Characteristics of Wetlands A and B

The existing drainage area surrounding Wetland A (Meridian Township Wetland 4-19) and Wetland B (Meridian Township Wetland 4-20) is 15.01 acres (Appendix A: Sheet 1 of 3). Wetland A, at 4.78 acres in size, and Wetland B, at 0.746 acres in size, collectively occupy more than 36% of the existing drainage/local watershed area.

Wetland A is primarily an open marsh (which seasonally and/or periodically supports large areas of open water) with forested wetland located around segments of the perimeter. Wetland B is a relatively small forested wetland depression, dominated by red maple (*Acer rubrum*). Both wetlands are isolated (and in the case of Wetland A expansive) depressions in the local watershed with no inlets or outlets. As such, both are currently already functioning as stormwater detention/retention areas with seasonal and periodic surface and ground water inputs into both wetlands only dissipating via evaporation or infiltration into the ground over time.

Proposed Drainage Area of Wetlands A and B

The proposed, post-development drainage area will be 23.22 acres, an increase of 8.01 acres (Appendix A: Sheet 2 of 3). As such, Wetlands A and B will collectively occupy approximately 24% of the proposed drainage area once the site is developed as proposed.

Proposed Stormwater Management Plan

The proposed stormwater management plan/system has been specifically designed to ensure that:

- The introduction of additional stormwater into Wetland A will not “result in the conversion of this wetland into a pond”(although I would note, as indicated above, that portions of this wetland currently exist as open water at least for portions of the year),
- That Wetland B will not become inundated to the extent that its trees will die, resulting conversion from forested wetland to wetland meadow, emergent wetland, or pond, and perhaps just as important as the above two points,
- That water levels are managed such that there is enough water/water level fluctuations to maintain the existing wetland retention hydrological characteristics of both Wetlands A and Wetland B to support and maintain the existing open marsh of Wetland A and forested wetland of Wetland B.

To accomplish this, the applicant is proposing, as correctly noted by Ms. Tripp, to install a storm pipe between Wetland B and Wetland A and then construct an outlet structure at the southwest end of Wetland A to allow stormwater to discharge to the municipal stormwater system (Appendix B). The details and basis for this design are as follows:

Wetland B, with an upland/wetland boundary line that ranges approximately from 870.70' to 871.00' appears to be slightly higher than Wetland A, with an upland/wetland boundary line of the latter that varies from approximately 870.50 to 871.00'. Accordingly, as currently designed, a 12"-diameter, concrete "equalization" storm pipe from Wetland B to Wetland A will be installed at an elevation of approximately 870.00' to allow any additional drainage and/or stormwater that may enter Wetland B to overflow into the expansive Wetland A, which will be controlled by an outlet set at a slightly lower elevation, which, in turn, will allow any additional drainage and/or stormwater that may enter this wetland to outlet into the municipal stormwater system. The elevation of the outlet structure for Wetland A is currently designed to be at an elevation of 869.75', which is the elevation KEBS has calculated to be the water level of the existing wetland following back-to-back 100-year storm events under existing conditions (i.e. with no outlet).

Proposed Water Budget for Newton Park

A Proposed Water Budget for Newton Park that was prepared by KEBS, Inc. staff is attached in Appendix C. A summary of their calculations and findings is as follows:

Existing Conditions

- Using an elevation of 868.90' as the lowest ground elevation in the subject wetlands, the storage volume available in the existing wetlands between 868.90' and 871.00' is 478,293 cft.
- With no outlet other than infiltration/evaporation (the existing condition), the water volume input resulting from back-to-back 100' storms would be 113,332 cft (or approximately 24% of the total available storage capacity).
- The resulting water level for the existing wetlands in this event, again under existing conditions (i.e. no outlet) and assuming the water level prior to the event was at or below the ground surface, would be at an elevation of 869.75'.

Proposed Conditions

- With a proposed outflow of 0.93 cfs (only 0.04 cfs/acre), KEBS has calculated the 100-year volume being added to the wetlands under the proposed conditions to be 154,166 cft (an increase of 40,832 cft from pre-development conditions).

- The resulting water level for the existing wetlands in this event, again under existing conditions (i.e. no outlet) and assuming the water level prior to the event was at or below the ground surface, would be at an elevation of 870.02’.
- Accordingly, the “impact” to the water level in wetlands **after a 100-year storm** would be an increase in elevation from 869.75 to 870.02, which is 0.27’ or **about 3 inches**. Obviously, the increase in water levels following more typical precipitation events would be substantially less.

COMMENTS ON AND ADDITIONAL INFORMATION IN RESPONSE TO FTCH’S OVERVIEW OF PROPOSED WETLAND IMPACTS

FTCH Comments

In Ms. Tripp’s October 24th Application Review, she provided the following basic characterization of Wetlands A and B and an overview of the proposed wetland impacts.

The proposed activities are located in Parcel Number 33-02-02-04-252-004 in the northeast quarter of Section 4, Town 4 North, Range 1 West, Ingham County, Michigan. The parcel is currently undeveloped and contains two wetlands greater than 0.25-acre in size:

- Wetland A, which is approximately 4.78 acres in size and primarily consists of open marsh. Forested wetland is located around the perimeter of the marsh. This wetland is designated at Wetland 4-19 on the Township wetland map.
- Wetland B, which is approximately 0.65-acre in size and consists of forested wetland. This wetland is designated at Wetland 4-20 on the Township wetland map.

NOTE: *Wetland B, based on the approved boundary, has been surveyed at 0.746 acres.*

The Applicant has submitted a WUP application to the Township requesting the following:

- Construct multiple housing units in upland.
- Maintain a 40-foot buffer between site development and Wetlands A and B.
- Discharge stormwater into Wetlands A and B via storm sewers and curb cuts.
- Construct forebays in upland at each stormwater outlet. Some of forebays will be constructed within the 40-foot wetland buffer near the wetland boundary and some would be constructed outside of it. The WUP application stated the forebays would be sized for the drainage area of each storm pipe and curb spillway. *No design details regarding the forebays were provided to FTCH (emphasis added).*
- Install a storm pipe between Wetlands A and B. The plan denotes forebay symbols at each end of the pipe. It appears the function of this pipe is to allow water to drain from Wetland B to Wetland A. *Design details regarding this structure were not provided to FTCH (emphasis added).*
- Construct an outlet structure at the southwest end of Wetland A to allow stormwater to discharge to the municipal stormwater system. *No plan details regarding the outlet were provided to FTCH. The stormwater detention calculations do size the outlet structure orifices to control the first flush and 100-year events (emphasis added).*

Voice Environmental Comments and Response

While Ms. Tripp's overview is basically accurate, she included three comments (which I emphasized in italics above). Her comments and my response to each are as follows:

Comment: The WUP application stated the forebays would be sized for the drainage area of each storm pipe and curb spillway. No design details regarding the forebays were provided to FTCH.

Response: Conceptual plan and cross-sectional design details for the sediment forebays have been added to the updated MUPUD site plan contained in Appendix A (Sheet 3 of 3). While the exact sizing and designed details for each of the 12 forebays could be developed at this time, it would basically require "engineering" the entire site. Doing so at this point in the process, absent an approved site plan (which if modified from what is currently being proposed would require some or potentially all of the forebays to be re-designed), is not reasonable.

As indicated above, once the Township's Land Use Committee approves the site plan for the project, each of the forebays will be sized for the drainage area of each storm pipe and curb spillway. As such, the subject wetlands will not be used for the first flush water quality treatment but rather the entire first flush water quality treatment will occur in the upland-based sediment forebays prior to discharging into the wetlands.

Comment: Install a storm pipe between Wetlands A and B. The plan denotes forebay symbols at each end of the pipe. It appears the function of this pipe is to allow water to drain from Wetland B to Wetland A. Design details regarding this structure were not provided to FTCH.

Response: As indicated above, the elevation for this "equalization" storm pipe between wetlands A and B is currently proposed to be at 870.00', which is the approximate elevation of the approved upland/wetland boundary. By setting the pipe at this elevation, if the water level of Wetland B rises above this level it will discharge into Wetland A and allow the remaining water in Wetland B below this elevation to dissipate via evaporation and infiltration into the ground as is currently the case. Thus the existing hydrological regime and water level fluctuations that maintain this forested wetland community will be maintained.

Again, once the Township's Land Use Committee approves the site plan for the project, additional design details on this storm water pipe connection between Wetland A and Wetland B will be prepared and presented to the township along with the sediment forebay design details.

Comment: Construct an outlet structure at the southwest end of Wetland A to allow stormwater to discharge to the municipal stormwater system. No plan details regarding the outlet were provided to FTCH. The stormwater detention calculations do size the outlet structure orifices to control the first flush and 100-year events.

Response: Again, as indicated above, the elevation of the outlet structure is currently proposed to be at 869.75, which approximates the elevation of the upland/wetland boundary of Wetland A. It is 0.25' or 3 inches lower than the current design elevation of Wetland B, which again will allow excess water above 870.00' in wetland B to drain into Wetland A, as well as excess water above 869.75' in Wetland A to drain into the municipal storm water system. In both cases, this design is specifically intended to maintain the existing seasonal water levels and water level fluctuations currently present in both wetlands.

NOTE: As noted above, the design elevations for the storm pipe between Wetland A and Wetland B and the outlet from Wetland A are based on the elevations of the respective upland/wetland boundaries and the existing and proposed water budgets. They are specifically intended, as also noted above, to ensure that Wetland A will not be converted into a pond, that the trees in Wetland B do not die and the area becomes a pond or a marsh, but just as importantly, that neither wetland is dewatered to the point that they are adversely impacted from too little water.

With that said, I would note that these elevations are not “cast in stone” (which is another reason why final design details for these structures have not been provided). For instance, with a proposed outflow of 0.93 cfs (only 0.04 cfs/acre), the outlet from Wetland A could be lowered (as stormwater detention requirements allow up to 0.15 cfs/acre), if the township and/or FTCH felt it was desirable to do so, necessary to ensure that the area will not turn into a pond, or to otherwise encourage more scrub-shrub or forested wetland types in this wetland. The point again, is that once the Land Use Committee approves the site plan, and the Environmental Commission/FTCH provides their input on or evaluation of the outlet elevations proposed herein, final engineering of these structures can be completed and submitted to the township for final approval.

RESPONSE TO THE OCTOBER 24, 2018 FTCH “REVIEW OF WUP APPLICATION”

In her October 24, 2018 “Wetland Use Permit #18-03 Application Review” letter, Ms. Tripp notes that “(t)he review standards used to evaluate WUP applications are found in Section 22-157 of Article IV (Wetland Protection) of Chapter 22 of the Township’s Code of Ordinances. WUPs are not to be issued unless the proposed activity is found to be in the public interest, the permit is necessary to realize the benefits from the activity, and the proposed activity is otherwise lawful in all respects. Section 22-157(2) lists eleven general criteria to be considered when evaluating whether or not a proposed activity is in the public interest.” Ms. Tripp then provided her evaluation of or comments on the proposed activity and/or information submitted with or missing from the original application according to each of the eleven criteria.

Accordingly, on behalf of Newton Pointe, LLC, I would like to provide the following discussion of each of the eleven general criteria listed in Section 22-157(2) that are to be considered when evaluating whether or not a proposed activity is in the public interest, including a response to Ms. Tripp’s October 24th comments where appropriate.

Section 22-157(2)(a) *The relative extent of the public and private need for the proposed activity.*

This site received approval for rezoning (#06050) to Commercial (C-2) by the Meridian Township Board on March 20, 2007. The approval for rezoning is conditioned on the site being developed under the Township's mixed use planned unit development ordinance and limiting the types of permitted uses and the residential density of the development. The purpose of the mixed use planned unit development (mixed use PUD) is to create more walkable pedestrian oriented developments by promoting and accommodating developments in rational mixed patterns that respect Meridian Township's transitional land use concept to protect, enhance and preserve natural resources.

Newton Park meets the Township's goals of a well-planned, integrated and high quality mixed use development project:

- It will enhance health and safety goals by meeting requirements for walkability, pedestrian orientation and high quality, durable, building materials.
- It will increase Township prosperity goals and citizen welfare by appreciated property values which will support necessary public services.
- It will actualize our cultural heritage through citizen pride in creative, new places to walk to, shop at and work in that retain a flavor of Meridian Township's rich history.
- It will enhance diversity goals with new types of residential uses in close-knit community design.
- It will improve our natural environment goal by mixed use development with incentives for more intensely landscaped buffers and open spaces designed to complement Township parks and green space plans.

Section 22-157(2)(b) *The availability of feasible and prudent alternative locations and methods to accomplish the expected benefits from the activity.*

As indicated above, the proposed stormwater management plan/system has been specifically designed to ensure that:

- The introduction of additional stormwater into Wetland A will not "result in the conversion of this wetland into a pond"(although I would note, as indicated above, that portions of this wetland currently exist as open water at least for portions of the year),
- That Wetland B will not become inundated to the extent that its trees will die, resulting conversion from forested wetland to wetland meadow, emergent wetland, or pond, and perhaps just as important as the above two points,
- That water levels are managed such that there is enough water/water level fluctuations to maintain the existing wetland retention hydrological characteristics of both Wetlands A

and Wetland B to support and maintain the existing open marsh of Wetland A and forested wetland of Wetland B

To accomplish this, the applicant is proposing to construct forebays in upland at each stormwater outlet. As indicated above, the forebays will be sized to hold and filter the first flush of the drainage area of each storm pipe and curb spillway it is receiving stormwater from, before discharging to the wetlands. Additionally, the applicant will install a storm/equalization pipe between Wetland B and Wetland A and then construct an outlet structure at the southwest end of Wetland A to allow stormwater to discharge to the municipal stormwater system (Appendix B), specifically allow any additional storm water input into these wetlands above the normal high water levels to drain from the wetlands to the municipal stormwater system consistent with storm water detention requirements.

Alternative locations

One hypothetical alternative to utilizing the subject wetlands as part of the stormwater system would be to construct the entire system in uplands, i.e. construct stormwater detention basins in the upland that would handle both the first flush and 100-year storm events. While this alternative is certainly feasible, it clearly is not prudent from either an economic or an ecological perspective.

Wetlands A and B have a combined acreage of 5.526 acres, which is approximately 21% of the entire site and 24% of the drainage area of the proposed developed. Under this scenario, a number of detention basins would likely have to be constructed, further reducing the area available for the housing units and associated infrastructure. While this alternative is certainly feasible (as most alternatives are) it would likely destroy the economic viability of the project. As such, it clearly is not a prudent alternative for the applicant, especially when there are expansive wetlands on site that are already providing valuable and effective storm water detention, storage and water filtration functions, in addition to numerous other ecological benefits.

This hypothetical alternative is also not a prudent course of action from an ecological standpoint. If stormwater is collected from the developed site and channeled into multiple upland-based detention ponds, it would essentially eliminate a substantial amount of the water input into both Wetlands A and B, which would clearly alter their character and negatively impact their ecological value significantly.

Given the fact that this hypothetical alternative would have significant economic and ecological detriments, it was rejected. It clearly is far more feasible and prudent to utilize the existing wetlands as an integral part of the stormwater system as the applicant has proposed.

Alternative Methods or Designs

In her October 24th review of the WUP application as submitted, Ms. Tripp expressed concern that the stormwater plan as originally submitted was “utilizing the wetlands for water

quality treatment and not adequately addressing water quality treatment in the sediment forebays prior to discharging into the wetlands.” The original plans did, in fact, contemplate limited filtration/treatment by the proposed forebays and utilizing the wetlands for both the first flush and 100-year storm events.

A primary reason that we have federal, state and local wetland protection statutes is precisely because wetlands do provide valuable water quality treatment functions (storage, sediment filtration, nutrient retention, etc). Wetlands A and B on this site are no exception as Ms. Tripp has noted, which is why, in my professional opinion, these wetlands are and should remain an integral part of the stormwater management/water quality treatment system. However, it is my opinion that it does make sense to design and size the sediment forebays such that they can receive and detain the first flush of storm events of the drainage areas feeding them to provide as much pre-treatment of stormwater prior to discharging into the wetlands as Ms. Tripp has suggested. Accordingly, it is the applicant’s and project engineer’s intent to do so in the final design for each of these structures.

In summary, the plan that has been proposed, as discussed and modified herein, is intended to maintain the existing hydrological regimes and water level fluctuation patterns and characteristic of both wetlands and to pretreat stormwater input into these wetlands such that adverse impacts to the wetlands is avoided or minimized to the maximum extent possible. It is my professional opinion that there are no feasible and prudent alternative locations or methods that would to accomplish stormwater management that would further avoid or minimize impacts to the subject wetlands. Since both wetlands are characterized by seasonal and periodic water fluctuations, the additional water input (managed and controlled as described herein) may actually result in a positive benefit to the character and diversity of these wetlands).

Section 22-157(2)(c) The extent and permanence of the beneficial or detrimental effects which the proposed activity may have on the public and private uses to which the area is suited, including the benefits the wetlands provide.

In her October 24th Application Review, Ms. Tripp noted that Wetlands A and B provide the following functions and values: Water storage, water quality improvement, groundwater recharge, wildlife habitat, and aesthetic value. I agree and it is precisely because of the capacity of these wetlands to provide these functions that they should be an integral part of the stormwater management plan.

As indicated herein, the proposed stormwater plan, including but not limited to the installation of 12 forebays that will capture and treat 100% of the first flush volume and the installation of outlets in both Wetlands A and B at design elevations to properly handle the additional water input to these wetlands, is specifically designed to maintain existing wetland hydrology and not adversely impact site wetlands, such that the functions listed are not negatively affect but rather enhanced.

The outlet elevations, as detailed above, are specifically designed such that the introduction of additional stormwater into Wetland A will NOT result in conversion of the wetland into a pond and to ensure that Wetland B will NOT become inundated to the extent that its trees will die, resulting in conversion from forested wetland to wetland meadow, emergent wetland, or pond. Just as importantly these elevations are intended to also ensure that sufficient water remains in each of the wetlands to allow the seasonal water level fluctuations that currently occur through evaporation and infiltration into the ground to continue.

Given the above design and measures there will be no “conversion of wetland into ponds that would result in a net loss of regulated Township wetlands,” which as Ms. Tripp has noted, “is prohibited by the Township’s Wetland Protection ordinance.”

Since neither wetland currently has any inlets or outlets, Ms. Tripp is correct in her statement that “adjustment of the wetlands’ water budget to prevent conversion of wetland to a water body is therefore dependent upon dewatering the wetlands through appropriate designed outlet structures.” The design elevations of those structures, and the basis for those design elevations, is outlined in detail above. KEBS, in consultation with Voice Environmental, has intentionally set these outlet structures at what we believe are the appropriate elevations based on the existing upland/wetland boundaries present. Furthermore, the final design of these structures, again, once the land use plan is approved, will ensure that these structures have the appropriate capacity to dewater the wetlands as needed to maintain wetland hydrology required for the emergent wetland (Wetland A) and the forested wetland (Wetland B).

In her review, Ms. Tripp indicated that “The stormwater detention outlet calculations identify the control of the first flush event for water quality management within the wetlands. This appears to be in addition to the sediment forebays.”

Response: As indicated above and in the submitted application, the sediment forebays and not the wetlands themselves will be designed to handle the first flush volumes.

Mr. Tripp also indicated that “the stormwater management plans identify new wetland areas around the perimeter of the existing wetlands, without providing details to support how or why these areas would become wetland, or what type of wetlands would develop.

Response: There are no new wetland areas that are being proposed to be created around the perimeter of the existing wetland or anywhere on the site.

Section 22-157(2)(d) *The probable impact of each proposal in relation to the cumulative effect created by other existing and anticipated activities in the watershed.*

I agree with Ms. Tripp that there are no identified cumulative impacts of the proposed project.

Section 22-157(2)(e) *The probable impact on recognized historic, cultural, scenic, ecological, or recreational values and on the public health or safety, or fish or wildlife.*

As I have indicated repeatedly above, the proposed stormwater plan has been intentionally designed such to account for and effectively control the introduction of additional stormwater into site wetlands such that they will not convert into open water bodies and the existing functions and ecological values of the wetlands are not impaired.

I agree with Ms. Tripp that no impacts on recognized historic, cultural, scenic or recreational values or impacts on fish, public health or safety are apparent for the proposed activities.

Section 22-157(2)(f) *Economic value, both public and private, of the proposed land change to the general township area.*

Newton Park is a financially-attractive and high-quality mixed use project proposed in the Township. It will meet the Township's goals of a safe, healthy and sustainable community.

- It will enhance incentives for investment by the ability to mix residential with commercial and office uses within the same development.
- It will provide specific community amenities.
- It will achieve creating attractive and commercially successful core areas through cooperative development projects with one or more land owners.
- It will encourage mitigation to lessen potential hazards associated with the location of a mixed use PUD.
- It will increase Township prosperity goals and citizen welfare by appreciated property values which will support necessary public services.

Section 22-157(2)(g) *The size and quality of the wetland being considered.*

The proposed activities will result in stormwater being discharged into an approximately 4.78-acre marsh/forested wetland complex (Wetland A) and an approximately 0.746-acre forested wetland (Wetland B). Both wetlands are currently provided stormwater

Section 22-157(2)(h) *The findings of necessity for the proposed activity which have been made by other agencies.*

Neither FTCH nor Voice Environmental is aware of any specific findings of necessity for the proposed activity which have been made by other agencies.

However, the Meridian Township Zoning Ordinance states that "planned unit developments shall, where feasible, provide for underground installation of utilities in both public ways and private extensions thereof. Provisions shall be made for construction of storm sewer facilities including grading, gutters, piping, and treatment of turf to handle storm waters, prevent erosion and the formation of dust. This could include the establishment of retention

basins in order to minimize storm water runoff. Utilities and maintenance of facilities shall be in accordance with the requirements and regulations of Meridian Charter Township.” The design we are proposing that incorporates the use of the on-site wetlands will meet Meridian Charter Township requirements and regulations.

Section 22-157(2)(i) *Amount of wetland remaining in the general area and proximity to a waterway.*

This consideration was adequately addressed in Mr. Tripp’s October 24th application review, in which she noted the following:

- According to the Township wetland map, Wetlands A and B are located approximately 500 feet and 100 feet (respectively) northwest of Township Wetland 4-22, a 47.75-acre wetland complex. The Costigan Drain, a designated county drain, flows through this wetland.
- Wetlands A and B are located approximately 1,800 feet north of the Costigan Drain. The Costigan Drain discharges into Lake Lansing via the Pine Lake Outlet Intercounty Drain.

Section 22-157(2)(j) *Proximity to any waterbody.*

This consideration was also adequately addressed in Mr. Tripp’s October 24th application review, in which she noted the following:

- Lake Lansing is located approximately 0.9 mile east of Wetlands A and B.
- An approximately 3.8-acre pond is located approximately 0.25 mile north-northeast of Wetlands A and B.

Section 22-157(2)(k) *Extent to which upland soil erosion adjacent to the protected wetland is controlled.*

In her application review, Ms. Tripp noted the following:

- A soil erosion and sedimentation control (SESC) plan was not submitted as part of the WUP application.

Response: This is true. The SESC plan and application will be prepared and submitted once the Townships Land Use Committee has approved the site plan and final site engineering, including but not limited to the requested design details for the forebays, equalization pipe between Wetlands A and B, and the outlet from Wetland A, has been completed.

- Design details for the stormwater pipes and forebays were not provided to assure that appropriate measures would be implemented to curtail erosion resulting from stormwater flow.

Response: This is also true. As indicated above, these design details will be provided once the Townships Land Use Committee has approved the site plan and final site engineering, including but not limited to the requested design details for the forebays, equalization pipe between Wetlands A and B, and the outlet from Wetland A, has been completed. Clearly, all required and appropriate temporary and permanent soil erosion control measures (silt fences, temporary cover crops, permanent vegetative cover, geotextile fabric and riprap, etc.) will be utilized and included in the final design as appropriate.

- The potential exists that soil will erode as stormwater is discharged from the numerous stormwater forebays and flows into Wetland A and B and as it flows through a pipe between Wetland A and B.

Response: While the potential for erosion from stormwater discharge exists on any site or project, appropriate and effective soil erosion control measures (both temporary and permanent) will be utilized as required and/or appropriate to ensure that soil will not erode as stormwater is discharged from the numerous forebays into Wetlands A and B or as it flows through the pipe between Wetlands A and B.

RESPONSE TO THE FTCH's "RECOMMENDATIONS"

In the Recommendations section of her October 24th Application Review, and as noted at the beginning of this letter/application review response, Ms. Tripp indicated that insufficient information was submitted in the original WUP application to ensure that irreparable harm would not result to the site wetlands from proposed stormwater discharge to the wetlands.

Understanding that there are additional design details that still need to be prepared and submitted to the Township/FTCH for their review and approval, which will be done as soon as the Township's Land Use Committee approves the site plan for the project, it is my professional opinion that this document, the updated stormwater plans, design details and calculations presented herein have clearly documented that irreparable harm will not result to the wetlands on the site. Specifically:

- Wetland hydrology will not be altered to the extent that the wetlands become ponds, instead of wetlands.
- Appropriate erosion control measures for all of the water control structures that will be discharging water down the slopes between the numerous forebays to the wetlands will be undertaken and as such, will prevent the deposition of soil within the wetlands.
- The stormwater management plan as updated and detailed herein proposes and adequately addresses water quality treatment in the sediment forebays prior to discharging into the wetlands.

**REQUEST FOR WUP APPROVAL FROM THE
MERIDIAN TOWNSHIP ENVIRONMENTAL COMMISSION**

Given the updated and/or additional information, site plans, design details and water budget calculations presented in this document which demonstrate that “irreparable damage to the wetlands will not occur,” Newton Pointe, LLC is respectfully requesting approval of their pending Wetland Use Permit (WUP) application to:

- Discharge stormwater into Wetlands A and B via storm sewers and curb cuts.
- Construct forebays in upland at each stormwater outlet, with the forebays providing sufficient capacity for 100% of the first flush volume. Some of forebays will be constructed within the 40-foot wetland buffer near the wetland boundary and some would be constructed outside of it.
- Install a 12” equalization storm pipe between Wetlands A and B.
- Construct an outlet structure at the southwest end of Wetland A to allow stormwater to discharge to the municipal stormwater system.

As indicated above, final design details and/or elevations for all of the proposed structures will of course be prepared and submitted for review and approval by the Township/FTCH once the Meridian Township Land Use Committee has approved the proposed site plan for the project and site.

If you have any questions, please do not hesitate to contact me.

Sincerely,

VOICE ENVIRONMENTAL GROUP, LLC



Steven P. Voice, MS, PWS, CSE
Senior Ecologist & Regulatory Specialist

Enclosures: 2 Appendices

cc: C. Holman
R. Uppal
J. Kyes
G. Petru

APPENDIX A.

Updated/Additional Site Plans for WUP Permit Application #18-03

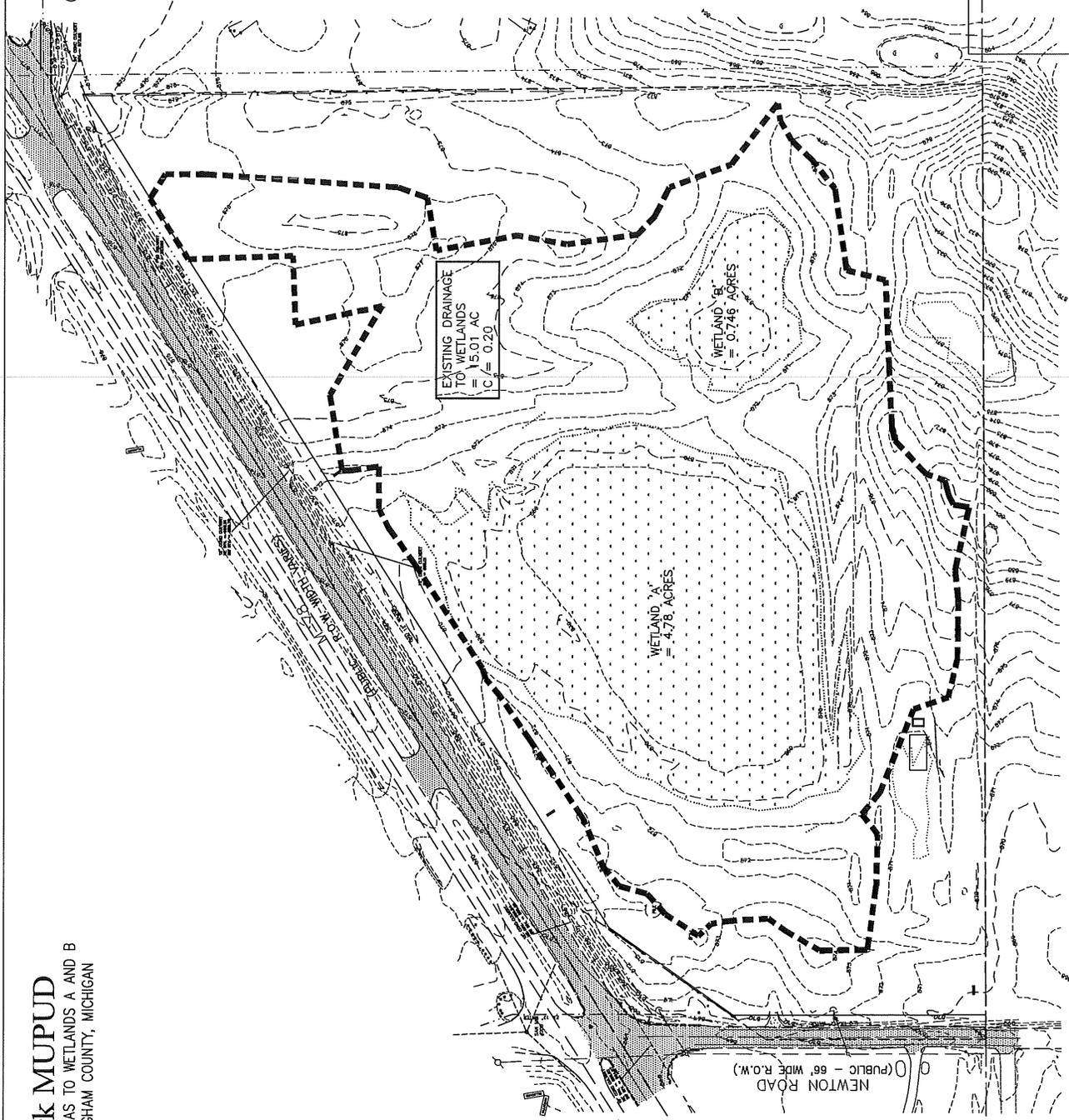
Sheet 1 of 3: Map of Existing Drainage Area to Wetlands A and B

Sheet 2 of 3: Map of Proposed (Post-Development) Drainage Area to Wetlands A and B

Sheet 3 of 3: Updated MUPUD Plan

Newton Park MUPUD
 EXISTING DRAINAGE AREAS TO WETLANDS A AND B
 MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

TOWNER ROAD
 (PUBLIC - 66' WIDE R.O.W.)



EXISTING DRAINAGE
 TO WETLANDS
 = 15.01 AC
 C = 0.20

WETLAND "A"
 = 4.78 ACRES

WETLAND "B"
 = 0.746 ACRES

NEWTON ROAD
 (PUBLIC - 66' WIDE R.O.W.)

REVISIONS	DATE	BY	DESCRIPTION

KEBS, INC.
 216 HAZLET ROAD, HAZLET, MI 49429
 PHONE: 268-1400
 FAX: 268-1401
 P.O. BOX 171, HAZLET, MI 49429

Newton Park MUPUD
 SCALE: 1" = 40'
 DATE: 11-24-17
 SHEET NO. 1 OF 3

APPROVED BY: [Signature]
 DTN MANAGEMENT COMPANY 19227

APPENDIX B.

Proposed Water Budget for Newton Park MUPUD project
Newton Pointe, LLC, WUP Permit Application #18-03

Proposed Water Budget for Newton Park:

Existing Runoff to Wetland 'A' and 'B': 15.01 Acres

Existing 'C' Coefficient: 0.20

First Flush Volume = $(3,630 \times A \times C) = 3,630 \times 15.10 \times 0.20 = 10,897 \text{ CFT}$

Channel Protection Volume = $(8784.6 \times A \times C) = 8784.6 \times 15.10 \times 0.20 = 26,371 \text{ CFT}$

100-Year Volume = 56,666 CFT (See Spreadsheet)

Volume Available in existing Wetlands:

868.90	0	0
869.0	112,904 sf	3,759 cft (Volume from 868.9 to 869.0)
870.0	178,175 sf	145,540 cft (Volume from 869.0 to 870.0)
871.0	479,810 sf	<u>328,994 cft</u> (Volume from 870 to 871.0)
	Total Volume Available =	478,293 cft

With no outlet other than infiltration/evaporation, etc. use back to back 100-Year Volumes to determine maximum water level in the wetland area under existing conditions. $V = 56,666 \times 2 = 113,332 \text{ cft}$

Water Level for Existing Wetland = $869.0 + (113,332 - 3,759)/(145,540) = 869.75$

Proposed Water Budget for Newton Park (Continued):

Proposed Runoff to Wetland 'A' and 'B': 23.22 Acres
Proposed 'C' Coefficient: 0.51

First Flush Volume = $(3,630 \times A \times C) = 3,630 \times 23.22 \times 0.51 = 42,987$ CFT

Channel Protection Volume = $(8784.6 \times A \times C) = 8784.6 \times 23.22 \times 0.51 = 104,029$ CFT

100-Year Volume = 154,166 CFT (See Spreadsheet, only using 0.04 cfs/acre as allowable outflow)

Volume Available in existing Wetlands:

868.90	0	0
869.0	112,904 sf	3,759 cft (Volume from 868.9 to 869.0)
870.0	178,175 sf	145,540 cft (Volume from 869.0 to 870.0)
871.0	479,810 sf	<u>328,994 cft</u> (Volume from 870 to 871.0)
	Total Volume Available =	478,293 cft

With a proposed outflow of 0.93 cfs (Only 0.04 cfs/acre), use the 100-Year Volume to determine maximum water level in the wetland area under proposed conditions. $V = 154,166$ cft

Water Level for Existing Wetland = $870.0 + (154,166 - 3,759 - 145,540) / (328,994) = 870.02$

Summary: The wetland water budget was compared with existing conditions and proposed conditions. The volume increase was determined to be 40,834 cft when we used a runoff of 0.04 cfs/acre. Ingham County will generally allow 0.15 cfs/acre to be allowable, but we have reduced this to utilize the large wetland area. Using the above data, the increase to the wetland would be from an elevation of 869.75 to 870.02, or 0.27', or about 3".

Detention Requirement and Discharge Allowance for Small Sites

EXISTING CONDITIONS

Storm Outlet: Existing Wetland 'A' and 'B' Existing "C" Value 0.20
 Job Name: Newton Park Proposed "C" Value 0.20
 Job Number: 92272 Maximum Allowable Outflow (CFS) 0.00
 Drainage Area (Acres) 15.01 Storm Recurrence Interval (Yrs) 100

Duration	A Rainfall (Per NWS Bulletin 71)	B 100% Runoff	C Runoff "C"	D Runoff (Ac.-Ft.)	E Outflow (Ac.-Ft.)	F Storage (Ac.-Ft.)
20 min.	1.57	1.964	0.20	0.393	0.000	0.393
30 min.	1.92	2.402	0.20	0.480	0.000	0.480
40 min.	2.10	2.627	0.20	0.525	0.000	0.525
1 hr.	2.44	3.052	0.20	0.610	0.000	0.610
2 hr.	3.02	3.778	0.20	0.756	0.000	0.756
3 hr.	3.33	4.165	0.20	0.833	0.000	0.833
4 hr.	3.52	4.403	0.20	0.881	0.000	0.881
5 hr.	3.71	4.641	0.20	0.928	0.000	0.928
6 hr.	3.90	4.878	0.20	0.976	0.000	0.976
8 hr.	4.11	5.141	0.20	1.028	0.000	1.028
10 hr.	4.30	5.379	0.20	1.076	0.000	1.076
12 hr.	4.52	5.654	0.20	1.131	0.000	1.131
18 hr.	4.89	6.117	0.20	1.223	0.000	1.223
24 hr.	5.20	6.504	0.20	1.301	0.000	1.301

- A) Inches of Rainfall: The numbers provided are taken from the National Weather Service Bulletin #71
- B) 100% Runoff for 15.01 Acres: Divide inches of rainfall by 12 and multiply by number of acres.
- C) Proposed % Runoff: Insert selected "C" value. "C" value of the total site can be adjusted as a ratio of impervious area, plus 0.05 for vacant area.
- D) Runoff: Multiply 100% runoff value by "C" value.
- E) Outflow: Multiply outflow in cfs by duration in hours, then by 3600 and divide by 43,560.
- F) Storage Required: Subtract Outflow from Runoff. Storage value will increase to a peak value and then decrease. The peak (largest) value for storage should be used.

* Maximum allowable Outflow (FCS) $Q=CA (C_{exist})$ $Q(CFS)= 0$

KEBS INC. 2116 Haslett Road Haslett, MI 48840 (517) 339-1014	Runoff Detention (cft): 56666 * MULTIPLY BY 2 FOR BACK TO BACK EVENT FOR RETENTION	By: gp	Date: 11/2/2018
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= 113332 cft

Detention Requirement and Discharge Allowance for Small Sites

PROPOSED CONDITIONS

Storm Outlet: Existing Wetland 'A' and 'B' Existing "C" Value 0.20
 Job Name: Newton Park Proposed "C" Value 0.51
 Job Number: 92272 Maximum Allowable Outflow (CFS) 0.93
 Drainage Area (Acres) 23.22 Storm Recurrence Interval (Yrs) 100

Duration	A Rainfall (Per NWS Bulletin 71)	B 100% Runoff	C Runoff "C"	D Runoff (Ac.-Ft.)	E Outflow (Ac.-Ft.)	F Storage (Ac.-Ft.)
20 min.	1.57	3.038	0.51	1.549	0.026	1.524
30 min.	1.92	3.715	0.51	1.895	0.038	1.856
40 min.	2.10	4.064	0.51	2.072	0.051	2.021
1 hr.	2.44	4.721	0.51	2.408	0.077	2.331
2 hr.	3.02	5.844	0.51	2.980	0.154	2.827
3 hr.	3.33	6.444	0.51	3.286	0.231	3.056
4 hr.	3.52	6.811	0.51	3.474	0.307	3.166
5 hr.	3.71	7.179	0.51	3.661	0.384	3.277
6 hr.	3.90	7.547	0.51	3.849	0.461	3.388
8 hr.	4.11	7.953	0.51	4.056	0.615	3.441
10 hr.	4.30	8.321	0.51	4.243	0.769	3.475
12 hr.	4.52	8.746	0.51	4.461	0.922	3.538
18 hr.	4.89	9.462	0.51	4.826	1.383	3.442
24 hr.	5.20	10.062	0.51	5.132	1.845	3.287

- A) Inches of Rainfall: The numbers provided are taken from the National Weather Service Bulletin #71
- B) 100% Runoff for 23.22 Acres: Divide inches of rainfall by 12 and multiply by number of acres.
- C) Proposed % Runoff: Insert selected "C" value. "C" value of the total site can be adjusted as a ratio of impervious area, plus 0.05 for vacant area.
- D) Runoff: Multiply 100% runoff value by "C" value.
- E) Outflow: Multiply outflow in cfs by duration in hours, then by 3600 and divide by 43,560.
- F) Storage Required: Subtract Outflow from Runoff. Storage value will increase to a peak value and then decrease. The peak (largest) value for storage should be used.

* Maximum allowable Outflow (FCS) $Q = 0.04 \text{ CFS/ACRE}$ $Q(\text{CFS}) = 0.93$

KEBS INC. 2116 Haslett Road Haslett, MI 48840 (517) 339-1014	Runoff Detention (cft): 154126	By: gp	Date: 11/2/2018
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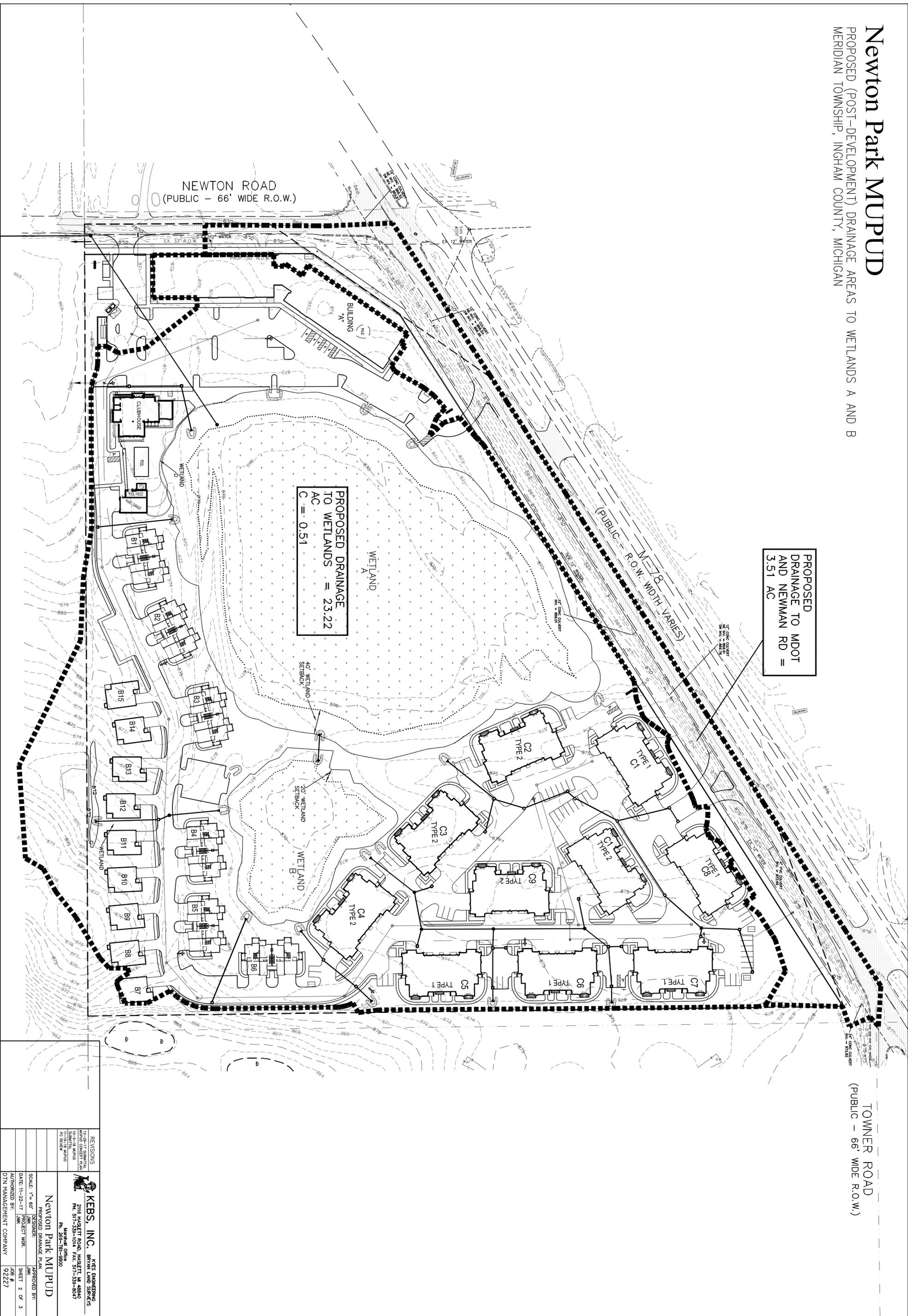
Newton Park MUPUD

PROPOSED (POST-DEVELOPMENT) DRAINAGE AREAS TO WETLANDS A AND B
 MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

TOWNER ROAD
 (PUBLIC - 66' WIDE R.O.W.)

PROPOSED
 DRAINAGE TO MDOT
 AND NEWMAN RD =
 3.51 AC

PROPOSED DRAINAGE
 TO WETLANDS
 AC
 C = 0.51



REVISIONS	
1	ISSUED FOR PERMITS
2	FOR REVIEW

KEBS, INC. 2116 HASETT ROAD, HASETT, MI 48840 PHONE: 517-339-0104 FAX: 517-339-8047 Meridian Office Ph. 269-791-9800	
Newton Park MUPUD PROPOSED DRAINAGE PLAN	
SCALE: 1" = 60'	DESIGNER: JMK
DATE: 11-22-17	APPROVED BY: JMK
PROJECT MGR: JMK	SHEET 2 OF 3
AUTHORED BY: JMK	9/22/17
DTN MANAGEMENT COMPANY	



October 24, 2018 (Revised November 2, 2018)
Project No. G181579

Mr. Mark Kieselbach
Charter Township of Meridian
5151 Marsh Road
Okemos, MI 48864

Re: Wetland Use Permit #18-03 Application Review
Newton Pointe, LLC
Newton Park MUPUD

Dear Mr. Kieselbach:

Newton Pointe, LLC (the Applicant) is requesting to discharge stormwater into two wetlands regulated by the Charter Township of Meridian (Township), in association with a proposed residential housing development located at 6276 Newton Road, Haslett, Michigan.

At the request of the Township, FTCH reviewed the Wetland Use Permit (WUP) request, including the following:

- An undated Joint Permit Application prepared by the Applicant;
- *Wetland and Jurisdiction Determination Report*, dated February 22, 2018, prepared by Voice Environmental Group, LLC (Voice);
- Newton Park MUPUD Stormwater Management Existing Drainage to Wetland figure, prepared by KEBS, Inc. and dated November 12, 2017;
- Newton Park MUPUD Stormwater Management Plan Prop Drain Map, prepared by KEBS, Inc. and dated November 12, 2017; and
- Two sheets of stormwater detention calculations.

This report provides a brief description of the resources that would be impacted by the proposed work, evaluates WUP Application #18-03 according to review standards in the Township Wetland Protection Ordinance (Article IV of Chapter 22 of the Code of Ordinances of the Charter Township of Meridian), and makes recommendations to the Township regarding issuance or denial of the WUP application. This evaluation is limited to a review of wetland impacts and does not assess broader hydrologic and hydraulic issues pertaining to stormwater management at the site.

Overview of Proposed Wetland Impacts

The proposed activities are located in Parcel Number 33-02-02-04-252-004 in the northeast quarter of Section 4, Town 4 North, Range 1 West, Ingham County, Michigan. The parcel is currently undeveloped and contains two wetlands greater than 0.25-acre in size:

- Wetland A, which is approximately 4.78 acres in size and primarily consists of open marsh. Forested wetland is located around the perimeter of the marsh. This wetland is designated at Wetland 4-19 on the Township wetland map.
- Wetland B, which is approximately 0.65-acre in size and consists of forested wetland. This wetland is designated at Wetland 4-20 on the Township wetland map.

Wetland A is regulated by the Township under Article IV (Wetland Protection) of Chapter 22 of the Township's Code of Ordinances because it is greater than two acres in size. Because Wetland B is less than two acres and greater than 0.25 acre in size, it is protected under the Township's wetland ordinance if the Township determines the wetland is essential to the preservation of the natural resources of the Township as provided in Section 22-156 of the ordinance.

The Applicant has submitted a WUP application to the Township requesting the following:

- Construct multiple housing units in upland.
- Maintain a 40-foot buffer between site development and Wetlands A and B.
- Discharge stormwater into Wetlands A and B via storm sewers and curb cuts.
- Construct forebays in upland at each stormwater outlet. Some of forebays will be constructed within the 40-foot wetland buffer near the wetland boundary and some would be constructed outside of it. The WUP application stated the forebays would be sized for the drainage area of each storm pipe and curb spillway. No design details regarding the forebays were provided to FTCH.
- Install a storm pipe between Wetlands A and B. The plan denotes forebay symbols at each end of the pipe. It appears the function of this pipe is to allow water to drain from Wetland B to Wetland A. Design details regarding this structure were not provided to FTCH.
- Construct an outlet structure at the southwest end of Wetland A to allow stormwater to discharge to the municipal stormwater system. No plan details regarding the outlet were provided to FTCH. The stormwater detention calculations do size the outlet structure orifices to control the first flush and 100-year events.

Review of WUP Application

The review standards used to evaluate WUP applications are found in Section 22-157 of Article IV (Wetland Protection) of Chapter 22 of the Township's Code of Ordinances. WUPs are not to be issued unless the proposed activity is found to be in the public interest, the permit is necessary to realize the benefits from the activity, and the proposed activity is otherwise lawful in all respects. Section 22-157(2) lists eleven general criteria to be considered when evaluating whether or not a proposed activity is in the public interest. An evaluation of the proposed activity, according to each of the eleven criteria, is as follows:

Section 22-157(2)(a) *The relative extent of the public and private need for the proposed activity.*

- No information regarding the relative extent of the public and private need for the proposed housing development was provided.

Section 22-157(2)(b) *The availability of feasible and prudent alternative locations and methods to accomplish the expected benefits from the activity.*

- The WUP application's discussion of feasible and prudent alternatives was limited to the following: "Provide pretreatment for storm runoff to the wetlands and construct stormwater detention outlet structures from the wetlands with stormwater outlet to public storm sewers". This narrative appears to be the proposed actions and not a discussion of feasible and prudent alternatives.
- No alternative site plans or stormwater management approaches were discussed in the WUP application. The availability of feasible and prudent alternative locations and methods to accomplish stormwater management without impacting site wetlands was not discussed in the WUP application.

Section 22-157(2)(c) *The extent and permanence of the beneficial or detrimental effects which the proposed activity may have on the public and private uses to which the area is suited, including the benefits the wetlands provide.*

- Wetlands A and B provide the following functions and values: water storage, water quality improvement, groundwater recharge, wildlife habitat, and aesthetic value.
- The Applicant did not provide a cogent argument that the proposed stormwater management approach will maintain existing wetland hydrology and not adversely impact site wetlands. The potential exists that the introduction of additional stormwater into Wetland A will result in conversion of the wetland into a pond. The potential exists that Wetland B will become inundated to the extent that its trees will die, resulting in conversion from forested wetland to wetland meadow, emergent wetland, or pond.
- Conversion of wetland into ponds would result in a net loss of regulated Township wetlands, which is prohibited by the Township's Wetland Protection ordinance.
- The additional stormwater entering the wetlands due to site development is not expected to leave the wetlands to a significant extent through infiltration, because the wetlands have a high water table, as documented by Voice's wetland delineation. Adjustment of the wetlands' water budget to prevent conversion of wetland to a water body is therefore dependent upon dewatering the wetlands through appropriately designed outlet structures. Specifically, maintenance of appropriate wetland hydrology is dependent upon discharge through the outlet structure in Wetland A and the storm pipe between Wetland A and B. Sufficient detail was not supplied in the WUP application to ensure that the outlet structure and pipes would be set at appropriate elevations and had appropriate capacity to dewater the wetlands as needed to maintain wetland hydrology required for emergent wetland (Wetland A) and forested wetland (Wetland B).
- The stormwater detention outlet calculations identify the control of the first flush event for water quality management within the wetlands. This appears to be in addition to the sediment forebays.
- The stormwater management plans identify new wetland areas around the perimeter of the existing wetlands, without providing details to support how or why these areas would become wetland, or what type of wetlands would develop.

Section 22-157(2)(d) *The probable impact of each proposal in relation to the cumulative effect created by other existing and anticipated activities in the watershed.*

- There are no identified cumulative impacts of the proposed project.

Section 22-157(2)(e) *The probable impact on recognized historic, cultural, scenic, ecological, or recreational values and on the public health or safety, or fish or wildlife.*

- Introduction of additional stormwater into site wetlands may impair the existing functions and values of the wetlands, especially if the wetlands convert into open water bodies. Degraded wildlife habitat and impaired ecological value may result.
- No other impacts on recognized historic, cultural, scenic or recreational values are apparent for the proposed activities. In addition, no impacts on fish or public health or safety are apparent.

Section 22-157(2)(f) *Economic value, both public and private, of the proposed land change to the general township area.*

- The question of economic value associated with the proposed activity is beyond the scope of the issues FTCH was retained to address. Accordingly, FTCH offers no opinion, recommendations, or advice with respect to this criterium.

Section 22-157(2)(g) *The size and quality of the wetland being considered.*

- The proposed activities will result in stormwater being discharged into an approximately 4.78-acre marsh/forested wetland complex and an approximately 0.65-acre forested wetland.

Section 22-157(2)(h) *The findings of necessity for the proposed activity which have been made by other agencies.*

- FTCH is not aware of any findings of necessity for the proposed activity which have been made by other agencies.

Section 22-157(2)(i) *Amount of wetland remaining in the general area and proximity to a waterway.*

- According to the Township wetland map, Wetlands A and B are located approximately 500 feet and 100 feet (respectively) northwest of Township Wetland 4-22, a 47.75-acre wetland complex. The Costigan Drain, a designated county drain, flows through this wetland.
- Wetlands A and B are located approximately 1,800 feet north of the Costigan Drain. The Costigan Drain discharges into Lake Lansing via the Pine Lake Outlet Intercounty Drain.

Section 22-157(2)(j) *Proximity to any waterbody.*

- Lake Lansing is located approximately 0.9 mile east of Wetlands A and B.
- An approximately 3.8-acre pond is located approximately 0.25 mile north-northeast of Wetlands A and B.

Section 22-157(2)(k) *Extent to which upland soil erosion adjacent to the protected wetland is controlled.*

- A soil erosion and sedimentation control (SESC) plan was not submitted as part of the WUP application.
- Design details for the stormwater pipes and forebays were not provided to assure that appropriate measures would be implemented to curtail erosion resulting from stormwater flow.
- The potential exists that soil will erode as stormwater is discharged from the numerous stormwater forebays and flows into Wetland A and B and as it flows through a pipe between Wetland A and B.

Recommendations

An essentiality determination should be completed to assess whether Wetland B provides essential functions as described in Section 22-156 of the Township wetland ordinance. If Wetland B provides essential functions, a wetland use permit will be required from the Township for regulated activities in the wetland.

Based upon our review of the submitted materials, it is our opinion that insufficient information was submitted in the WUP application to ensure that irreparable harm would not result to site wetlands from proposed stormwater discharge to the wetlands. This harm could result from:

- Altering wetland hydrology to the extent that the wetlands become ponds, instead of wetlands.
- Erosion from water discharging down the slopes between the numerous forebays to the wetlands, resulting in deposition of soil within the wetlands.



- Utilizing the wetlands for water quality treatment and not adequately addressing water quality treatment in the sediment forebays prior to discharging into the wetlands.

FTCH recommends the Applicant provide additional information to ensure the above harm would not result from the proposed project. This information may include design details pertaining to the forebays, storm pipes and outlet structure, and water budgets for site wetlands that reflect both before and after site development conditions. FTCH recommends that a WUP not be issued until the Applicant adequately addresses the concerns noted in this letter.

We appreciate the opportunity to assist in the review of this file. If you have any questions or require additional information, please contact me at 616.464.3738 or ehtripp@ftch.com.

Sincerely,

FISHBECK, THOMPSON, CARR & HUBER, INC.

A handwritten signature in black ink, reading "Elise Hansen Tripp". The signature is written in a cursive, flowing style.

Elise Hansen Tripp, PWS

pmb

By email

cc: Mr. Peter Menser – Township



January 3, 2019
Project No. 181579

Mr. Mark Kieselbach
Charter Township of Meridian
5151 Marsh Road
Okemos, MI 48864

Re: Review of Voice Environmental Group, LLC Response Letter
Wetland Use Permit (WUP) #18-03 Application
Newton Pointe, LLC
Newton Park MUPUD

Dear Mr. Kieselbach:

FTCH has reviewed a letter and associated site and drainage plans and calculations from Voice Environmental Group, LLC (Voice), dated December 12, 2018. This information was submitted to the Township of Meridian (Township) in response to FTCH's October 24, 2018, *Wetland Use Permit #18-03 Application Review*.

In our prior review, we concluded that insufficient information was submitted in the WUP application to ensure that irreparable harm would not result to site wetlands from proposed stormwater discharge to the wetlands. This harm could result from:

- Altering wetland hydrology to the extent that the wetlands become ponds, instead of wetlands.
- Erosion from water discharging down the slopes between the numerous forebays to the wetlands, resulting in deposition of soil within the wetlands.
- Utilizing the wetlands for water quality treatment and not adequately addressing water quality treatment in the sediment forebays prior to discharging into the wetlands.

FTCH recommended Newton Pointe, LLC (the Applicant) provide additional information to ensure the above harm would not result from the proposed project. This information may include design details pertaining to the forebays, storm pipes and outlet structure, and water budgets for site wetlands that reflect both before and after site development conditions. In response to this request, Voice submitted:

- An existing Drainage Area Map
- A proposed Drainage Area Map
- An updated MUPUD site plan, including the proposed stormwater management plan and typical details for stormwater features (i.e. level spreader, preformed scour hole, and rock barrier overflow)
- A proposed water budget with an updated "Detention Requirement and Discharge Allowance for Small Sites" calculation spreadsheet for the project.

Voice noted that final engineering design details for stormwater forebays, the storm pipe between Wetlands A and B, and the outlet structure would not be prepared until the Township Land Use Committee approves the proposed site plan. The Applicant wishes to avoid engineering the site twice and noted the Township may request changes to the site plan that impact the above noted stormwater control structures.

Voice confirmed the following design details that address FTCH's wetland impact concerns:

- Twelve stormwater forebays will be constructed in upland at each stormwater outlet. The forebays will be designed after the Township approves the site plan to provide sufficient capacity for 100 percent of the first flush volume of stormwater. Some of the forebays will be constructed within the 40-foot wetland buffer near the wetland boundary and some would be constructed outside it.

- A 12-inch diameter wetland equalizer culvert will be installed between Wetlands A and B to ensure stormwater flow from Wetland B to Wetland A and to avoid excessive ponding in Wetland B that could be detrimental to the forested wetland plant community. It is FTCH's opinion that a 12-inch diameter pipe is too small and will be prone to clogging. As a result, water could become trapped within Wetland B at a depth and duration in excess of the existing conditions, resulting in subsequent tree mortality in the forested wetland. An 18-inch minimum diameter pipe would be more appropriate; it is the pipe size recommended by the Michigan Department of Environmental Quality for wetland equalizer pipes.
- The proposed elevation of the wetland equalization pipe is 870 feet. Based upon the Existing Drainage Area Map, the overall approximate elevation of the wetland boundary in Wetlands A and B is between 870.5 and 871 feet. The wetland boundary elevation at the east end of the equalizer pipe (in Wetland B) is approximately 870.75 feet. Setting the equalization pipe at 870 feet would ensure drawdown of stormwater in Wetland B to ensure wetland hydrology is maintained at existing depths and duration of inundation. Refined engineering drawings are needed to indicate the installation of the equalization pipe at this elevation.
- The updated water budget indicated the water level in the wetlands after a 100-year storm would increase 0.27 foot (approximately 3 inches). Voice did not indicate the anticipated drawdown time within the wetlands.

Based upon the above information, FTCH recommends the Township issue a WUP for the proposed project with the following conditions:

1. The Applicant must submit the final engineering design for stormwater forebays, the storm pipe between Wetlands A and B, and the outlet structure to the Township for Township approval prior to Site development to ensure these features are engineered appropriately to ensure no harm to Site wetlands (i.e. maintenance of appropriate wetland hydrology and stormwater management).
2. Due to increased runoff into the wetlands, as a result of the proposed impervious surfaces and increased drainage area to the wetlands, we recommend that the stormwater outlet be sized for a discharge rate that will dewater the 100-year storm event within 24 hours, with the understanding that the acceptable discharge rate must meet Meridian Township engineering standards and not cause harmful interference to the downstream receiving waters.
3. Stormwater forebays must be constructed outside the 40-foot wetland buffer to the greatest extent possible and must not extend into the wetlands.
4. A minimum 18-inch diameter wetland equalization storm pipe must be installed between Wetlands A and B, not a 12-inch diameter pipe. The pipe should be installed at an elevation of 870 feet.

We appreciate the opportunity to assist in the review of this file. If you have any questions or require additional information, please contact me at 616.464.3738 or ehtripp@ftch.com.

Sincerely,

FISHBECK, THOMPSON, CARR & HUBER, INC.



Elise Hansen Tripp, PWS

pmb

By email

cc: Mr. Peter Menser – Township



To: Environmental Commission

From: Peter Menser, Principal Planner
Justin Quagliata, Assistant Planner

Date: January 4, 2019

Re: Wetland Use Permit #18-04

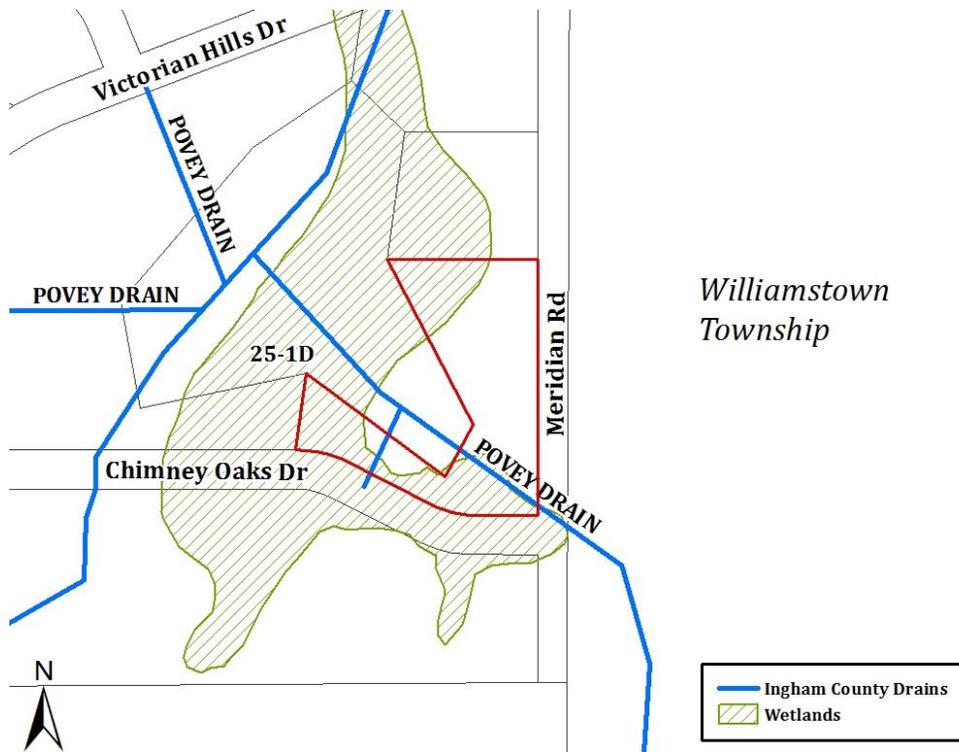
Sierra Homes of Michigan has requested a wetland use permit to install a culvert within the Chimney Oaks Branch of the Ingham County Povey Drain located at 60 Chimney Oaks Drive. The approximate 2.89 acre subject site is zoned RR (Rural Residential) and is located on the north side of Chimney Oaks Drive, west of Meridian Road.

The proposed elliptical corrugated metal culvert would total 40 linear feet in length (57 inch x 38 inch diameter) and would allow for the construction of an asphalt driveway across the Povey County Drain to access a proposed single family house. The Township environmental consultant delineated the project area on October 17, 2018 to determine the boundary, regulatory status, and size of the wetland. The consultant's delineation report stated a channel with steep banks is present at the proposed drain crossing location. The channel extends from an Ingham County stormwater detention basin west of the site and runs through the southeast end of the subject site. The stormwater detention basin and associated drainageway is part of Township Wetland #25-1D, which is a 12.17-acre wetland regulated by both the State of Michigan and Meridian Township. Both the detention basin and the channel crossing the site are part of the Chimney Oaks Branch of the Ingham County Povey Drain. The Township environmental consultant stated emergent wetland is present within the channel at the location of the proposed drain crossing.

The submitted application materials indicate installation of the proposed culvert would impact approximately 0.006 acre (240 square feet) of regulated wetland. 45 cubic yards of fill is proposed to facilitate installation of the culvert with approximately five cubic yards of riprap on each end of the culvert. The Michigan Department of Environmental Quality (MDEQ) granted approval of the culvert installation project and issued a permit on December 14, 2018.

The Wetland Protection Ordinance requires wetland mitigation in order to satisfy the Township requirement of no net loss of wetlands. Wetland must be mitigated at a ratio of 1.5 to 1. As 240 square feet of wetland would be impacted by the proposed culvert installation, 360 square feet of on-site mitigation is required. The applicant is proposing a 360 square foot mitigation wetland adjacent to an existing pond along the west property line. The Township's environmental consultant has recommended the proposed mitigation wetland be monitored for a period of five years, starting in the first full growing season after construction.

WETLAND MAP



In accordance with Section 22-155 of the Code of Ordinances, for wetland use permit applications submitted in conjunction with activities that do not require approval by the Planning Commission and/or Township Board, the Director of Community Planning and Development has the authority to approve, approve with conditions, or deny the application for a wetland use permit. As construction of a driveway for a single family house does not require approval from the Planning Commission or Township Board, this request will be decided by the Director of Community Planning and Development.

The Township's environmental consultant has reviewed the request and has recommended approval with conditions. Details of the wetland use permit review and suggested conditions of approval are included in the attached report.

Environmental Commission Options

The Environmental Commission may recommend approval, approval with conditions, or denial of the proposed wetland use permit. A motion to recommend approval in accordance with the conditions proposed by Township's wetland consultant is provided.

- **MOTION to recommend approval of Wetland Use Permit #18-04 to install a culvert within the Povey Drain subject to the conditions proposed by the Township's wetland consultant in the report dated January 4, 2019.**

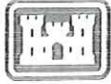
Wetland Use Permit #18-04 (Sierra Homes)
Environmental Commission (January 9, 2019)
Page 3

Attachments

1. Wetland use permit joint application, dated November 5, 2018 and received by the Township on December 6, 2018.
2. Wetland use permit and mitigation plan, dated January 4, 2019 and received by the Township on January 4, 2019.
3. Michigan Department of Environmental Quality permit, dated December 14, 2018 and received by the Township on December 17, 2018.
4. Ingham County Drain Commissioner permit, dated October 8, 2018 and received by the Township on November 16, 2018.
5. Final wetland use permit report prepared by the Township environmental consultant dated January 4, 2019 and received by the Township on January 4, 2019.

G:\Community Planning & Development\Planning\WETLAND USE PERMITS (WUP)\2018\WUP 18-04 (Sierra Homes)\WUP 18-04.env1.docx





Joint Permit Application

For Work in Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams,
 High Risk Erosion Areas and Critical Dune Areas
www.mi.gov/jointpermit

<p>What is the purpose of the Joint Permit Application?</p>	<p>This Joint Permit Application was developed to facilitate the state and federal permit application process administered by the Michigan Department of Environmental Quality (DEQ) and the U.S. Army Corps of Engineers (USACE).</p> <p>The Joint Permit Application is a multi-purpose application used to describe and quantify proposed activities regulated by the DEQ and/or the USACE. This application is for those activities regulated by the following Parts of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended by the State of Michigan.</p> <ul style="list-style-type: none"> • Part 301, Inland Lakes and Streams • Part 325, Great Lakes Submerged Lands • Part 303, Wetlands Protection • Floodplain Regulatory Authority found in Part 31, Water Resources Protection • Part 315, Dam Safety • Part 323, Shorelands Protection and Management (High Risk Erosion Areas) • Part 353, Sand Dunes Protection and Management (Critical Dune Areas) <p>The regulated activities are summarized in Appendix D. The statutes and rules are available at www.mi.gov/jointpermit.</p> <p>This application is also for those activities regulated by the USACE within the waters of the United States under Section 10, Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404, Clean Water Act of 1977 (33 U.S.C. 1344).</p> <p><u>Preapplication Meeting</u>: This is an optional service available for activities proposed in inland lakes and streams (Part 301), wetlands (Part 303), and critical dune areas (Part 353). A preapplication meeting can answer many questions regarding whether or not a permit is required and the review process. The application form and fee schedule are available at www.mi.gov/jointpermit.</p>
<p>How do I complete the Joint Permit Application?</p> <p><i>An accurate and complete application package is required for processing; inaccurate or missing information will delay processing.</i></p>	<p>There are three parts to a complete Joint Permit Application package:</p> <ol style="list-style-type: none"> 1. Application Form 2. Maps and Drawings 3. Fee <p>Follow the checklists on the following page for each part of the application package.</p> <p>When you have questions or need assistance in completing the application package refer to the following information on our website www.mi.gov/jointpermit or you may contact the appropriate district office, page iii, or through the website link "Who to Contact."</p> <ul style="list-style-type: none"> • Joint Permit Application Training Manual • EZ Guides for small projects • Acronyms in Appendix A • Sample drawings in Appendix B • Minor Project and General Permit Categories in Appendix C • Fee schedule in Appendix C • State and Federal Authority and Penalties in Appendix D • Glossary in Appendix E

Application Checklist

The following website will provide township, range, section, latitude and longitude information:

www.mcgi.state.mi.us/wetlands/

www.geocoder.us

In each section check all boxes that apply to your project.

Show and label property lines on the site plan.

Label existing and proposed contours, dimensions, excavation and/or fill on the site plans and cross sections.

Provide tables for multiple impact areas.

1. Application Form

- Complete Sections 1 through 9 of the application form.
- An authorization letter from the property owner if someone other than the property owner is signing the application.
- Complete those Sections 10 through 20 that apply to your project. Follow the instructions at the beginning of each section. For additional information, the instructions for each sample drawing in Appendix B indicate the application sections you will most likely need to complete. Complete the application form as much as possible before adding attachments. Label each attachment with the applicant's name.
- Stake or flag the area for site inspection including the property corners, proposed road or driveway centerlines, and areas of proposed impacts. The site must be flagged when the application is submitted.

2. Maps and Drawings

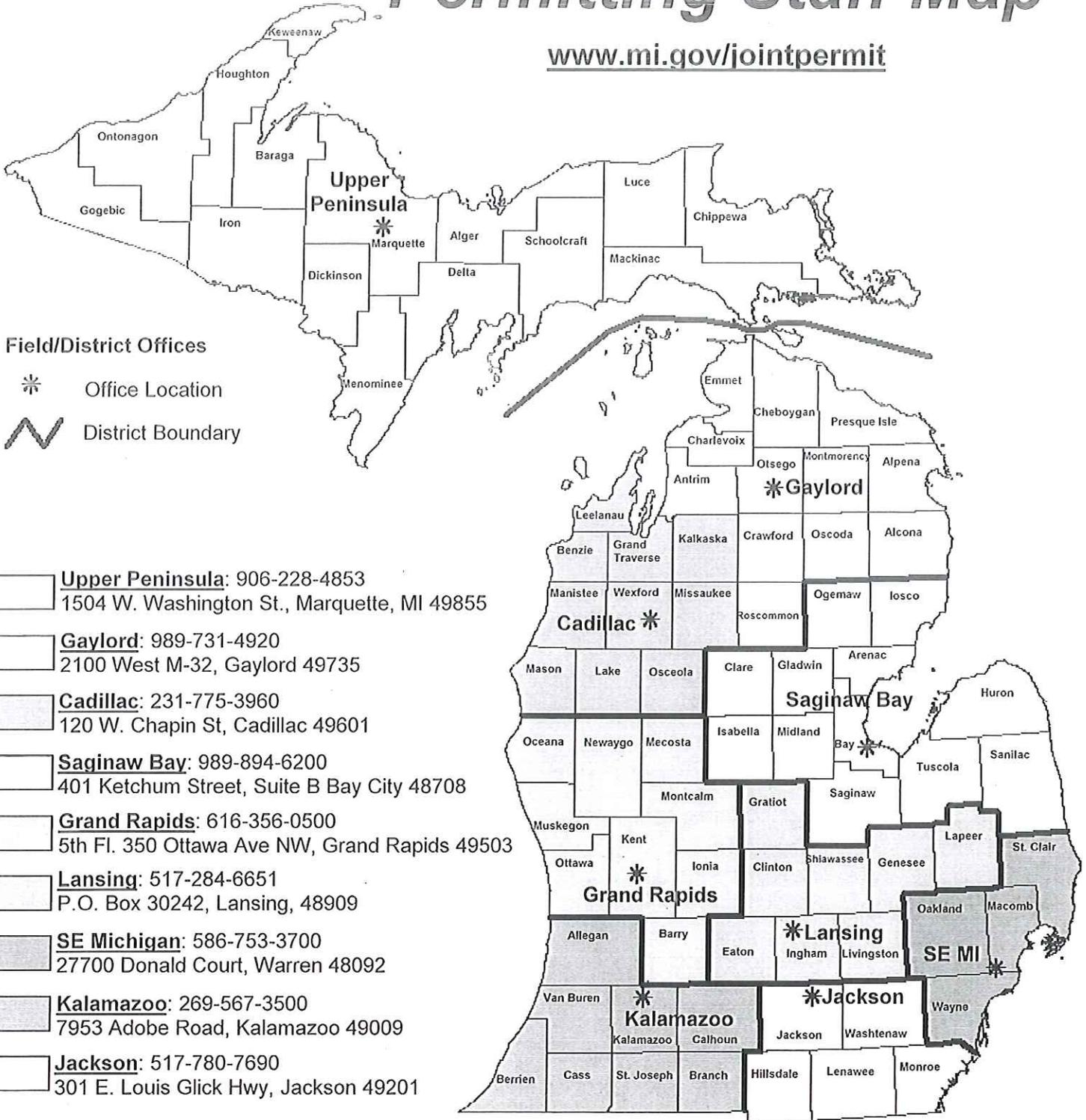
- All maps and drawings must be black and white, legible, reproducible, and sized to 8.5" x 11". Aerial photographs do not substitute for site plans. If larger drawings or blueprints are required to show adequate detail for review, you may also submit one full size copy.
- Vicinity Map: A map to the proposed project location that includes ALL streets, roads, intersections, highways, or cross-roads to the project. Do not assume review staff knows your project location.
- Project Site Plan: Overhead drawings to scale or with dimensions, length and width, of the proposed project are required. Show and label property lines on the site plan.
- Cross-section drawings are required. Provide the cross-sections and profile views to scale or with dimensions, length, width, and height.
- Elevation data must include a description of the reference point or benchmark used and its corresponding elevation. For projects on the Great Lakes or Section 10 Waters, elevations must be provided in IGLD 85. For observed Great Lake water elevations in IGLD, visit the USACE website under "water levels". If elevations are from still water, provide the observation date and water elevation. On inland sites, elevations can use NGVD 29, NAVD 88, a local datum or an assumed bench mark.
- Provide descriptive photographs of the proposed work site showing vegetation if wetlands are involved or the shoreline for shore protection projects. All photographs must be labeled with your name and the date of the photograph, indicate what they show, and be referenced to the site plan. Proposed activities or structure(s) may be indicated directly on the photographs using indelible markers or ink pens. Provide aerial photographs 1:400 or larger for major projects. (WETLANDS REPORT)

3. Fee

- Payment to the State of Michigan. Fees typically range from \$50 to \$4,000 depending on the type of project. Refer to Appendix C of the application and/or visit www.mi.gov/jointpermit to determine the appropriate fee for your project and for directions to pay by credit card or electronic fund transfer payment.
- Applications should be sent directly to the district offices. Please refer to page iii, or refer to www.mi.gov/jointpermit "who to contact" for address and/or phone number. Applications that cross county boundaries should be sent to the district containing the primary work effort.
- Applications for dams regulated under Part 315 or from public agencies eligible to receive federal and/or state transportation funding for a project involving public roadways, non-motorized paths, airports, or related facilities should be mailed to: DEQ, WRD, P.O. BOX 30458, LANSING, MI 48909-7958.

Land/Water Interface Permitting Staff Map

www.mi.gov/jointpermit





APPENDICES

Appendix A:	Acronyms and Abbreviations	A-1
Appendix B:	Sample Drawings	
	1. General Instructions for all Drawings and Sample Site Location Maps.....	B-1
	2. Inland Lake Shore Protection.....	B-2
	3. Bulkhead/Seawall.....	B-2
	4. Pond Construction.....	B-3
	5. Floodplain Fill.....	B-3
	6. Wetland Boardwalk.....	B-4
	7. Dredging.....	B-4
	8. Driveway Across Wetland.....	B-5
	9. Residential Wetland Fill and Boardwalk Construction.....	B-5
	10. Docks - Piers - Mooring Piles.....	B-6
	11. Beach Sanding.....	B-6
	12. Pipe/Utility Crossings in a Trench.....	B-7
	13. Pipe/Utility Crossings using Directional Bore.....	B-7
	14. Bridge or Culvert (4 drawings).....	B-8
	15. Dam Construction.....	B-12
	16. Water Intake.....	B-12
	17. Great Lakes Shore Protection.....	B-13
	18. Maintenance Dredge Channel.....	B-13
	19. Proposed Residence in a High Risk Erosion Area.....	B-14
	20. Proposed Residence in a Critical Dune Area.....	B-14
	21. Marina Site Plan.....	B-15
	22. Outlet Pipe.....	B-16
	23. Temporary Logging Road Crossing.....	B-16
Appendix C:	Fees and Categories for Minor Project and General Permit for Minor Activities.....	C-1
Appendix D:	State Authority, Federal Authority, Privacy Act Statement, and State and Federal Penalties.....	D-1
Appendix E:	Glossary (listed words are italicized in the application package).....	E-1

Application status can be viewed on the Water Resources Division (WRD) website at www.deq.state.mi.us/CIWPIS. During the application period, if any information is missing from the application or if any clarification is needed regarding materials provided, the application is incomplete and staff will request the information from the applicant/agent by letter, email, fax or phone call. If a complete response is not provided within 30 days, the application will be closed. Some regulatory parts allow extensions if requested within the 30 day time frame. Once the WRD has received the information necessary for review of the project, including a thoroughly completed application, consistent drawings that have adequate detail for review and the full application fee, the file will be reviewed for final processing. A mailed postcard or a public notice will provide the file number and the telephone number of the office where the application is being processed. The review time to determine if an application is complete for processing ranges from 15 to 30 days. Technical processing times, after the application is administratively complete, may range from 60 to 90 days. Processing times will be longer if a public hearing is held. Staff from your local District/Field Office may visit the project site and may request additional information prior to a decision on the application. Application fees are not refundable or transferable.

If a federal permit will also be required, a copy of the permit application will be sent to the Detroit District Office, USACE, for processing at the federal level. Additional copies of this application form can be downloaded from the WRD website at www.mi.gov/jointpermit or can be photocopied from the original. If you have any questions about the permitting process or if you need to modify your application, you can contact the WRD by phone or fax at the addresses on the previous page, or email at DEQ-WRD-jointpermit@michigan.gov.



AGENCY USE	Previous USACE File Number	Date Received	DEQ File Number
	USACE File Number		Fee received \$

- Validate that all parts of this checklist are submitted with the application package. Fill out application and additional pages as needed.
- All items in Sections 1 through 9 are completed.
- Project-specific Sections 10 through 20 are completed.
- Dimensions, volumes, and calculations are provided for all impact areas.
- All information contained in the headings for the appropriate Sections (1-20) are addressed, and identified attachments (⇒) are included.
- Map, site plan(s), cross sections; one set must be black and white on 8 ½ by 11 inch paper; photographs.
- Application fee is attached.

1 Project Location Information For Latitude, Longitude, and TRS info anywhere in Michigan see www.mcqi.state.mi.us/wetlands/

Project Address (road, if no street address) <i>60 Chimney Oaks Drive</i>	Zip Code <i>48864</i>	Municipality (Township/Village/City) <i>Meridian/Okemos</i>	County <i>Ingham</i>
Property Tax Identification Number(s) <i>33-02-02-25-478-004</i>	Latitude <i>42.698507 N</i>	Township/Range/Section (TRS) T <i>4N</i> N or S; R <i>1W</i> E or W; Sec <i>25</i>	
Subdivision/Plat and Lot Number <i>Chimney Oaks - Lot 30</i>	Longitude <i>- 84 363848 W</i>	OR Private Claim # _____	

2 Applicant and Agent Information

Owner/Applicant (individual or corporate name) <i>Sierra Homes of Michigan, Inc.</i>	Agent/Contractor (firm name and contact person) <i>KEBS Inc. - Greg Petru</i>
Mailing Address <i>10476 West Walker Road</i>	Mailing Address <i>2116 Haslett Road</i>
City <i>Fowler</i> State <i>MI</i> Zip Code <i>48835</i>	City <i>Haslett</i> State <i>MI</i> Zip Code <i>48840</i>
Contact Phone Number <i>517-204-3641</i> Fax <i>989-593-4154</i>	Contact Phone Number <i>517-339-1014</i> Fax <i>517-339-8047</i>
Email <i>christhelen@yahoo.com</i>	E-mail <i>gpetru@kebs.com</i>
<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Is the applicant the sole owner of all property on which this project is to be constructed and all property involved or impacted by this project? ⇒ If no, attach letter(s) of authorization from all property owners including the owner of the disposal site.	
Property Owner's Name (If different from applicant) <i>Nancy Houthoofd</i>	Mailing Address <i>60 Chimney Oaks</i>
Contact Phone Number <i>517-930-1359</i>	City <i>Okemos</i> State <i>MI</i> Zip Code <i>48864</i>

3 Project Description

Project Name <i>Lot 30, Chimney Oaks</i>	Preapplication File Number <i>- - -P</i>
Name of Water body <i>Povey Drain</i>	Date project staked/flagged

The proposed project is on, within, or involves (check all that apply)	Project Use
<input type="checkbox"/> an inland lake (5 acres or more)	<input checked="" type="checkbox"/> private
<input type="checkbox"/> a pond (less than 5 acres)	<input type="checkbox"/> commercial
<input checked="" type="checkbox"/> a stream, river, ditch or drain	<input type="checkbox"/> public/government
<input checked="" type="checkbox"/> a legally established County Drain	<input type="checkbox"/> project is receiving federal/state transportation funds
Date Drain was established	<input type="checkbox"/> Wetland Restoration
<input type="checkbox"/> a channel/canal	<input type="checkbox"/> other
<input checked="" type="checkbox"/> 500 feet of an existing water body	
<input type="checkbox"/> a Great Lake or Section 10 Waters	
<input checked="" type="checkbox"/> a wetland	
<input type="checkbox"/> a 100-year floodplain	
<input type="checkbox"/> a dam	
<input type="checkbox"/> a designated high risk erosion area	
<input type="checkbox"/> a designated critical dune area	
<input type="checkbox"/> a designated environmental area	

Indicate the type of permit being applied for: General Permit Minor Project Individual (All other projects.) ⇒ See Appendix C.

Written Summary of All Proposed Activities *A new driveway is proposed across the Povey Drain, which is an Ingham County drain. The driveway has been placed to cross the drain at the point of least impact. There is also a small wetland that will be impacted by the construction of the driveway, but impact is very minimal. There is a 36" culvert that is proposed to be placed underneath the driveway. The 36" culvert is larger than the existing 30" culvert that exists underneath Meridian Road.*

Construction Sequence and Methods *Soil Erosion Control methods will be put in place prior to construction including silt fence, rip rap and other measures to minimize erosion to the drain and the existing pond. Culvert will be placed within the center of the drain area and fill will be placed to construct the driveway. All slopes from the driveway will be stabilized with large rip rap and/or mulch blankets*



4 Project Purpose, Use and Alternatives *Attach additional sheets as necessary.*

Describe the purpose of the project and its intended use; include any new development or expansion of an existing land use.
The purpose of the project is to place a driveway off of Chimney Oaks Drive to access a home location on Lot 30. The only way to provide a driveway from Chimney Oaks Drive is to cross the existing drain.

Describe the alternatives considered to avoid or minimize resource impacts. Include factors such as, but to limited to, alternative locations, project layout and design, and construction technologies. For utility crossings include alternative routes and construction methods.
The first alternative considered was placement of the home. It was attempted to be placed on the South side of the drain, but there was not enough room within setbacks to allow this. The second alternative considered was location of the crossing. After looking at the driveway locations, this spot was chosen to cause the least amount of impact. The third alternative was to consider the size of the culvert crossing. After review of the project with the Drain Commission (Ingham), it was determined a 36" culvert would be used.

5 Locating Your Project Site *Attach a legible black and white map with a North arrow.*

Names of roads of closest intersection *Meridian Road and Chimney Oaks Drive*

Directions from main intersection to the project site, with distances from the best and nearest visible landmark and water body *NW corner of the intersection*

Description of buildings on the site (*color; 1 or 2 story, other*)
n/a

Description of adjacent landmarks or buildings (*address; color; etc*)
n/a

How can your site be identified if there is no visible address? *at the NW corner of the intersection*

6 Easements and Other Permits

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

⇒ If yes, attach a copy. Provide copies of court orders and legal lake levels if applicable.

List all other federal, interstate, state, or local agency authorizations including required assurances for Critical Dune Area projects.

Agency	Type of Approval	Number	Date Applied	Date approved /denied	Reason for denial
<i>Meridian Twp</i>	<i>Wetland</i>		<i>11-5-18</i>		
<i>Ingham Drain (ICDC)</i>	<i>Drain Crossing</i>	<i>18-088</i>	<i>9-1-18</i>	<i>10-8-18</i>	

7 Compliance

If a permit is issued, when will the activity begin? (M/D/Y) *12/1/2018*

Proposed completion date (M/D/Y) *6/1/2018*

No Yes Has any construction activity commenced or been completed in a regulated area?

⇒ If Yes, identify the portion(s) underway or completed on drawings or attach project specifications and give completion date(s).

No Yes Were the regulated activities conducted under a DEQ and/or USACE permit?

⇒ If Yes, list the permit numbers

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

⇒ If Yes, attach explanation.

8 Adjoining Property Owners *Provide current mailing addresses. Attach additional sheets/labels for long lists.*

<input type="checkbox"/> Established Lake Board <input type="checkbox"/> Lake Association	Contact Person	Mailing Address	City	State and Zip Code
--	----------------	-----------------	------	--------------------

List all adjoining property owners.

If you own the adjoining lot, provide the requested information for the first adjoining parcel that is not owned by you.

Property Owner's Name	Mailing Address	City	State and Zip Code
<i>Ingham County Drain Commission</i>	<i>707 Buhl Ave.</i>	<i>Mason</i>	<i>MI 48854</i>
<i>Mark and Gina Rynties</i>	<i>10257 S. Bay Drive</i>	<i>Laingsburg</i>	<i>MI 48848</i>
<i>Thomas & Courtney Rodziewicz</i>	<i>55 Victorian Hills Drive</i>	<i>Okemos</i>	<i>48864</i>



5 Applicant's Certification *Read carefully before signing.*

I am applying for a permit(s) to authorize the activities described herein. I certify that I am familiar with the information contained in this application; that it is true and accurate; and, to the best of my knowledge, that it is in compliance with the State Coastal Zone Management Program. I understand that there are penalties for submitting false information and that any permit issued pursuant to this application may be revoked if information on this application is untrue. I certify that I have the authority to undertake the activities proposed in this application. By signing this application, I agree to allow representatives of the DEQ, USACE, and/or their agents or contractors to enter upon said property in order to inspect the proposed activity site before and during construction and after the completion of the project. I understand that I must obtain all other necessary local, county, state, or federal permits and that the granting of other permits by local, county, state, or federal agencies does not release me from the requirements of obtaining the permit requested herein before commencing the activity. I understand that the payment of the application fee does not guarantee the issuance of a permit.

<input type="checkbox"/> Property Owner <input checked="" type="checkbox"/> Agent/Contractor <input type="checkbox"/> Corp. or Public Agency / Title	Printed Name <i>Chris Thelen</i>	Signature 	Date <i>11-5-18</i>
--	-------------------------------------	---	------------------------



10 Projects Impacting Inland Lakes, Streams, Great Lakes, Wetlands or Floodplains

- Complete only those sections A through M applicable to your project.
- If your project impacts wetlands also complete Section 12. If your project impacts regulated floodplains also complete Section 13.
- To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27. Example: (25 ft long x 10 ft wide x 2 feet deep) / 27 = 18.5 cubic yards
- Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness.
 - ⇒ Provide a black and white overall site plan, with cross-section and profile drawings. Show existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures, land change activities and soil erosion and sedimentation control measures. Review Appendix B and EZ Guides for aid in providing complete site-specific drawings
 - ⇒ Provide tables for multiple impact areas or multiple activities such as multiple fill areas or multiple culverts. Include your calculations.

Water Level Elevation

On inland waters NGVD 29 NAVD 88 other Observed water elevation (ft) *854.4* date of observation (M/D/Y) *9/14/18*
 On a Great Lake IGLD 85 surveyed converted from observed still water elevation.

A. PROJECTS REQUIRING FILL (See All Sample Drawings)

- ⇒ Attach a site plan and cross-section views to scale showing maximum and average fill dimensions with calculations.
- ⇒ For multiple impact areas on a site provide a table with location, dimensions and volumes for each fill area.

Purpose bioengineered shore protection boat ramp boat well bridge or culvert crib dock
 riprap seawall swim area other *culvert and driveway*

Dimensions of fill (ft) Length <i>40</i> Width <i>15</i> Maximum Depth <i>5</i>	Total volume (cubic yards) <i>111</i>	Volume below OHWM (cubic yards) <i>22</i>
Maximum water depth in fill area (ft) <i>4</i>	Area filled (sq ft) <i>685</i>	Will filter fabric be used under proposed fill? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (If Yes, type) <i>geotextile</i>

Fill will extend _____ feet into the water from the shoreline and upland _____ feet out of the water.

Type of clean fill peastone % sand *80%* gravel *20%* other

Source of clean fill commercial on-site ⇒ If on-site, show location on site plan.
 other ⇒ If other, attach description of location.

B. PROJECTS REQUIRING DREDGING OR EXCAVATION (See Sample Drawings)

- Refer to www.mi.gov/jointpermit for spoils disposal and authorization requirements.
- ⇒ Attach a site plan and cross-section views to scale showing maximum and average dredge or excavation dimensions with calculations.
- ⇒ For multiple impact areas on a site provide a table with location, dimensions and volumes for each dredge/excavation area.

Purpose boat ramp boat well bridge or culvert maintenance dredge
 navigation pond/basin other

Dimensions (ft) Length _____ Width _____ Maximum Depth _____	Total volume (cu yds)	Volume below OHWM (cu yds)
---	-----------------------	----------------------------

Has this same area been previously dredged? No Yes If Yes, provide date and permit number:

Will the previously dredged area be enlarged? No Yes If Yes, when and how much?

Is long-term maintenance dredging planned? No Yes If Yes, how often?

Dredge or Excavation Method Hydraulic Mechanical other

Spoils Disposal
 Dredged or excavated spoils will be placed on-site landfill USACE confined disposal facility other upland off-site
 For disposal, provide a ⇒ Detailed spoils disposal area location map and site plan with property lines.
 ⇒ Letter of authorization from property owner of spoils disposal site, if disposed off-site.

For volumes less than 5,000 cu yards, has proposed dredge material been tested for contaminants within the past 10 years?
 No Yes ⇒ If Yes, provide test results with a map of sampling locations.

C. PROJECTS REQUIRING RIPRAP (See Sample Drawings 2, 3, 8, 12, 14, 22, and 23)

Riprap water ward of the ordinary high water mark: dimensions (ft) length _____ width _____ depth _____	Volume(cu yd)
---	---------------

Riprap landward of the ordinary high water mark: dimensions (ft) length _____ width _____ depth _____	Volume(cu yd)
---	---------------

Type and size of riprap (inches)
 field stone angular rock other Will filter fabric or pea stone be used under proposed riprap?
 No Yes, Type _____



<input type="checkbox"/> D. SHORE PROTECTION PROJECTS (See EZ Guides and Sample Drawings 2, 3, and 17. Complete Sections 10A, B, and/or C.) ⇒ For bioengineering projects include the list of native plants/seeds, if available.			
Type and length (ft)	<input type="checkbox"/> bioengineering (ft)	<input type="checkbox"/> revetment (ft)	<input type="checkbox"/> riprap (ft) <input type="checkbox"/> seawall/bulkhead (ft)
Structure is <input type="checkbox"/> new <input type="checkbox"/> repair <input type="checkbox"/> replacement of an existing structure		Will the existing structure be removed? <input type="checkbox"/> No <input type="checkbox"/> Yes	
Proposed Toe Stone (linear feet)		Distance of project from adjacent property lines (ft)	
Distance of project from an obvious fixed structure (example - 50 ft from SW corner of house)			
For bioengineering projects indicate the structure type <input type="checkbox"/> brush bundles <input type="checkbox"/> coir log <input type="checkbox"/> live stakes <input type="checkbox"/> tree revetment <input type="checkbox"/> other			
<input type="checkbox"/> E. DOCK - PIER - MOORING PILINGS (See Sample Drawing 10) ⇒ Attach a copy of the property legal description, mortgage survey, or a property boundary survey report.			
Dock Type <input type="checkbox"/> open pile <input type="checkbox"/> filled <input type="checkbox"/> crib <input type="checkbox"/> floating <input type="checkbox"/> cantilevered <input type="checkbox"/> spring piles <input type="checkbox"/> piling clusters <input type="checkbox"/> other			
Is the structure within the applicant's riparian area interest area? <input type="checkbox"/> No <input type="checkbox"/> Yes ⇒ Show parcel property lines on the site plan.			
Proposed structure dimensions (ft) length width		Use <input type="checkbox"/> private <input type="checkbox"/> public <input type="checkbox"/> commercial	
Dimensions of nearest adjacent structures (ft) length width		Distance of dock from adjacent property lines (ft)	
<input type="checkbox"/> F. BOAT WELL (See EZ Guide. Complete Sections 10A and 10B)			
Dimensions (ft) length width depth		Number of boats	
Type of sidewall stabilization <input type="checkbox"/> concrete <input type="checkbox"/> riprap <input type="checkbox"/> steel <input type="checkbox"/> vinyl <input type="checkbox"/> wood <input type="checkbox"/> other			
Volume of backfill behind sidewall stabilization (cu yd)		Distance of boat well from adjacent property lines (ft)	
<input type="checkbox"/> G. BOAT RAMP (See EZ Guide. Complete sections 10A, 10B, and 10C for mattress and pavement fill, dredge, and riprap)			
Type <input type="checkbox"/> new <input type="checkbox"/> existing <input type="checkbox"/> maintenance/improvement		Use <input type="checkbox"/> private <input type="checkbox"/> public <input type="checkbox"/> commercial	
Existing overall boat ramp dimensions (ft) length width depth		Type of construction material <input type="checkbox"/> concrete <input type="checkbox"/> wood <input type="checkbox"/> stone <input type="checkbox"/> other	
Proposed overall ramp dimensions (ft) length width depth		Proposed ramp dimensions (ft) below ordinary high water mark length width depth	
Number of proposed skid piers	Proposed skid pier dimensions (ft) length width		Distance of ramp from adjacent property lines (ft)
<input type="checkbox"/> H. BOAT HOIST - ROOFS (See EZ Guide)			
Type <input type="checkbox"/> cradle <input type="checkbox"/> side lifter <input type="checkbox"/> other		Located on <input type="checkbox"/> seawall <input type="checkbox"/> dock <input type="checkbox"/> bottomlands	
Hoist dimensions, including catwalks (ft) length width			
Area occupied, including cat walks (sq ft)		Distance of hoist from adjacent property lines (ft)	
Permanent Roof <input type="checkbox"/> No <input type="checkbox"/> Yes ⇒ If Yes, how is the roof supported?		Maximum Roof Dimensions (ft): length width height	
<input type="checkbox"/> I. BOARDWALKS and DECKS in WETLANDS or FLOODPLAINS (See Sample Drawings 5 and 6. Complete Sections 12 and/or 13) ⇒ Provide a table for multiple boardwalks and decks proposed in one project; include locations and dimensions.			
Wetlands		Floodplains	
Boardwalk <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	Deck <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	Boardwalk <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	Deck <input type="checkbox"/> on pilings <input type="checkbox"/> on fill
Dimensions (ft) length width	Dimensions (ft) length width	Dimensions (ft) length width	Dimensions (ft) length width
<input type="checkbox"/> J. INTAKE PIPES (See Sample Drawing 16) or OUTLET PIPES (See Sample Drawing 22)			
If outlet pipe, discharge is to <input type="checkbox"/> inland lake <input type="checkbox"/> stream, drain or river <input type="checkbox"/> overland flow <input type="checkbox"/> Great Lake <input type="checkbox"/> wetland <input type="checkbox"/> other			
Number of pipes	Pipe diameters and invert elevations	Does pipe discharge below the OHWM?	<input type="checkbox"/> No <input type="checkbox"/> Yes
		Is the water treated before discharge?	<input type="checkbox"/> No <input type="checkbox"/> Yes
Type <input type="checkbox"/> headwall <input type="checkbox"/> end section <input type="checkbox"/> other		Dimensions of headwall OR end section (ft) length width height	



K. MOORING and NAVIGATION BUOYS (See EZ Guide for Sample Drawing)

⇒ Provide a site plan showing the distances between each buoy and from the shore to each buoy, and depth (ft) of water at each location.
 ⇒ Provide cross-section drawing(s) showing anchoring system(s) and dimensions.

Purpose of buoy mooring navigation scientific structures swimming other

Number of buoys	Dimensions of buoys (ft)				Boat Lengths	Type of anchor system
	width	height	swing radius	chain length		

Buoy Location: Latitude . N Longitude -- W. ⇒ Provide a table for multiple buoys.

Do you own the property along the shoreline? No Yes ⇒ If No, attach an authorization letter from the property owner(s).

Do you own the bottomlands? No Yes ⇒ If No, attach an authorization letter from the property owner(s).

L. FENCES

⇒ Provide an overall site plan showing the proposed fencing through streams, wetlands or floodplains.
 ⇒ Provide a drawing of fence profile showing the design, dimension, post spacing, mesh, and distance from ground to bottom of fence.

Purpose of fence Airport Cervidae Livestock Residential Security Other

Total length (ft) of fence through streams	wetlands	floodplains	Fence height (ft)	Fence type and material
--	----------	-------------	-------------------	-------------------------

M. OTHER - e.g., structure removal, maintenance or repair, aerator, dry fire hydrant, gold prospecting, habitat structures, scientific measuring devices, soil borings, or survey activities.

Structure description, dimensions and volumes. Complete Sections 10A-C as applicable.

11 **Expansion of an Existing or Construction of a New Lake or Pond** (See Sample Drawings 4 and 15)

⇒ Complete Section 10J for outlets and Section 17 for water control structures.
 ⇒ Provide elevations, cross-sections and profiles of outlets, dams, dikes, water control structures and emergency spillways to nearest water bodies.

Which best describes your proposed water body use (check all that apply)
 mining recreation storm water retention basin wastewater basin wildlife other

Water source for lake/pond
 groundwater natural springs Inland Lake or Stream storm water runoff pump sewage other

Location of the lake/basin/pond floodplain wetland stream (inline) upland

Maximum dimensions (ft) length width depth	Maximum Area: <input type="checkbox"/> acres <input type="checkbox"/> sq ft
---	---

Has there been a hydrologic study performed on the site? No Yes ⇒ If Yes, provide a copy.

Has the DEQ conducted a wetland assessment for this parcel? No Yes ⇒ If Yes, provide a copy or WIP number:

Has a professional wetland delineation been conducted for this parcel? No Yes ⇒ If Yes, provide a copy with data sheets.

Spoils Disposal	Dredged or excavated spoils will be placed <input type="checkbox"/> on-site <input type="checkbox"/> landfill <input type="checkbox"/> USACE confined disposal facility <input type="checkbox"/> other upland off-site
	For disposal, provide a ⇒ Detailed spoils disposal area location map and site plan with property lines.
	⇒ Letter of authorization from property owner of spoils disposal site, if disposed off-site.



12 Activities That May Impact Wetlands (See Sample Drawings 8 & 9). Complete other Sections as applicable.

- Locate your site and wetland information with the DEQ Wetlands Map Viewer at www.mcai.state.mi.us/wetlands/
- For information on the DEQ's Wetland Identification Program (WIP) visit www.mi.gov/wetlands.
 - ⇒ Provide a detailed site plan with labeled property lines, upland and wetland areas, and dimensions and volumes of wetland impacts.
 - ⇒ Complete the wetland dredge and wetland fill dimension information below for each impacted wetland area.
 - ⇒ Attach tables for multiple impact areas or activities.
 - ⇒ Attach at least one cross-section for each wetland dredge and/or fill area; show wetland and upland boundaries on the cross-section.

Has the DEQ conducted a wetland assessment for this parcel?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	⇒ If Yes, provide a copy or WIP number:
Has a professional wetland delineation been conducted for this parcel?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	⇒ If Yes, provide a copy with data sheets
Is there a recorded DEQ easement on the property?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	⇒ If Yes, provide the easement number
Did the applicant purchase the property before October 1, 1980?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	⇒ If Yes, provide documentation.
Is any grading or mechanized land clearing proposed?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	⇒ If Yes, label the locations on the site plan.
Has any of the proposed grading or mechanized land clearing been completed?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	⇒ If Yes, label the locations on the site plan

Proposed Activity	<input type="checkbox"/> boardwalk or deck (Section 10I) <input type="checkbox"/> dewatering <input type="checkbox"/> fences (Section 10L) <input type="checkbox"/> septic system	<input checked="" type="checkbox"/> bridges and culverts (Section 14) <input type="checkbox"/> draining surface water <input checked="" type="checkbox"/> fill or dredge <input type="checkbox"/> stormwater discharge (Section 10J)	<input type="checkbox"/> designated environmental area <input checked="" type="checkbox"/> driveway / road <input type="checkbox"/> restoration <input type="checkbox"/> other
-------------------	--	---	---

FILL	Dimensions maximum length (ft) 40 maximum width (ft) 15	Area <input type="checkbox"/> acres <input checked="" type="checkbox"/> sq ft 685	Average depth (ft) 4	Volume (cu yd) 111 45
	<p style="color: red; font-size: small;">AT WETLAND = 40 x 3 = 120 40 x 3 = 120 = 240 SF UPDATED TO 240 SF.</p>			<p style="color: red; font-size: small;">-UPDATED TO 45 cu yd</p>
DREDGE	Dimensions maximum length (ft) maximum width (ft)	Area <input type="checkbox"/> acres <input type="checkbox"/> sq ft	Average depth (ft)	Volume (cu yd)

Spoils Disposal
 Dredged or excavated spoils will be placed on-site landfill USACE confined disposal facility other upland off-site
 For disposal, provide a ⇒ Detailed spoils disposal area location map and site plan with property lines.
 ⇒ Letter of authorization from property owner of spoils disposal site, if disposed off-site.

Septic System
 The proposed project will be serviced by:
 public sewer private septic system
 ⇒ Show system on plans.
 If a private septic system is proposed, has an application for a permit been made to the County Health Department? No Yes
 If Yes, has a permit been issued? No Yes ⇒ Provide a copy of the permit.

Describe the wetland impacts, the proposed use or development, and the alternatives considered:
The project proposes to place a driveway across an existing drain that has wetland delineated along the outer edges . A culvert has been proposed under the driveway. The impact to the wetland will be proposed fill to construct the driveway. There were alternatives considered for the placement of the driveway. The first alternative was to see if the driveway could be placed off of Meridian Road instead of Chimney Oaks. A driveway access was not allowed off of Meridian. The next alternative was to determine the best location to cross the existing ditch/wetland to get to the home site. The location shown was chosen because it crosses at the shortest span of wetland area.

Does the project impact more than 1/3 acre of wetland? No Yes
 ⇒ If Yes, submit a Mitigation Plan with the type and amount of mitigation proposed. For more information go to www.mi.gov/wetlands

Describe how impacts to waters of the United States will be avoided and minimized:
Impacts to the wetland areas will be minimized in a few ways. The location of the driveway was reviewed and placed in a location that crosses the wetland/drain area at it's shortest span. Measures will be used before and during construction to protect the drain and wetland from sediment and erosion. Once the culvert is installed, fill will be placed and all side slopes will be stabilized with rip rap.

Describe how the impact to waters of the United States will be compensated. OR Explain why compensatory mitigation should not be required for the proposed impacts.



Mitigation is not proposed due to the small amount of wetland that is being filled.

—MITIGATION PLANS PROVIDED FOR TOWNSHIP



14 Bridges and Culverts Including Foot and Cart Bridges. (See EZ Guides and Sample Drawings 5, 14A, 14B, 14C, 14D.)

- Complete other applicable Sections, including 10A-C.
- A hydraulic analysis or hydrologic analysis may be required to fully assess impacts. → Attach hydraulic calculations
- High Water Elevation - describe reference point and highest known water level above or below reference point and date of observation
→ Attach additional sheets for multiple bridges and/or culverts.
→ Provide detailed site-specific drawings of existing and proposed Plan and Elevation View at a scale adequate for detailed review.
→ Provide all information in the boxes below; do not write in a reference to plan sheets. Show reference datum used on plans.

Stream Information

The site has a high water elevation (ft) above or below the Reference Point of *854.4* Date observed *9/14/2018*

Reference datum used NGVD 29 NAVD 88 IGLD 85 (Great Lakes coastal areas) other

Average stream width (ft) at the ordinary high water mark (OHWM) outside the influence of any ponding or scour holes around the structure	Upstream	15
	Downstream	15

Cross-sectional area of primary channel (sq ft) *3.75* (See Sample Drawing 14C for more information)

The width of the stream where the water begins to overflow its banks. Bankfull width (ft) *25*

The invert of the stream 100-feet from structure (ft)	Upstream	854.00
	Downstream	853.80

Is the existing culvert perched? No Yes If Yes, provide a profile of the channel bottom at the high and low points for a distance of 200 feet upstream and downstream of the culvert.

Complete this form for each bridge / culvert location.

Existing

Proposed

Bridge

Number of bridge spans		
Bridge type (concrete box beam, concrete I-beam, timber, etc.)		
Bridge span (length perpendicular to stream) (ft)		
Bridge width (parallel to stream) (ft)		
Bottom of bridge beam (ft)	Upstream	
	Downstream	
Stream invert elevation at bridge (ft)	Upstream	
	Downstream	
Bridge rise from bottom of beam to streambed (ft)		

Culvert

Number of culverts		1
Culvert type (arch, bottomless, box, circular, elliptical, etc.)	<i>Pipe-Arch</i>	Circular
Culvert material (concrete, corrugated metal, plastic, etc.)		<i>CMP</i>
Culvert length (ft)		40
Culvert <input type="checkbox"/> width <input checked="" type="checkbox"/> diameter (ft)	<i>57 x 38</i>	3
Culvert height prior to any burying (ft)		3
Depth culvert will be buried (ft)		.67
Elevation of culvert crown (ft)	Upstream	856.43
	Downstream	856.38
Higher elevation of <input type="checkbox"/> culvert invert OR <input checked="" type="checkbox"/> streambed within culvert (ft)	Upstream	854.00
	Downstream	854.05

Complete for both Bridges and Culverts

Entrance design (mitered, projecting, wingwalls, etc.)		<i>m</i>
Total structure waterway opening above streambed (sq ft)		5.9
Total structure waterway area below the 100-year elevation (sq ft) (if known)		
Elevation of road grade at structure (ft)		859.20
Elevation of low point in road (ft)		859.00
Distance from low point of road to mid-point of bridge crossing (ft)		30'
Length of approach fill from edge of bridge/culvert to existing grade (ft)		12'

A Licensed Professional Engineer may certify that your project will not cause a harmful interference for a range of flood discharges up to and including the 100-year flood discharge. The "Required Certification Language" is found under "forms" on the "maps, forms and documents" link from the www.mi.gov/jointpermit page or a copy may be requested by phone, email, or mail. A hydraulic report supporting this certification may also be required.

Is Certification Language attached? No Yes



MARX
WETLANDS
LLC

January 4, 2019

Mr. Mark Kieselbach
Charter Township of Meridian
5151 Marsh Road
Okemos, Michigan 488864

Re: Meridian Township Wetland Use Permit & Mitigation Plan

60 Chimney Oaks Drive – Lot 30 of the Chimney Oaks Subdivision
Section 25 of Meridian Township, Ingham County, Michigan

Dear Mr. Kieselbach:

On behalf of our client, Sierra Homes of Michigan, Inc.–Applicant, Marx Wetlands LLC (MW) prepared a Meridian Township wetland use permit and mitigation plan for the wetland impact associated with the project located on vacant parcel (ID # 33-02-02-25-478-004) within Section 25 of Meridian Township (T4N, R1W), Ingham County, Michigan.

Project Activities: The project proposes the construction of an access drive from Chimney Oaks Drive to the proposed house development, involving the installation of a 57”x 38” diameter culvert within Watercourse 1 (Ingham County’s FKA Povey, Chimney Oaks Branch Drain), totaling 40 linear feet in length. Approximately 0.006 acres (240 square feet) of Wetland A will be impacted, requiring approximately 45 cubic yards of wetland fill and approximately 5 cubic yards of riprap on either end of the culvert.

Summary of Proposed Wetland Mitigation

Pursuant to Meridian Township Wetland Ordinance, the Applicant has prepared a wetland mitigation plan for the proposed wetland impact associated with the project. Because the proposed development will impact a Township-regulated wetland, mitigation will be required in order to meet the Township’s goal of no net loss of wetlands. The Applicant is proposing on-site wetland creation as mitigation to satisfy the requirements of Meridian Township Wetland Ordinance.

The on-site impacted wetland (Wetland A; along the banks of the existing watercourse/drain) is largely an emergent wetland. Therefore, the Applicant proposes the creation of one (1) wetland mitigation area on-site totaling 360 square feet (0.008 acres) within the project property, meeting the 1.5:1 wetland mitigation ratio requirement for wetland impacts in Meridian Township.

The project appears to meet state and local water quality standards and follows sedimentation and erosion control best management practices (BMPs)

3309 Platt Road
Ann Arbor, Michigan
Mobile: 734-478-8277
e-mail
bg.marxwetlands@gmail.com

January 4, 2019

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through the use of appropriate soil erosion control methods (i.e., silt fencing, matting, and etc.). It is the professional opinion of MW that the proposed project has minimized impacts to natural features to the maximum extent practicable.

Feel free to contact me should you have any questions and/or comments. We appreciate your consideration and attention to this matter.

Sincerely,



Marx Wetlands LLC

Bryana J. Guevara, PWS 2949
ISA Certified Arborist MI-4240A
bg@marxwetlands.com
734-478-8277

CC: Chris Thelen

Sierra Homes of Michigan, Inc.
10476 West Walker Road
Fowler, Michigan 48835

Enclosures:

- Summary Report & Mitigation Plan
- Impact Plans & Wetland Mitigation Plan

MERIDIAN WETLAND USE PERMIT APPLICATION & WETLAND MITIGATION PLAN

SUMMARY REPORT

for the

**60 Chimney Oaks Drive – Lot 30
of the
Chimney Oaks Subdivision**

Prepared for:

**Chris Thelen
Sierra Homes of Michigan, Inc.
10476 West Walker Road
Fowler, Michigan 48835**



**MARX
WETLANDS
LLC**

January 4, 2019

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APPENDICES

- I. Impact Plans & Proposed Wetland Mitigation
- II. FTCH’s Wetland Delineation – WDV 18-13 (Dated October 24, 2018)
- III. Site Photo Log

1.0 INTRODUCTION

Marx Wetlands LLC (MW) was contracted by Sierra Homes of Michigan, Inc. (Applicant) prepare a Meridian Township wetland use permit and mitigation plan for proposed wetland impacts associated with the proposed project located on parcel 33-02-02-25-478-004 in Section 25 of Meridian Township (T4N, R1W), Ingham County, Michigan, located at 60 Chimney Oaks Drive, directly northwest of the intersection of Chimney Oaks Drive and Meridian Road (hereafter referred to as “Site”). The Site contains undeveloped land, consisting of areas of upland grassy fields, upland forest/scrub-shrub, and wetland. In addition, the Site contains a stormwater detention basin owned by the Ingham County Drain Commissioner (ICDC), which has a channel extending east-west towards Meridian Road. Refer to the *Site Location Map* on Sheet 1 of Impact Plans in **Appendix I**.

2.0 EXISTING SITE CONDITIONS

The region of Ingham County where the Site is situated is largely rural residential with with some commercial development; however, contains fragmented natural areas as well. The proposed project is located directly north of Chimney Oaks Drive and west of Meridian Road.

On October 17, 2018, Fishbeck, Thompson, Carr & Huber, Inc. (FTCH) staff conducted a wetland delineation for the Site (on Parcel No. 33-02-02-256-478-004; 60 Chimney Oaks Drive). Based on FTCH’s findings, the western portion of the Site contains a stormwater detention basin, which forms a channel that transects the Site (in an east-west direction) and appears to be part of the Ingham County’s FKA Povey, Chimney Oaks Branch Drain. FTCH identified two (2) wetland areas within the Site; one wetland along the edge of the channel of the drain and an adjacent approximately 700-square foot wetland was present north of the channel in a steep depression. Based on FTCH’s determination, both wetland areas are regulated by both the State of Michigan and Meridian Township. Refer to the *FTCH’s Wetland Delineation – WDV 18-13 (Dated October 24, 2018)* provided in **Appendix II**, for more information regarding this delineation and site investigation.

3.0 PROPOSED ACTIVITIES AND IMPACTS

The proposed project involves the construction of one (1) single-family house with an adjoining garage, and one (1) asphalt driveway, which will require a new road crossing of on-site watercourse (Watercourse 1; FKA Povey, Chimney Oaks Branch Drain) and wetland fill. Refer to the *Site Photo Log* for on-site conditions provided in **Appendix III**. Detailed information of proposed activities are described below and depicted on the *Impact Plan* presented in **Appendix I**.

3.1 Impact 1– Drain/Wetland

Approximately 0.006 acres (240 square feet) of Wetland A will be impacted for the construction of the proposed access drive, involving the installation of a 57”x 38” diameter culvert within Watercourse 1, totaling 40 linear feet in length. The total amount of wetland impact at this location includes approximately 45 cubic yards of wetland fill and approximately 5 cubic yards of riprap on either end of the culvert. This road is necessary to provide site access from Lot 30 to Chimney Oaks Drive. Refer to the *Impact Plan* in **Appendix I** for details on the proposed on-site wetland/watercourse impact for the proposed driveway crossing.

4.0 ALTERNATIVES ANALYSIS

Meridian Township typically reviews the proposed project development along with any feasible alternatives when considering wetland impacts and permitting.

MW and the Applicant believe that the proposed development is not dependent upon being located in wetland; however, no feasible or prudent alternatives are available given the characteristics of soils, topography, site accessibility, setbacks, building constraints, and the configuration of existing on-site natural features.

The Applicant has developed a site layout that minimizes impacts to the natural features (i.e., wetlands/watercourse) on-site; however, one (1) regulated wetland/drain will be impacted in order to provide a reasonable usage of the available land. Impacts to wetland and natural features were minimized to the maximum extent practicable.

4.1 Project Purpose & Location

The purpose of this project is to develop Lot 30 of the overall Chimney Oaks development. It is imperative that this development is approved to ensure affordable housing in a rapidly developing area and growing community. The Site is ideally located within close proximity (one to two miles) to two (2) main thoroughfares, including M-14 (W. Grand River Avenue) and Interstate I-96, which would provide access to the Site and a convenient commute for the future resident for the proposed development. The Applicant has carefully reviewed and considered several on-site alternatives throughout the site selection process and after examining all of the potential alternatives, the Preferred Design was selected.

4.2 Development Site Layout

The Applicant has reviewed and considered alternative layouts to the proposed project design. After review, the proposed layout was selected because it is economically feasible for development given the Site geometric constraints, specific project and site requirements, building requirements and setbacks, visibility and accessibility, safety, traffic flow into and out of the Site, and existing natural features. The proposed site layout has been designed to

minimize impacts to the to the maximum extent practicable, compared to other possible options that were also feasible.

The Applicant has chosen the current design, because this configuration minimizes impacts to natural features to the maximum extent practicable, while ensuring the development's financial feasibility. It was determined that site access from Chimney Oaks Drive would improve site accessibility to the proposed house/garage and ensure public safety given the current traffic flow on Meridian Road. The placement of an access drive connected directly to Meridian Road would present a potential traffic safety risk because of the moderate traffic flow and limited visibility from the proposed house.

The small disjunct wetland was avoided and only the drain/watercourse and adjacent wetland fringe will be impacted. MW believes that the current site layout does minimize impacts to on-site natural features to the maximum extent practicable, given the existing constraints discussed above. Refer to the *Impact Plan* provided in **Appendix I** of this report.

5.0 PROPOSED WETLAND MITIGATION

Pursuant to Meridian Township Wetland Ordinance, the Applicant has prepared a wetland mitigation plan for the proposed wetland impact associated with the project. Because the proposed development will impact a Township-regulated wetland, mitigation will be required in order to meet the Township's goal of no net loss of wetlands. The Applicant is proposing on-site wetland creation as mitigation to satisfy the requirements of Meridian Township Wetland Ordinance.

The on-site impacted wetland (Wetland A; along the banks of the existing watercourse/drain) is largely an emergent wetland. Therefore, the Applicant proposes the creation of one (1) wetland mitigation area on-site totaling 360 square feet (0.008 acres) within the project property, meeting the 1.5:1 wetland mitigation ratio requirement for wetland impacts in Meridian Township.

The Applicant proposes the wetland mitigation area adjacent to the existing pond along the western boundary of the property and it will remain post-construction. By siting the mitigation area within close proximity of the existing pond and near the proposed house development, it is anticipated that it will likely provide sufficient wetland hydrology.

5.1 PROPOSED WETLAND MITIGATION GOALS AND OBJECTIVES

The main goal of the mitigation plan will be to recreate the approximate habitat and functional values of the wetlands proposed for impacts:

- Sediment Retention - The proposed impacted wetland is generally topographically lower than the surrounding areas.
- Flood Control – The concavity of the proposed impacted wetland appears to capture and detain water during significant rain events.
- Wildlife Habitat & Usage – The proposed impacted wetland provides potential habitat that is currently utilized and visited by birds, amphibians, insects, deer, small mammals, etc.
- Habitat Variety – The proposed impacted wetland is largely an emergent wetland within the banks of the existing on-site watercourse/drain.

The goal of the mitigation wetland area will be to re-create wetland habitat of similar type and function to the emergent wetland being impacted for the proposed development. The proposed wetland mitigation area will be larger than the proposed wetland impact area, but otherwise will be similar in providing green/open space, sediment retention, flood control, wildlife habitat, and habitat variety.

Adequate mitigation will be assured by creating a wetland area that is larger than the proposed impacted wetland and by proposing the wetland mitigation area within the existing property. Sediment retention and flood control will be developed by siting the proposed wetland mitigation adjacent to the existing on-site pond. Wildlife habitat will be provided and retained in part by constructing the mitigation area near the existing pond, remaining wetlands, and tree lines, which may attract animals and provide more habitat diversity.

5.2 PROPOSED WETLAND MITIGATION DESIGN

In order to comply with Meridian Township wetland mitigation requirements, the Applicant proposes to construct one (1) on-site compensatory mitigation wetland area for the creation of 1.5 acres of mitigation for any one (1) acre of permitted impact.

The proposed project proposes impacting approximately 0.006 acres (240 square feet) of total wetland impact. Using the 1.5:1 ratio, mitigation for the site would require approximately 0.008 acres (360 square feet) total acres of emergent wetland mitigation. Therefore, the Applicant proposes the creation of one (1) small wetland mitigation area on-site within the property totaling approximately 360 square feet (0.008 acres). The Applicant proposes the mitigation area to be adjacent to the on-site pond. Refer *Impact Plans* in **Appendix I** for additional information on the proposed Wetland Mitigation Plan.

The proposed wetland mitigation area is designed to be relatively flat and match existing contours of the on-site pond. It is intended that this design will allow for the collection and retention of overland run-off, precipitation, groundwater, and standing water. The goal of the mitigation wetland will be to recreate a habitat of similar type and function to the impacted wetland proposed by the site development; therefore, the mitigation design includes the creation of habitat structures, if applicable.

The mitigation area will be constructed in conjunction with site grading and leveling. All excavated material during the wetland mitigation construction will be placed in upland (non-wetland). The proposed project activities will meet state and local water quality standards and follow sedimentation and erosion control best management practices (BMPs) using appropriate soil erosion control methods (i.e. silt fencing, etc.) to meet requirements of the Ingham County and any best management practices required by Meridian Township Wetland Use Permit.

5.2.1 Proposed Wetland Hydrology

The wetland mitigation design relies upon precipitation and overland runoff, along with the placement of topsoil, and the planting of wetland vegetation. The proposed wetland mitigation area will receive water sufficient to support wetland conditions through direct precipitation and overland flow runoff. In addition, the mitigation area will likely receive overflow water from the adjacent pond. The mitigation area will be constructed to match the existing grade of the on-site pond. In addition, the mitigation area will be designed flat and will be lined with a clay-rich layer in order to retain runoff or precipitation and maintain adequate wetland hydrology.

Based upon a desktop review of the soils in the proposed mitigation area, the subsoils primarily comprised of loam/sandy loam subsoils. Therefore, the proposed wetland mitigation areas may need an approximately 6-inch layer of clay-rich soil to maintain wetland hydrology. Any sandy soil layers should be undercut with clay to maintain appropriate soil texture for wetland hydrology.

5.2.2 Proposed Mitigation Soils

The mitigation area will be excavated to a minimum depth of six (6) inches (or to a depth that matches the thickness of the existing topsoil), stockpiled on-site, and replaced onto the mitigation area bottom, which will have been over-excavated to a depth approximately 12 inches below the finished contour elevation. A six-inch layer of clay will line the bottom of the wetland mitigation area. Then the mitigation area will be topped with a six-inch layer of top-soil. The replacement of this local topsoil will ensure fertile soils with the natural seedbed and will likely allow spontaneous or volunteer plant growth from the adjacent wetland areas.

5.2.3 Proposed Mitigation Vegetation

Vegetation in the wetland mitigation area will include spontaneous or volunteer plant growth from adjacent pond and existing topsoil placed back during site grading and construction

activities. In addition, the wetland mitigation areas will be applied with emergent wetland seed mix following construction and grading activities. The vegetation will include species and/or varieties native to Michigan or the Midwest, depending on availability at local nurseries.

The proposed wetland mitigation area will be seeded at rate of 35.44 pounds/acre of Pure Live Seed (PLS) with native emergent vegetation. The seed mix includes several permanent and temporary grasses, sedges, rushes, and herbaceous forbs. The emergent wetland seed mix list is listed below in **Table 1. Wetland Mitigation Seed Mix list** and on Sheet 1 of the *Wetland Mitigation Plan (Sheet 4 of Impact Plan set)* provided in **Appendix I**.

WETLAND MITIGATION SPECIES LIST			
WETLAND MITIGATION SEE LIST SUMMARY			
SEED MIX	RATE (LBS/ACRES)	ACREAGE	REQUIRED LBS
EMERGENT WETLAND SEED MIX	35.44	0.004	0.1418
Wetland Mitigation Plant List			
Emergent Wetland Vegetation			
Species		Oz/Acre	Indicator
Permanent Grasses, Sedes, and Rushes			
Bristly Sedge	<i>Carex comosa</i>	2	OBL
Common Lake Sedge	<i>Carex lacustris</i>	1.5	OBL
Bottlebrush Sedge	<i>Carex lurida</i>	4	OBL
Spike Rush	<i>Eleocharis obtusa</i>	3	OBL
Common Rush	<i>Juncus effusus</i>	4	OBL
Rice Cut Grass	<i>Leersia oryzoides</i>	3	OBL
Hardstem Bulrush	<i>Schoenoplectus acutus</i>	6	OBL
Chairmakers Rush	<i>Scirpus pungens</i>	6	OBL
Softstem Bulrush	<i>Scirpus validus</i>	8	OBL
	<i>Total</i>	37.50 oz/acre	
Temporary Cover			
Redtop	<i>Agrostis alba</i>	4	
Seed Oats	<i>Avena sativa</i>	360	
Annual Rye	<i>Lolium multiflorum</i>	100	
	<i>Total</i>	464.00 oz/acre	
Forbs			
Sweet Flag	<i>Acorus calamus</i>	3	OBL
Swamp Milkweed	<i>Asclepias incarnata</i>	2	OBL
Water Plantain	<i>Alisma spp.</i>	4	OBL
Spotted Joe-Pye-Weed	<i>Eupatorium maculatum</i>	1	OBL
Rosemallow	<i>Hibiscus spp.</i>	3	OBL
Blue Flag Iris	<i>Iris virginica</i>	4	OBL
Cardinal Flower	<i>Lobelia cardinalis</i>	1	OBL
Great Blue Lobelia	<i>Lobelia siphilitica</i>	1	FACW
Monkey Flower	<i>Mimulus ringens</i>	1	OBL
Arrow Arum	<i>Peltandra virginica</i>	12	OBL
Pickeral Weed	<i>Pontederia cordata</i>	8	OBL
Broad-leaf Arrowhead	<i>Sagittaria latifolia</i>	8	OBL
Bur Reed	<i>Sparganium eurycarpum</i>	4	OBL
Blue Vervain	<i>Verbena hastata</i>	2	FACW
	<i>Total</i>	54 oz/acre	

Following construction, the wetland mitigation areas will be seeded with the following temporary cover species: redbtop (*Agrostis alba*), seed oats (*Avena sativa*), and annual rye (*Lolium multiflorum*).

5.2.4 Proposed Habitat Structures

The goal of the mitigation wetland area will be to recreate wetland habitat of similar type and function to the impacted wetland areas and provide natural wildlife habitat. The mitigation area includes the creation of an emergent wetland, which can attract wildlife that currently utilize adjacent habitats within undeveloped areas of the property. In addition to the creation of the emergent wetland mitigation area, the mitigation includes the placement of a couple logs and/or tree stumps as habitat structures. The habitat structures will be placed with heavy equipment following a precipitation event in order to create the natural micro-topography within the wetland. The habitat structures may provide breeding, nesting, and feeding grounds for several wildlife species, including amphibians, reptiles, birds, and mammals.

5.3 PROPOSED MITIGATION PERFORMANCE STANDARDS

The Applicant will be responsible for contracting out monitoring of the wetland construction area for five years following the completion of construction of the wetland mitigation area. The monitoring of the wetland mitigation area will be conducted by a qualified wetland consultant. A complete assessment of the development for the wetland mitigation area will be made annually.

The Applicant will provide Meridian with annual reports no later than December 30 of each year following the completion of construction. The reports will be provided to Mr. Mark Kieselbach or Peter Menser, Charter Township of Meridian, 1515 Marsh Road, Okemos, MI 48864. Utilizing recognized and established scientific procedures, the annual monitoring report, at a minimum will include:

- 1) Construction has been completed in accordance with approved plans and specifications referenced in the permit and supporting documentation.
- 2) One (1) emergent wetland totaling 0.008 acres (360 square feet) should be constructed and characterized by the presence of water at a frequency and duration sufficient to support predominance of wetland vegetation at the end of the monitoring period.
- 3) A layer of high-quality soil, an organic or loamy texture soil, is placed over the mitigation area at a minimum average thickness of 5 inches.
- 4) The mitigation areas shall be free of oil, grease, debris, and all other contaminants.
- 5) Mean relative percent cover of native species in the herbaceous layer in the mitigation area at the end of the monitoring period is not less than 80 percent for the overall mitigation area.

- 6) Extensive areas of bare soil shall not exceed 5 percent of each mitigation areas. Typically, extensive areas refer to areas greater than 0.01 acre in size.
- 7) The mitigation area supports a predominance of wetland vegetation (defined as more than 50% relative plant cover of species rated FAC or wetter; wetland indicator status during the given monitoring year) and is represented by a minimum number of native wetland species, at the end of the monitoring period.
- 8) At the end of the monitoring period, the mitigation wetland should support a predominance of wetland vegetation in each vegetative layer, represented by a minimum number of native wetland species, which shall not be less than: 8 species within the mitigation wetland area.
- 9) In the mitigation area, the combined percent cover of the following invasive species shall not exceed 10%: common reed (*Phragmites australis*), musk thistle (*Carduus nutans*), field thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), purple loosestrife (*Lythrum salicaria*), and reed canary grass (*Phalaris arundinacea*). In the mitigation area, the percent cover of the following invasive species shall not exceed 2%: autumn-olive (*Elaeagnus umbellata*), common buckthorn (*Rhamnus cathartica*), glossy buckthorn (*Frangula alnus*) and multi-flora rose (*Rosa multiflora*).

5.4 PROPOSED MITIGATION MONITORING PROTOCOL & REPORTING

Monitoring of the mitigation area will occur over five consecutive years. In the first two years, the monitoring activities will be conducted twice per year. Monitoring activities in the first two years should be conducted at least 60 days apart. With the possible exception of Year 1, the monitoring activity window will be from June 1 through October 15.

Monitoring in Year 1 will begin June 1, after wetland mitigation construction is final. However, if mitigation construction is finalized between June 1 and July 31, at the discretion of the Applicant, monitoring in Year 1 may also begin between August 1 and August 15 and continue thereafter until October 15. Wetland mitigation monitoring should occur during the growing season, or roughly between June 1 through October 15 of each monitoring year. The monitoring of the mitigation area by a wetland professional will track the progress of wetland development and provide information to the Township, such as any contingencies or if the mitigation areas are not developing as planned per performance standards.

The wetland mitigation monitoring and data collection protocol should include the following:

- 1) Photographic Documentation: One photograph from at least four (4) unique permanent points within each mitigation area.
- 2) Document Topsoil: Record topsoil depth at least 4 locations within each mitigation area (First monitoring visit only).
- 3) Document any waste materials: Inspect the mitigation area for oil, grease, man-made debris, yard or pet waste, and all other contaminants.
- 4) Document Vegetation: Determine percent cover of species in each vegetative stratum (i.e., herbaceous, shrubs, vines, and trees) and areas of open water or bare soils within each wetland mitigation area.
- 5) Document Hydrology: Record depth of standing water, or depth to water table if within 20 inches of surface in two permanent station locations in each mitigation area.
- 6) Document Wetland Acreage: Determine total wetland acreage and mark wetland boundaries of each wetland mitigation area.
- 7) Document Habitat & Wildlife Usage: Record animal species observed to be using or to have used in each mitigation area based on yearly inspections.
- 8) Document total Plant Species: Record all plant species growing in each mitigation area.
- 9) Document Invasive Species Levels: Provide invasive species coverage in each report, grouped according to Performance Standards Item 9 listed above.
- 10) Document Native Vegetation Performance Standard Progress: Provide mean relative percent cover and number of native species for each mitigation area in each report.
- 11) Document Wetland Vegetation Performance Standard Progress: Provide relative plant cover of species rated FAC or wetter in each report.
- 12) Evaluate Mitigation Progress: Document wetland progress include details of water levels, wetland vegetation (species composition), soils, and hydrology. This should include a summary discussion of trends in data compared to previous monitoring visits.
- 13) Assure Mitigation Progress: Document any incidents, issues, and/or conditions that may delay wetland progression. Provide any recommendations, including corrective actions, if applicable.

All monitoring data will be collected, compiled, and analyzed together for each proposed mitigation area, unless specifically noted otherwise. A monitoring report will be provided by the Applicant to the Meridian Township by December 30 of each year that follows each of the five (5) consecutive monitoring years.

5.5 Long-Term Protection

The Applicant will ensure that no construction activities will occur within wetland mitigation boundaries. In addition, signage will be placed along buffer edges beyond the wetland mitigation area. Typical signage will read: **Wetland Conservation Easement | No construction or placement of structures allowed. | No mowing, cutting, filling, dredging or application of chemicals allowed. | Meridian Township.**

5.6 Financial Assurance

If the proposed Wetland Use Permit Application is approved, the Applicant will post a surety bond to the Meridian Township (if necessary) to ensure the mitigation is timely and properly completed, that the mitigation is thereafter managed, monitored, and protected, as provided by the mitigation plan, and to guarantee compliance with the plan.

APPENDIX I

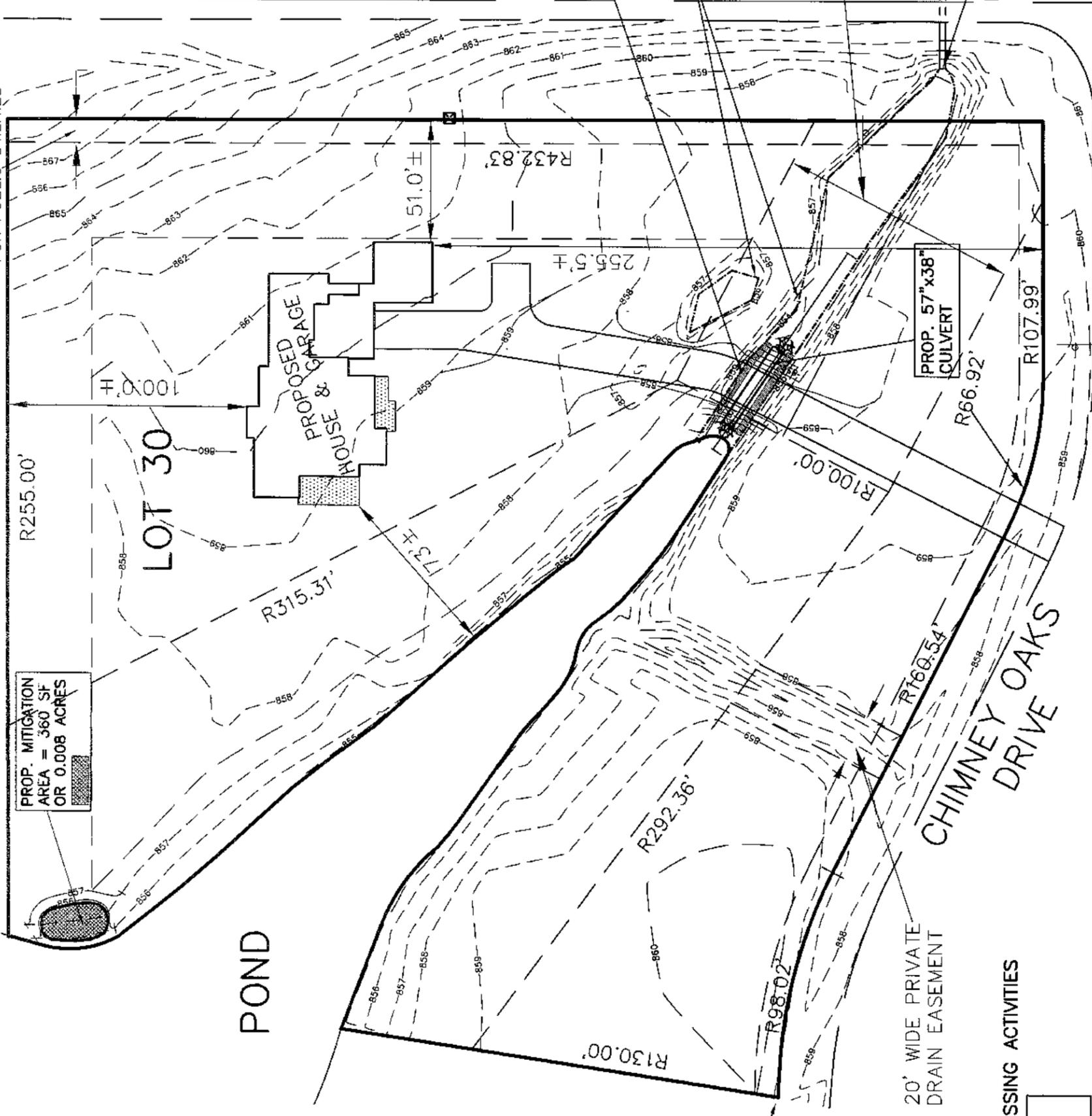
Impact Plan & Proposed Wetland Mitigation Plan

LOT 30, CHIMNEY OAKS

MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

BENCHMARK #1
AT PROPERTY CORNER,
T/BAR 858.51

PROP. MITIGATION
AREA = 360 SF
OR 0.008 ACRES



- PROPOSED DRAIN CROSSING ACTIVITIES**
1. INSTALL CULVERT
 2. CONSTRUCT DRIVEWAY
 3. STABILIZE SLOPES

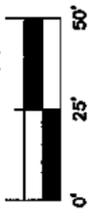
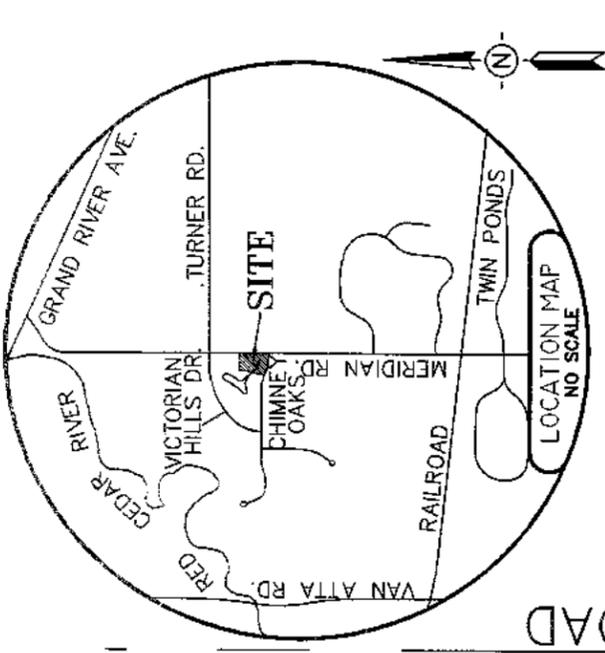
20' WIDE PRIVATE
DRAIN EASEMENT

100' WIDE PRIVATE
EASEMENT FOR
POVEY DRAIN

PROP. WETLAND
FILL AREAS = 240 SF
OR 0.0055 ACRES

EXISTING WETLAND
AREAS

Legal Description (as provided):
Lot 30, Chimney Oaks Subdivision, Meridian
Township, Ingham County, Michigan,
according to the recorded plat thereof, as
recorded in Liber 44 of Plats, Pages 1-4,
Ingham County Records.



KEBS, INC.
2116 HASLETT ROAD, HASLETT, MI 48840
PH. 517-339-1014 FAX. 517-339-8047
Marshall Office
Ph. 269-781-9800

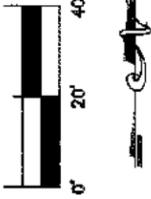


REVISIONS	SCALE: SEE PLAN	PROJECT MGR. G. PETRU	APPROVED BY: G.A.P.	DATE: 10-27-18	AUTHORIZED BY: CHRIS THELEN	JOB # E-93525
10-31-18 SUBMITTAL						
12-3-18 SUBMITTAL						

Lot 30, Chimney Oaks
PROPOSED CULVERT - DRIVEWAY
OVERALL SITE PLAN

SHEET 1 OF 3

PLAN VIEW
SCALE: 1" = 40'



LOT 30, CHIMNEY OAKS

MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

PROPOSED 5 CYD 6"-8" ROCK ON GEOTEXTILE RIP RAP, I.E. 853.38

WETLAND FILL AREA = 240 SF OR 0.0055 ACRES

PROPOSED 40 LF 57"x38" CULVERT @ 0.10%

PROPOSED 5 CYD 6"-8" ROCK ON GEOTEXTILE RIP RAP, I.E. 853.42

CHIMNEY OAKS DRIVE

PROPOSED HOUSE & GARAGE

SHEET 2 OF 3

JOB # E-93525

Lot 30, Chimney Oaks
PROPOSED CULVERT- DRIVEWAY
CROSS SECTION A-A

AUTHORIZED BY: CHRIS THELEN

DATE: 10-27-18

DRAWN BY: G.A.P.

APPROVED BY: G.A.P.

PROJECT MGR. G. PETRU

SCALE: SEE PLAN

REVISIONS

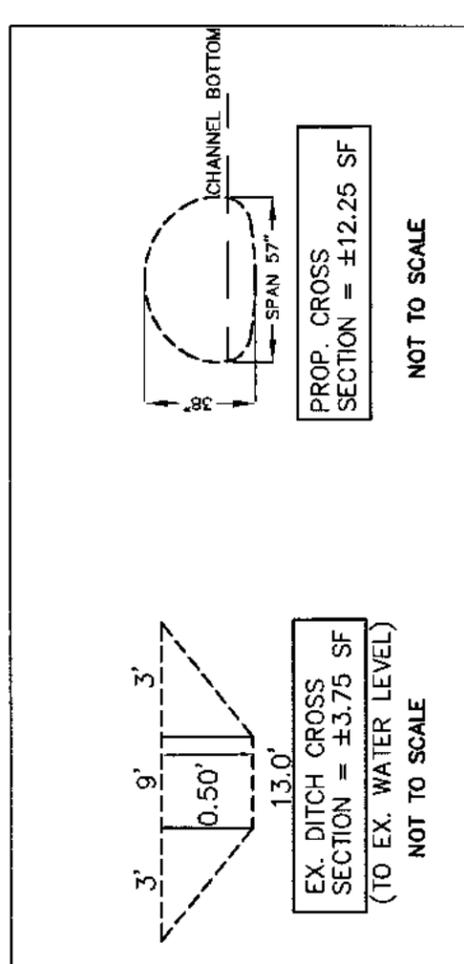
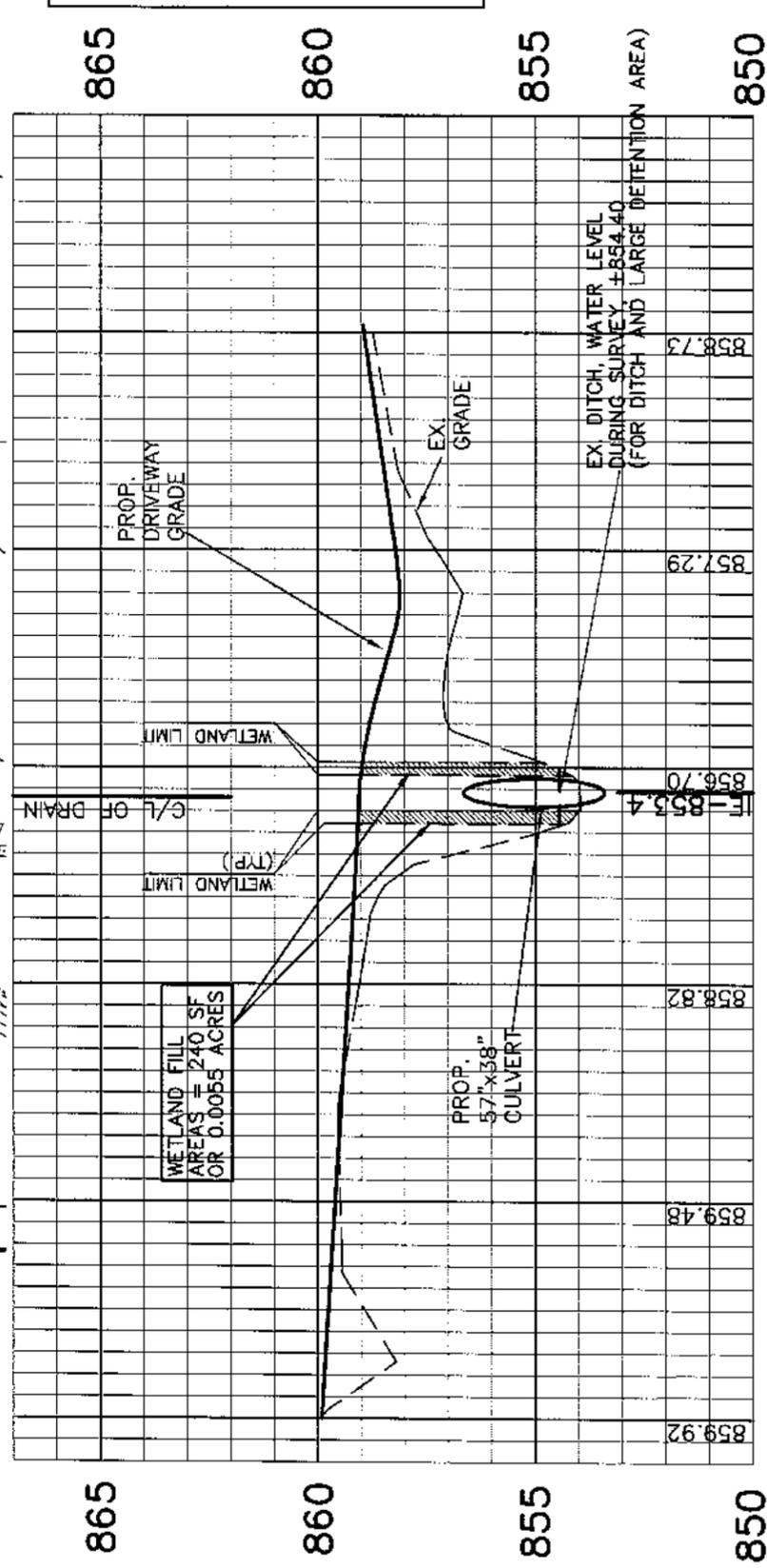
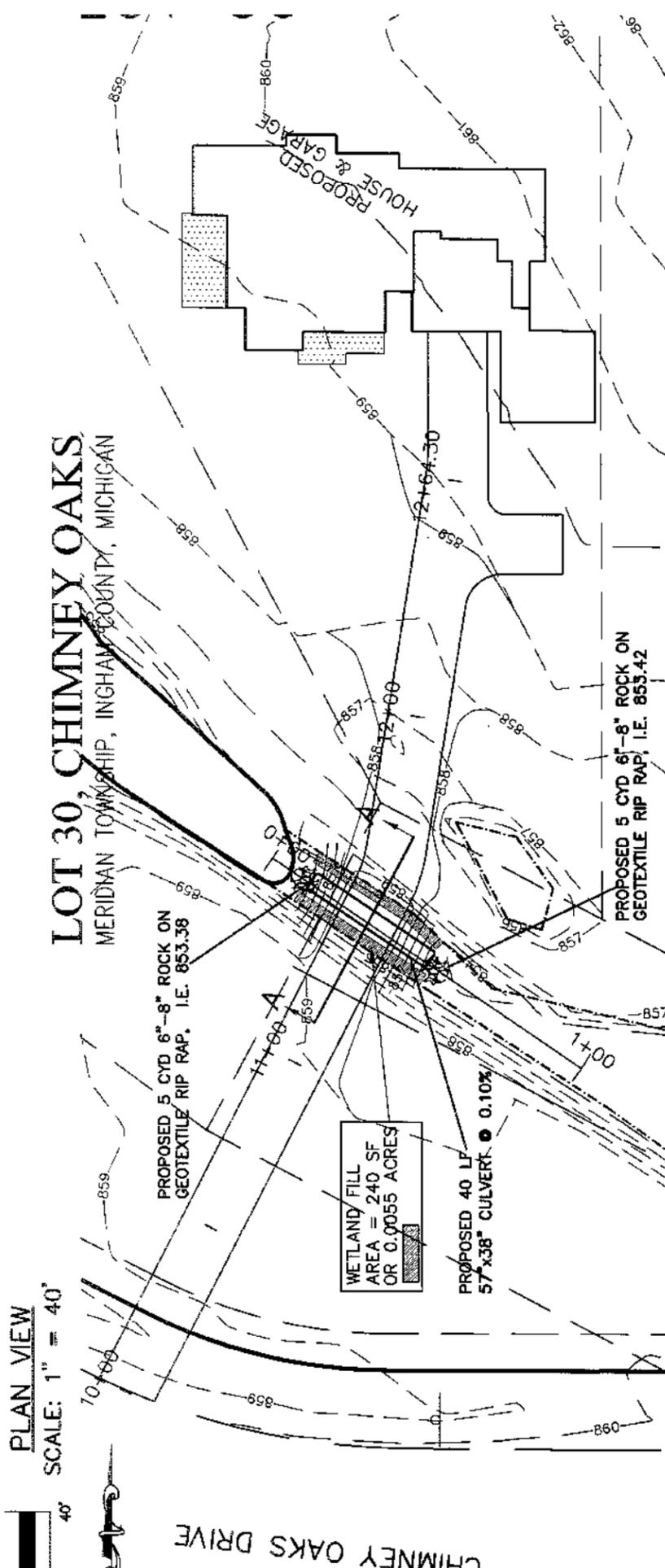
10-31-18 SUBMITTAL

12-3-18 SUBMITTAL

2116 HASLETT ROAD, HASLETT, MI 48840
PH. 517-339-1014 FAX. 517-339-8047

Marshall Office
Ph. 269-781-9800

KEBS, INC.



PROFILE VIEW
SCALE: HORIZ. 1" = 40'
VERT. 1" = 5'

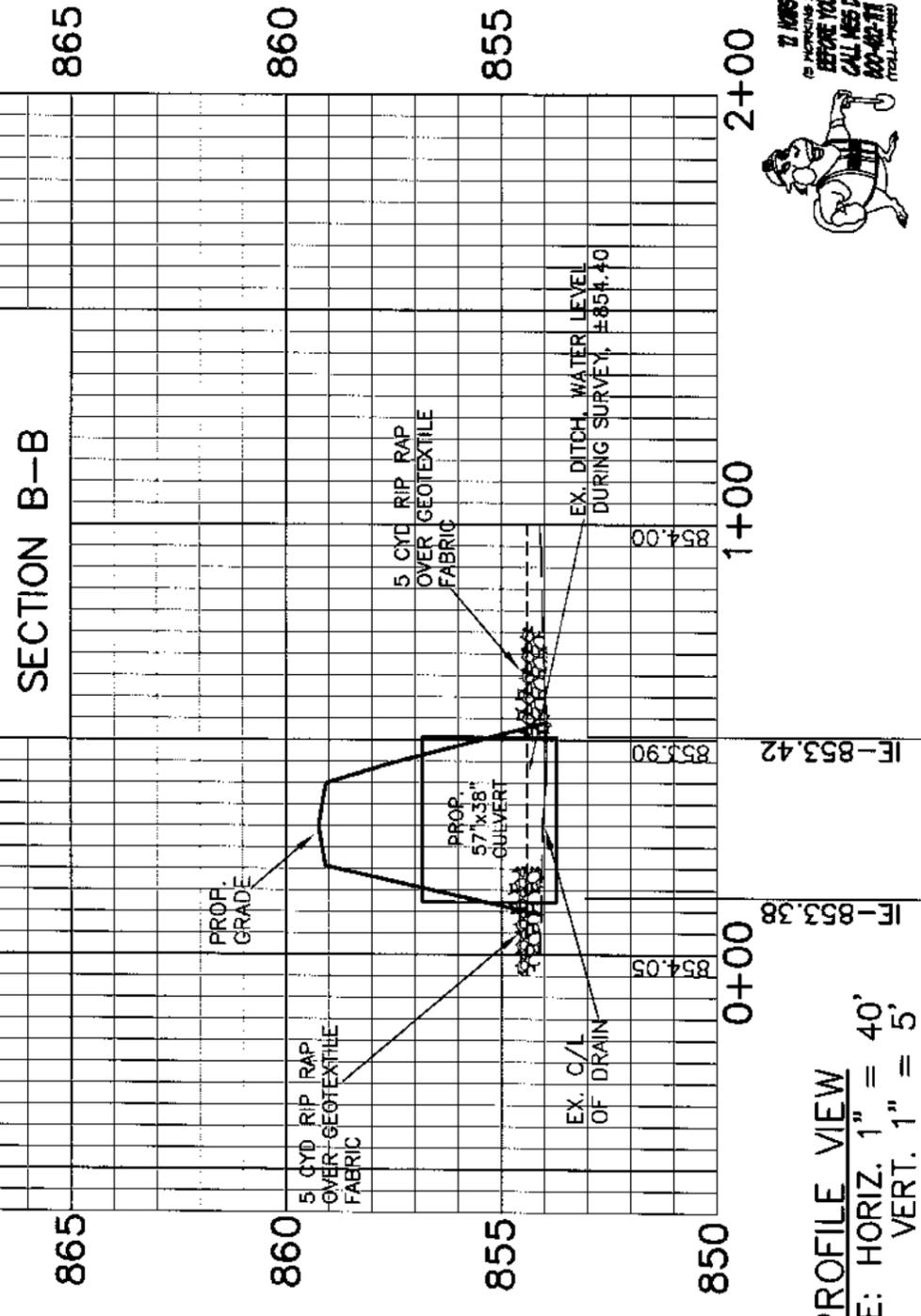
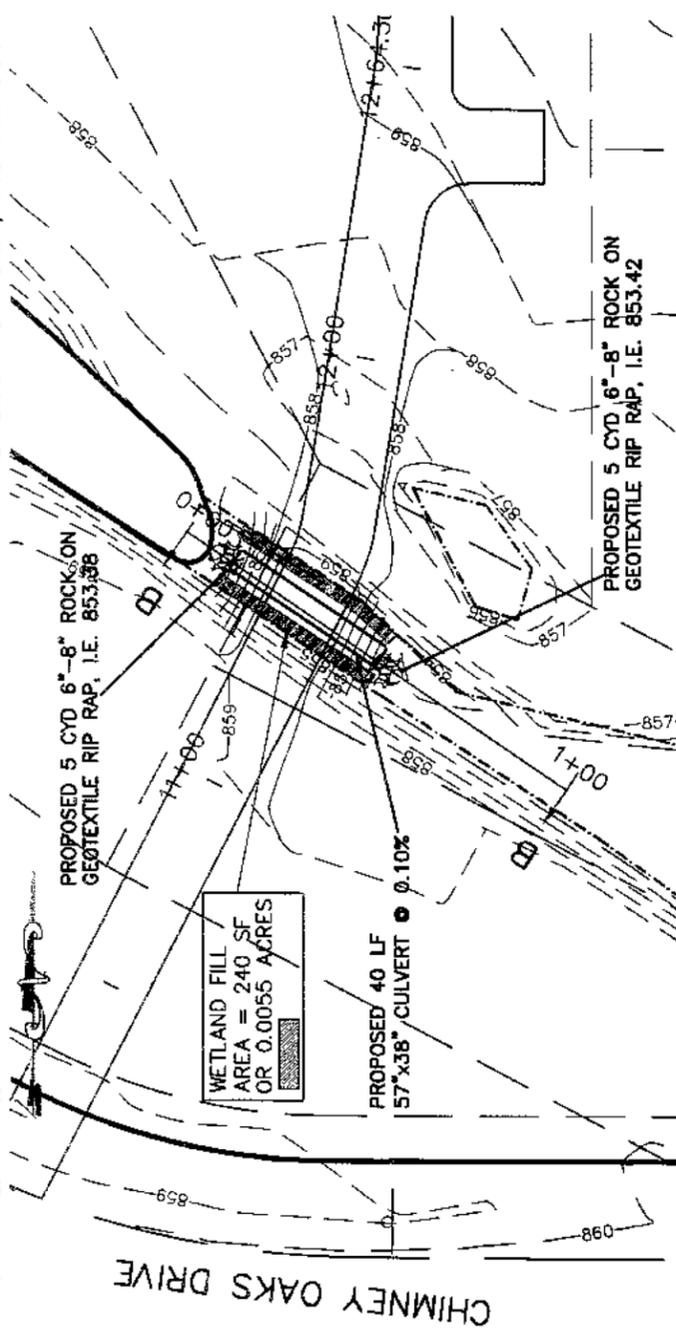


2 HRS
IN WORKING DAYS
BEFORE YOU DIG
CALL KES 517
800-427-7777
(TOLL-FREE)



LOT 30, CHIMNEY OAKS
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

PLAN VIEW
SCALE: 1" = 40'



PROFILE VIEW
SCALE: HORIZ. 1" = 40'
VERT. 1" = 5'



LOT 30, CHIMNEY OAKS

MITIGATION PLAN

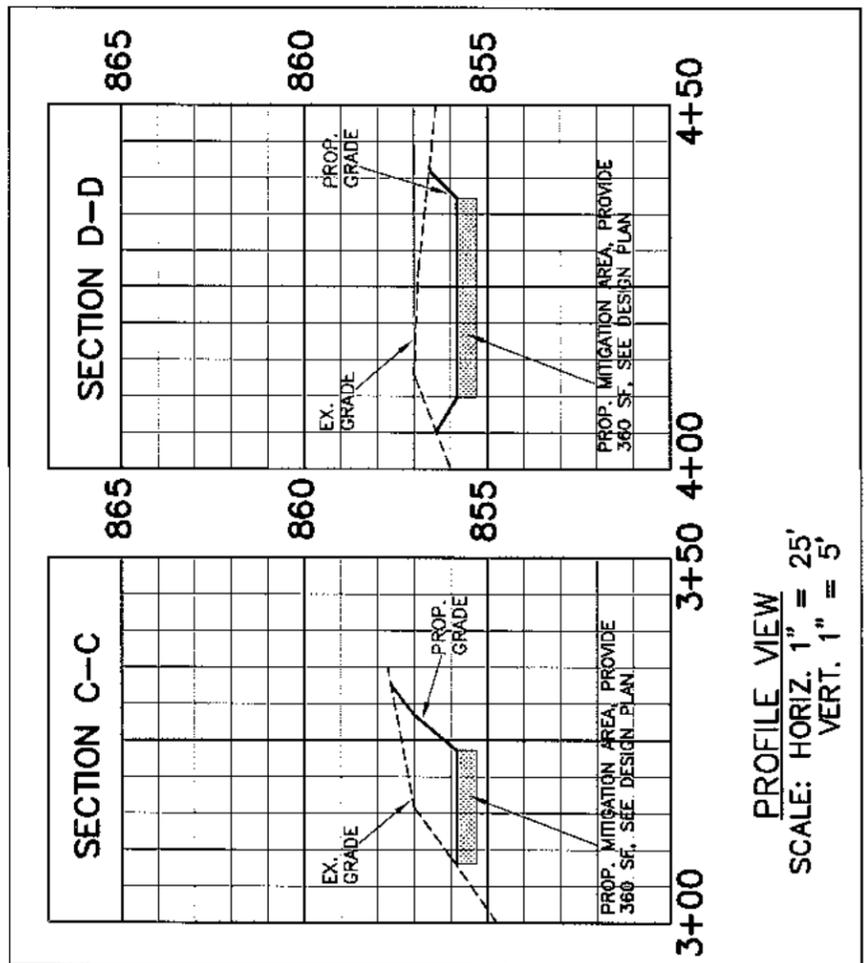
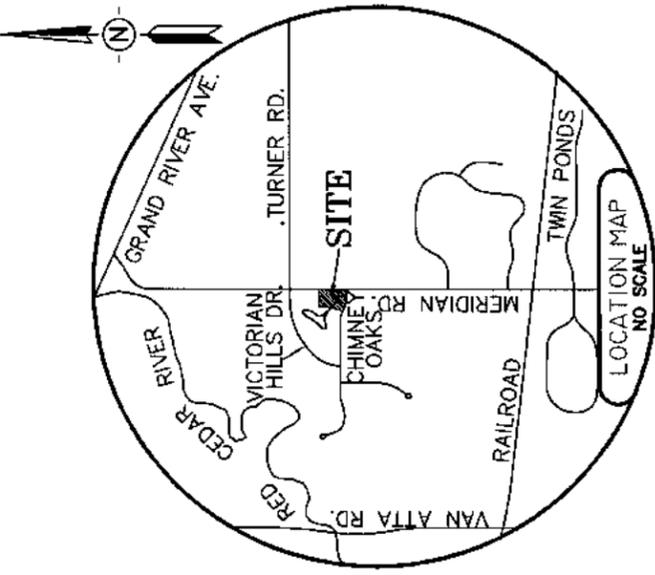
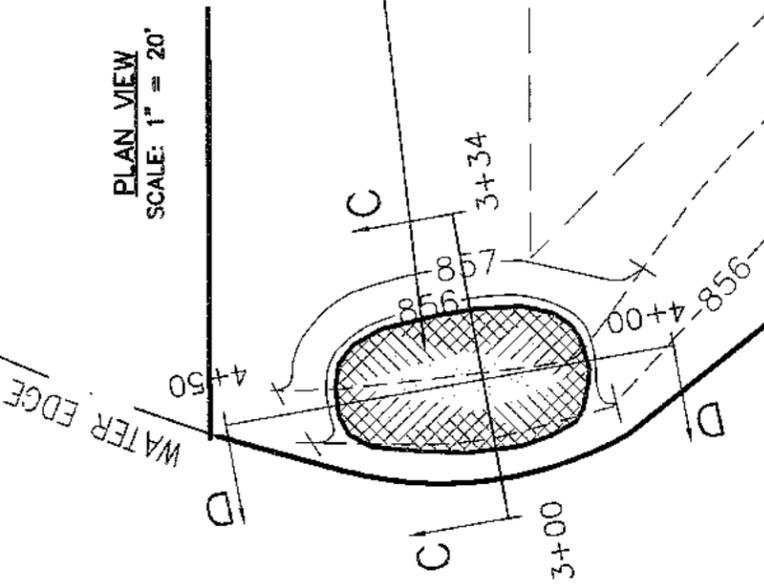
SHEET: MITIGATION 1

PROPOSED MITIGATION AREA, FOR SEE SEED MIX, THIS PAGE, FOR CONSTRUCTION NOTES AND DETAILS SEE MITIGATION PAGE 2 AND 3.

PROPOSED EMERGENT WETLAND = 360 SF OR 0.008 ACRES

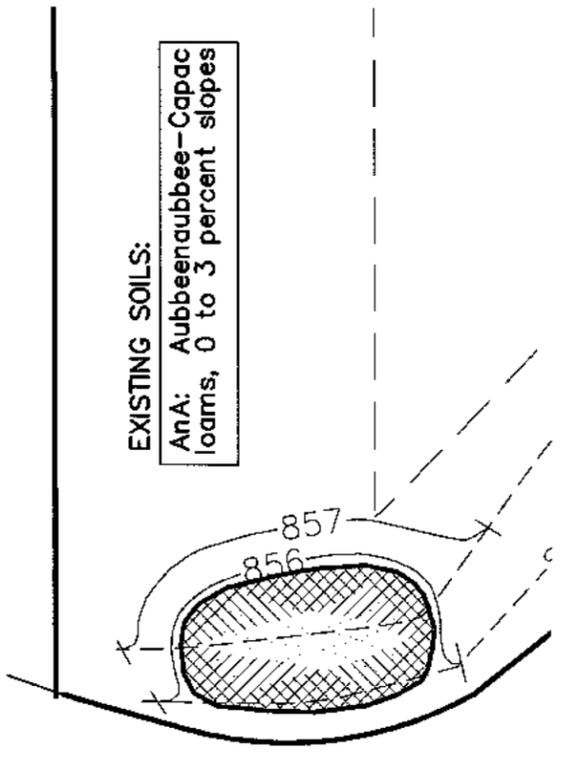
MITIGATION ELEVATION ±855.50 - 855.75

PLAN VIEW
SCALE: 1" = 20'



PROFILE VIEW
SCALE: HORIZ. 1" = 25'
VERT. 1" = 5'

WETLAND MITIGATION SEE LIST SUMMARY			
SEED MIX	RATE (LBS./ACRES)	ACREAGE	REQUIRED LBS
EMERGENT WETLAND SEED MIX	35.44	0.008	0.284
Wetland Mitigation Plant List			
Emergent Wetland Vegetation Species	Oz/Acre	Indicator	
Permanent Grasses, Sedes, and Rushes			
Bristly Sedge	2	OBL	
Common Lake Sedge	1.5	OBL	
Bottlebrush Sedge	4	OBL	
Spike Rush	3	OBL	
Common Rush	4	OBL	
Rice Cut Grass	3	OBL	
Hardstem Bulrush	6	OBL	
Charmakers Rush	6	OBL	
Softstem Bulrush	8	OBL	
Total	37.50 oz/acre		
Temporary Cover			
Redtop	4		
Seed Oats	360		
Annual Rye	100		
Total	464.00 oz/acre		
Forbs			
Sweet Flag	3	OBL	
Swamp Milkweed	2	OBL	
Water Plantain	4	OBL	
Spotted Joe-Pye-Weed	1	OBL	
Rosemallow	3	OBL	
Blue Flag Iris	4	OBL	
Cardinal Flower	1	OBL	
Great Blue Lobelia	1	FACW	
Monkey Flower	1	OBL	
Arrow Arum	12	OBL	
Pickeral Weed	8	OBL	
Broad-leaf Arrowhead	8	OBL	
Bur Reed	4	OBL	
Blue Vervain	2	FACW	
Total	54 oz/acre		



REVISIONS
12-4-18 SUBMITTAL
SCALE: SEE PLAN
PROJECT MGR. G. PETRU
APPROVED BY: G.A.P.
DRAWN BY: G.A.P.
DATE: 10-27-18



KEBS, INC.
2116 HASLETT ROAD, HASLETT, MI 48840
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Lot 30, Chimney Oaks
PROPOSED CULVERT-DRIVEWAY
MITIGATION PLAN
AUTHORIZED BY: CHRIS THELEN
JOB # E-93525

General Notes

- CONTRACTOR shall furnish all labor, materials, equipment, transportation, services and necessary equipment work required to complete work as shown on the Drawings and/or as specified herein.
- All work shall comply with all applicable permits. In general, the work includes:

Site Construction

- Creating and grubbing; erosion control; catchment; storm drainage; including native cobblestone rip rap and; wetland upland seeding.
- Conduct site clearing operations to insure minimum interference with roads, streets, walks and other adjacent occupied or used facilities. Do not close or abandon streets, walks, and other adjacent occupied or used facilities without permission from authorities having jurisdiction.
- Limits of work are established on the Drawings and shall be verified with the Wetland Consultant prior to any construction activities. No vehicle activity shall occur outside the limit of construction area.
- Contractor is responsible for procuring and complying with any additional permits that may be required by any governing agency for the completion of this project, including, but not limited to, soil erosion control permits and county drain permits.
- Disposal of excess excavated soil material and materials not acceptable for use as fill shall be placed at an upland location on-site. Stockpiled excess material shall be graded and stabilized with seed to prevent erosion into any existing wetland or watercourse. Contractor shall not remove and/or fill excess soil material without prior approval of Wetland Consultant and Contractor shall submit cost to transport excess soil material to OWNER prior to removal.

Utilities

- Locations of existing underground utilities are shown using the best information available, but with no guarantee that indicated locations are accurate or that lines other than those shown may or may not be present. Contractor and those subcontractors affected by site conditions shall be fully responsible for any deductions or compensations made on the basis of this information and that of any additional site inspections, if made.
- "MISS DIG" shall be contacted by Contractor for location of underground utilities prior to start of work. It should be understood that MISS DIG will not locate private lines, only utility company lines and the Contractor will be responsible for verifying all locations.
- Conflicts between utilities and proposed work shall be reported to Wetland Consultant prior to construction.

Welland Mitigation Plan

Welland Use Permit Application
Lot 30, Chimney Oaks Drive
Meridian Township, Ingham County, MI

These documents are being submitted in addition to those plans and documents already submitted to and under review by the Charter Township of Meridian (Meridian) in the above-referenced file.

Existing Conditions

A site location map, ownership information, and site development plans have been previously submitted for permit. This previously submitted information, in addition to this mitigation plan is intended to provide the required detail to evaluate the existing conditions and proposed activity immediately surrounding the mitigation site.

The proposed wetland mitigation area is located adjacent to the on-site pond. The design of the wetland mitigation area is expected to provide adequate hydrology to sustain wetland plant communities in the mitigation areas as well as maintaining the existing wetland areas.

Welland Mitigation Goals and Objectives

In order to mitigate for unavoidable wetland impacts (0.005 acres; 240 square feet) applied for in the above referenced application, a total of 0.008 acres (360 square feet) of newly created wetland area will be placed under a conservation easement as mitigation. The wetland mitigation area will be created as described below:

- A conservation easement consisting of newly created emergent wetland (0.008 acres) within the above-referenced project.

The newly created wetland area is designed to develop into emergent wetlands to replace the values and functions of the impacted wetland along the banks of the existing drainwatercourse. The mitigation area will be excavated down to an elevation 6 inches below the elevation of the existing adjacent on-site pond and brought back to that pond's grade with organic soils. Tree logs or trunks or other habitat structures can be added to the wetland mitigation area to replicate natural wetland conditions and provide micro-habitat structure to allow for a more diverse flora and fauna to develop in these areas.

Soils

A minimum of 6 inches of organic soils (topsoil) from the impacted areas or other on-site areas will be spread within the base of the newly excavated wetland mitigation areas as shown on plans.

The mitigation area will be excavated to a minimum depth of six (6) inches (or to a depth that matches the thickness of the existing topsoil), stockpiled on-site, and replaced onto the mitigation area bottom, which will have been over-excavated to a depth approximately 12 inches below the finished contour elevation. A six-inch layer of clay will line the bottom of the wetland mitigation area. Then the mitigation area will be topped with a six-inch layer of top-soil. The replacement of this local topsoil will ensure

Layout

- Contractor shall establish and maintain grades, benchmarks, and all other significant reference line of points including mitigation area lines and benchmarking that adequate accuracy are distributed to each wetland mitigation area as shown on the drawings. Location of wetlands and alignment shall be performed by a Licensed Surveyor. Wetland Consultant shall review the layout of all grade elevations and the average of the wetland mitigation areas prior to construction and after the establishment of sub-grades.
- The Contractor shall designate a full-time Project Supervisor who is authorized to act as his/her agent and to be responsible for all subcontractors. The Project Supervisor shall be designated by name prior to commencement of the work and shall be available for proper supervision of the project for the duration of the MDEQ permit and/or contract.

Sequence of Construction

- Hold a pre-construction meeting with all parties involved. Examine the site to ascertain the site and conditions under which the work is to be done and review conditions of all applicable permits.
- Install erosion control measures and tree protection to the limits shown on the wetland mitigation and civil engineering drawings.
- Clear and grub woody vegetation within the limits of the wetland mitigation areas.
- Survey and stake proposed layout for site construction. Wetland Consultant to review contour staking for excavations and fills and review the staking for the mitigation area.
- Excavate and fill within the limits of work to the required sub-grade elevations.
- Survey and stake site for sub-grade elevations and mitigation area. Wetland Consultant to review and approve the created area of mitigation prior to the placement of topsoil. Any adjustments to the average of mitigation shall be decided at this time.
- Remove any water which may have accumulated in the mitigation areas to prevent soil changes detrimental to the stability of the sub-grade.
- Place and spread topsoil. Finished grades in wetland mitigation and restoration areas are subject to written approval from the Wetland Consultant.
- Immediately following fine grading, the Wetland Consultant and Contractor shall meet on-site to jointly examine current site conditions under which the work is to be completed.

fertile soils with the natural seeded and will likely allow spontaneous or volunteer plant growth from the adjacent wetland areas.

Hydrology

The proposed wetland mitigation area is designed to maintain hydrology similar to the nearby wetland areas. The impacted wetland receives its hydrology from ground water, precipitation, overflow from adjacent drain, and surface water runoff. The proposed wetland mitigation area will receive water sufficient to support wetland conditions through direct precipitation and overland flow runoff. In addition, the mitigation area will also likely receive overflow water from the adjacent pond. The mitigation area will be constructed to match the existing grade of the on-site pond. In addition, the mitigation area will be lined with a clay-rich layer in order to retain runoff and will be designed to maintain adequate wetland hydrology. The runoff will likely flow to the west, where it will drop into the lower elevation of the mitigation and be discharged into the native wetland vegetation. Runoff will likely travel through on-site grass before it drains into proposed wetland mitigation area; therefore, removing the majority of any particulate matter or other substances that it might contain as it flows off the proposed driveway and house. It is anticipated that the mitigation area will probably experience similar water regimes as the proposed impact wetlands throughout the growing season based on regional weather patterns.

Vegetation Establishment Plan

The mitigation area will be seeded with a wetland seed mix of including a variety of native wetland plants as shown in the wetland seed mix. The seed mix will be planted in accordance with procedures set forth by the seed supplier, and the site mulched to prevent erosion prior to establishment of the wetland flora.

Wildlife Habitat Structures

Within all mitigation areas a minimum of 6 habitat structures, such as tree stumps, logs, etc., shall be placed per acre, or 1 structure for the 0.008-acre (360 sq ft) site. Below is a detailed description of acceptable habitat structures:

- Tree stumps laid horizontally in the created wetland area. Acceptable stumps shall be a minimum of 6 feet long (log and root ball combined) and 12 inches in diameter.
- Logs laid horizontally within the created wetland area. Acceptable logs shall be a minimum of 10 feet long and 6-inches in diameter.
- Whole trees laid horizontally within the wetland area. Acceptable whole trees shall have all of their fine structure left intact (i.e., not trimmed down to major branches for installation) and be a minimum of 20 feet long (tree and root ball combined) and a minimum of 12 inches in diameter at breast height (DBH).
- Snags which include whole trees left standing that are dead or dying, or live trees that will be felled and die, or whole trees installed upright into the created wetland. A variety of tree species should be used for the creation of snag habitat. Acceptable snags shall be a minimum of 12 inches DBH. Snags should be grouped together so as to provide mutual functional support as nesting, feeding, and perching sites.
- Sand mounds at least 18 inches in depth and placed so that they are surrounded by a minimum of 30 feet water measuring at least 18 inches in depth. The sand mound shall have at least a 200 square foot area that is 18 inches above the projected high-water level and oriented to receive maximum amounts of sunlight.

- Stake limits of seeding and provide submittals to Wetland Consultant prior to seed planting.
- Wetland Consultant to approve seed mix and limits of seeding.
- Seed the wetland mitigation area and any disturbed upland areas.
- Provide straw mulch over seeding areas and apply erosion control blanket on slopes adjacent to existing wetland and wetland mitigation areas.
- Contractor to provide as-built drawings to the Wetland Consultant and/or Owner.
- Meet with Wetland Consultant to review the newly created mitigation efforts, and obtain a copy of the as-built drawings.
- Remove loose protection and soil erosion control measures if approved by Wetland Consultant and provide site clean-up.

Grading Specifications

General Notes

- Upon issuance, all work shall comply with MDEQ Permit and other issued permits.
- The contractor is responsible for supplying all materials, labor, equipment, transportation, all all services incidental to clearing, grading, seeding, soil stabilization, and clean up of the mitigation areas.
- Erosion controls are to be installed to the limits indicated on the plan indicated on the plan. Any damage to the existing wetlands not being restored to their original character at the contractor's own expense. All pre-erosion control measures shall be removed after final acceptance of work, unless suggested by the Wetland Consultant to remain in place. Care shall be taken during removal to minimize the loss of the accumulated sediment. If necessary, all silt and sedimentation is to be immediately removed from adjacent wetland or water courses.
- All trash and debris shall be removed from the site and legally disposed of upon completion of grading activities. Repair to their original character areas outside the work limits damaged by operating under the contract. Repair shall include finish grading and seeding as required to match existing grade and conditions, and maintenance of repaired areas.

Sequence of Construction and Schedule
The following sequence of construction explains the methods of establishing the proposed wetland areas:

Mitigation Monitoring

The mitigation area will be monitored as required in the first full growing season after construction, planning and seeding to document the newly established vegetative community.

Monitoring Plan and Management Provisions
The Applicant will be responsible for contracting out monitoring of the wetland construction area for five years following the completion of construction of the mitigation area. The monitoring of the wetland mitigation area will be conducted by a qualified wetland consultant. A complete assessment of the development for the wetland mitigation area will be made annually. The Applicant will provide Meridian with annual reports no later than December 30 of each year following the completion of construction. The reports will be provided to Mr. Mark Kleaebach, Charter Township of Meridian, 1515 Marsh Road, Okemos, MI 48864. Utilizing recognized and established scientific procedures, the annual monitoring report, at a minimum will include:

- A measure of the percent cover of wetland vegetation species (using USACE plant list of wetland plant species) versus upland plant species;
- A measure of vegetation diversity;
- A description of vegetative community structure;
- A description of wildlife community structure;
- A record and description of hydrologic development, including:
 - Characterization of water regimes, measurement of water depths, periods and degree of inundation (flooding), saturation zones, water clarity, etc.
- A record of any oil, grease, man-made debris, and/or other contaminants.
- A written summary of wetland development will be provided and will compare data gathered in the current monitoring year with data of all previous monitoring years.
- A photographic history of new wetland construction work and development will be kept and submitted with the annual report. The photographic record will visually document all construction phases and shall be designed to also document wetland development through the five-year monitoring period.

Monitoring Performance Schedule
End of Year 1: Mitigation area vegetative cover of at least 20% wetland indicator species (FAC or wetter). Approximately 60% of the total original seeded area should be surviving.

Earthwork

- Sub-grades in created wetland shall be six inches lower than proposed finished grade contours and spot elevations to allow for the placement of topsoil. Topsoil shall be salvaged wetland soil from impact area or from an approved source.
- Unless indicated otherwise, grade evenly between points and contours or between such points or contours and existing grades, refer to grading detail. Acceptable grade tolerance shall not exceed three inches (0.25 feet) on proposed grades specified on the plans to accommodate minor ruts, dirt dumps, organic matter, and the like. Wetland Consultant they adjust grades in-field based on site conditions to accommodate the intent of the emergent and scrub/shrub wetland creation. Care shall be taken to not excavate below the depths indicated. Contractor shall be responsible for any unauthorized excavation and/or fill operations. Notify Wetland Consultant, minimum three business days, for sub-grade verification.
- Wetland Consultant may determine during sub-grade verification that existing sub-grades are too water permeable to accommodate the intent of the wetland creation. If this is determined, Contractor shall either compact native sub-soils to a degree sufficient to inhibit water percolation or excavate an additional six inches of sub-soils and back fill with clean compacted clay soils, as directed by Wetland Consultant.
- Remove water accumulation in excavation area (if required) to prevent soil changes detrimental to the stability of the sub-grade. Provide and maintain erosion control measures and sufficient dewatering devices such as pumps, hoses, strainers and other appropriate equipment to convey the water from excavations. Water shall be discharged at an upland location a sufficient distance from the excavations to prevent backflow. Care shall be taken to prevent water borne silt from dewatering operations from entering existing wetlands and water courses.
- Surplus excavated material or material unsuitable for filling or grading operations (including all wetland excavation material) shall be disposed of in an upland location on the Owner's property as designated by the Owner's Representative. Stockpiled excess material shall be graded and stabilized to prevent erosion into any existing wetland or watercourse.

Seed Specifications

General Notes

- Seeding shall be done by a single Contractor specializing and experienced in landscape work.
- Seed material shall be the true native genus and species shown and scheduled on the drawings. No hybrids or cultivars will be accepted.
- Mulch shall be shredded hardwood bark mulch free from deleterious materials, sticks, twigs, etc., and suitable for top dressing of trees, shrubs, and planting beds.
- Warranty Period shall be at the end of the first full growing season. A full growing season is defined as the beginning of May through the end of October of the same year. If installation occurs after June 15, the warranty period shall be extended through the end of October of the next year so as to achieve a full growing season.

Seeding

- Stake limits of seeding and provide seed mix submittals to Wetland Consultant for approval.
- Approval of Wetland Consultant must be obtained for seed bed preparation and staking prior to seeding.
- Install seed immediately following completion of fine grading.
- Install seed between the dates of May 1 through June 15 or October 1 through November 30 or as conditions permit. If seeding occurs between June 15 through October 1, the Contractor is responsible to adequately water the mitigation sites on a consistent basis for seed germination and establishment. Contractor shall notify the Wetland Consultant for the timing of seed installation.

Uniformly broadcast specified seed over the specified areas at the specified rates. Provide a carrier (silica sand or other approved material) to ensure uniform distribution of seed.

Immediately following seeding, apply straw mulch at the rate of 1.5 tons per acre over all seeded areas.

- Warranty shall be:
 - Wetland seed mix 95% cover of seeded areas at the end of the first growing season.
 - Wetland seed mix 80% cover of seeded areas at the end of the first growing season.

Submittals

- Contractor shall provide to the Wetland Consultant the following submittals:
 - Wetland Seed Mix
 - Upland Seed Mix

- Place and spread the approved topsoil at a minimum depth of six inches over the entire wetland area, see grading detail.
- Topsoil shall be spread roughly such that minor ruts, dirt dumps and organic matter are acceptable. Topsoil compaction during spreading operations shall occur only to the degree that shall prevent settlement beyond the specified grade tolerance. Avoid over compacting beyond that provided by the spreading equipment. Over compacted topsoil shall be thoroughly loosened by scarifying or plowing to a depth of six inches. Notify Wetland Consultant, minimum three business days, for final acceptance of the finished grades.

REVISIONS

SCALE: SEE PLAN
PROJECT MGR. G. PETRU
APPROVED BY: G.A.P.
DRAWN BY: G.A.P.
DATE: 10-27-18

12-4-18 SUBMITTAL

REVISIONS

APPROVED BY: G.A.P.

DRAWN BY: G.A.P.

DATE: 10-27-18

AUTHORIZED BY: CHRIS THELEN

JOB # F-93525

MITIGATION 2

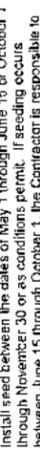
PROPOSED CULVERT-DRIVEWAY

Lot 30, Chimney Oaks

MITIGATION CONSTRUCTION NOTES

216 HASLETT ROAD, HASLETT, MI 48840
PH. 517-339-1014, FAX 517-339-8047
Ph. 269-781-9800
Marshall Office

KEBS, INC.



APPENDIX II

FTCH's Wetland Delineation – WDV 18-13 (Dated October 24, 2018)



October 24, 2018
Project No. 181578

Mr. Mark Kieselbach
Charter Township of Meridian
5151 Marsh Road
Okemos, MI 48864-1198

Re: Wetland Delineation – WDV 18-13
Sierra Homes Property
60 Chimney Oaks Drive, Okemos, Ingham County, Michigan

Dear Mr. Kieselbach:

On October 17, 2018, Fishbeck, Thompson, Carr & Huber, Inc. (FTCH) staff conducted a field investigation and delineated wetlands on Parcel No. 33-02-02-256-478-004, located at 60 Chimney Oaks Drive, Charter Township of Meridian (Township), Michigan (the Site). The approximately 1.5-acre Site is located in Section 25 of Town 4 North, Range 1 West. The Site is surrounded by vacant and residential property. Chimney Oaks Drive is located along the Site's southern boundary and Meridian Road is located along the Site's eastern boundary. The parcel is irregularly shaped. A stormwater detention basin owned by the Ingham County Drain Commissioner (ICDC) is located along the Site's western boundary. A channel extends from the basin to the east and crosses the southeast end of the Site (see Figure 1). The wetland delineation was limited to the area of a proposed driveway that will cross this drainageway (see proposed plan in Appendix 1). The results of the investigation are included in this report.

The wetland delineation was conducted in a manner consistent with the 1987 *Corps of Engineers Wetlands Delineation Manual* and 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2)*. The wetlands identification and delineation procedures outlined in these manuals require evaluation of site vegetation, soils, and hydrologic characteristics. Dominant wetland vegetation, hydric soil, and wetland hydrology must all be present for an area to be classified as a wetland. Hydrophytic vegetation decisions are based on the wetland indicator status of species that are dominant in the plant community. Species with indicator statuses of obligate wetland (OBL), facultative wetland (FACW), and facultative (FAC) are considered wetland species, while species with indicator statuses of facultative upland (FACU) and upland (UPL) are considered upland species. FAC species are also commonly present in upland plant communities.

Literature Review

The Township wetland map for Section 25 indicates the stormwater detention basin and associated drainageway is part of Township Wetland 25-1D, a 12.17-acre, open water and forested wetland that is a tributary to the Red Cedar River and a designated county drain. The ICDC Preliminary Meridian Township Southeast Drain map confirms the stormwater detention basin, the channel that crosses the Site, and a second short swale that connects to the channel from Chimney Oaks Drive on the Site are all part of the FKA Povey, Chimney Oaks Branch Drain.

According to the U.S. Department of Agriculture Natural Resources Conservation Service *Web Soil Survey*, the soil at the proposed driveway crossing is Colwood-Brookston loams (80% hydric rating) (Appendix 2).

The National Wetlands Inventory (NWI) map indicates wetland in the stormwater detention basin and the drainageway that extends from the basin onto the Site. The NWI code for this wetland is PUBGx, which indicates the wetland has an unconsolidated bottom, was historically excavated, and is intermittently exposed (Appendix 3).

Site Investigation

The area of investigation and Wetland Sampling Point SP-A are noted in Figure 1. A well-defined channel with steep banks was present at the proposed driveway crossing location. Emergent wetland was present at the toe of the slope and was dominated by reed canarygrass (*Phalaris arundinacea*, FACW). Although reed canarygrass grew up the channel slope, wetland hydrology appeared to be limited to the toe of slope. Soil was saturated at Wetland Sampling Point SP-A, while the adjacent channel contained 11 inches of water. Emergent wetland along the edge of the channel was approximately 2 to 3 feet wide on either side of the channel.

A separate, 700-square foot wetland was present north of the channel in a steep depression, as indicated in Figure 1. The wetland contained shallow standing water covered in common duckweed (*Lemna minor*, OBL). The wetland edges contained reed canarygrass, highbush cranberry (*Viburnum opulus*, FAC), silver maple (*Acer saccharinum*, FACW), and riverbank grape (*Vitis riparia*, FACW). An upland plant community was observed at the top of slope around the wetland, and included black walnut trees (*Juglans nigra*, FACU), American basswood (*Tilia americana*, FACU), invasive honeysuckle shrubs (*Lonicera* sp.), black raspberry (*Rubus occidentalis*, UPL), and tall goldenrod (*Solidago altissima*, FACU). Photographs of the Site's wetlands are included in Appendix 4.

A U.S. Army Corps of Engineers Wetland Determination Data Form was completed to describe site vegetation, soil, and hydrology at sampling location SP-A (Appendix 5). A wetland data form was not completed for the wetland in the depression due to the obvious signs of wetland vegetation and hydrology, and difficulty accessing this area due to steep slopes and unstable soil. FTCH flagged the wetland boundaries with pink ribbon labelled A1 through A5 on the north side of the channel, A13 through A16 on the south side of the channel, and A6 through A12 around the wetland north of the channel. Flagged points were surveyed with a handheld GPS unit with submeter accuracy. Wetland boundaries are noted on Figure 1.

Conclusions

According to Michigan's Natural Resources and Environmental Protection Act, Act 451, Section 30301(d), wetlands "contiguous to the Great Lakes or Lake St. Clair, an inland lake or pond, or a river or stream" or "more than 5 acres in size" are regulated by the State of Michigan. In addition, the Township regulates wetlands greater than two acres in size which are not contiguous to a water body and wetlands between 0.25 acre and two acres in size that are determined to be essential to the preservation of the natural resources of the Township.

Wetland along the edge of the channel and the adjacent delineated wetland are contiguous to the Povey Drain and are therefore regulated by both the State of Michigan and the Township. It appears construction of the proposed driveway will impact both the wetland along the edge of the channel and the adjacent wetland.

A wetland use permit is required from the Township for the following activities within wetlands regulated by the Township:

- Placing fill or permitting the placement of fill in the wetland.
- Dredging, removing, or permitting the removal of soil or minerals from the wetland.

Mr. Mark Kieselbach
Page 3
October 24, 2018

- Constructing, operating, or maintaining any use or development in the wetland.
- Draining surface water from the wetland.
- Discharging water into the wetland.

In addition, the Township requires that all structures and grading activities during site development shall be set back 40 feet from the delineated wetland boundary and a natural vegetation strip shall be maintained within 20 feet of the wetland boundary.

If you have any questions regarding this letter, the wetland permitting process, or any other wetland-related issues, please contact me at 616.464.3738 or ehtripp@ftch.com.

Sincerely,

FISHBECK, THOMPSON, CARR & HUBER, INC.



Elise Hansen Tripp, PWS

pmb

Attachments

By email

cc/att: Mr. Peter Menser – Township of Meridian

Figures

Appendix 1

PLOT PLAN

For:
Sierra Homes of Michigan, Inc.
10476 W. Walker Road
Fowler, MI 48835

Survey Address:
60 Chimney Oaks Drive
Okemos, MI 48864
ID: 33-02-02-25-478-004

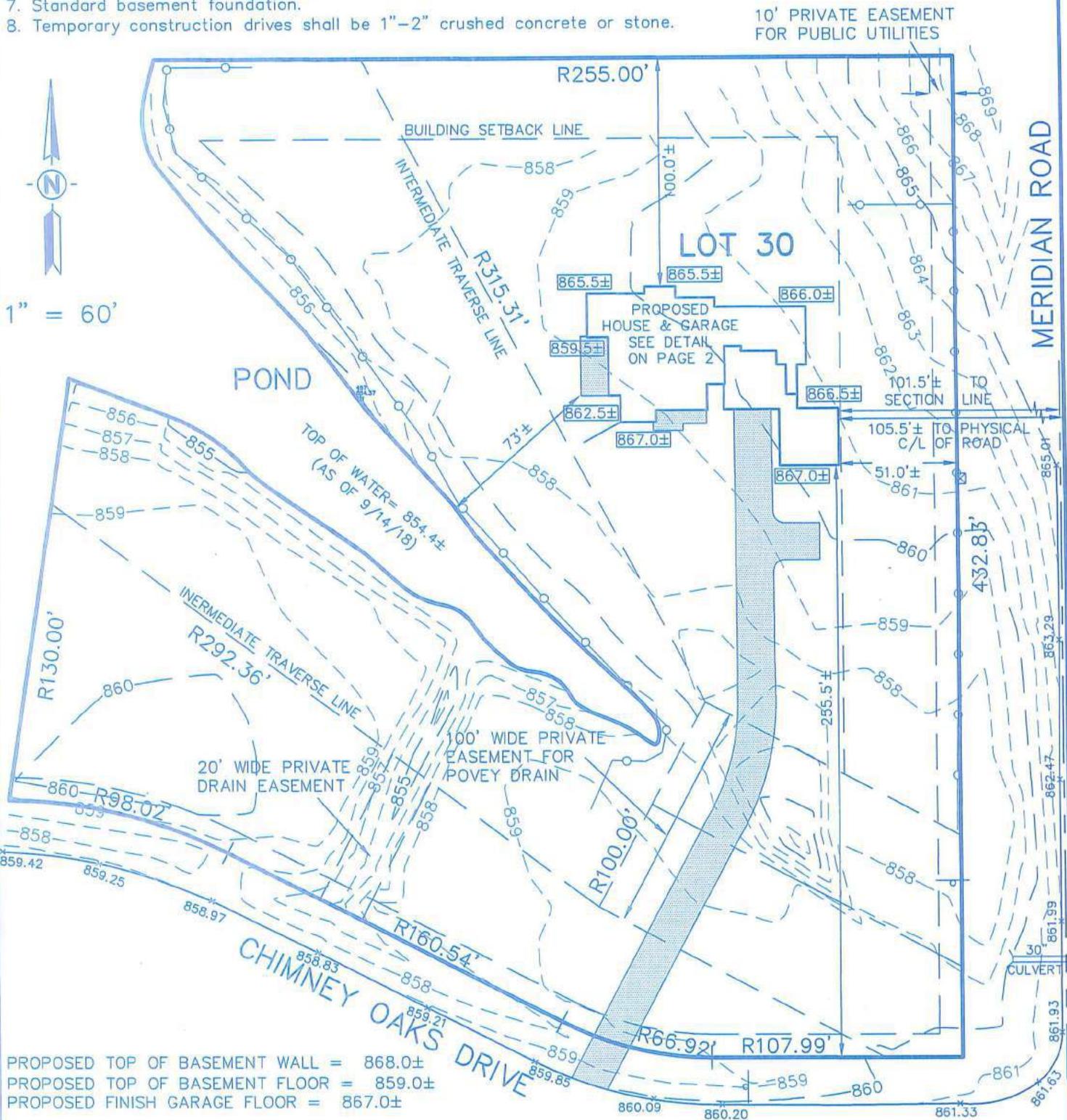
Legal Description (as provided): Lot 30, Chimney Oaks Subdivision, Meridian Township, Ingham County, Michigan, according to the recorded plat thereof, as recorded in Liber 44 of Plats, Pages 1-4, Ingham County Records.

Soil Erosion Control Notes:

1. Clean roads daily
2. Clean catch basin filters once a week.
3. Inspect and maintain silt fence once a week.
4. Keep soil erosion permit posted at all times until site is stabilized.
5. All BMP's must remain in working order until site is stabilized.
6. Excavated soil to be used as fill on site.
7. Standard basement foundation.
8. Temporary construction drives shall be 1"-2" crushed concrete or stone.

NOTES:

1. A LOT SURVEY IS REQUIRED FOR THE EXACT LOCATION OF FENCE AND PROPERTY LINES.
2. ALL EASEMENTS MAY NOT BE SHOWN.



PROPOSED TOP OF BASEMENT WALL = 868.0±
 PROPOSED TOP OF BASEMENT FLOOR = 859.0±
 PROPOSED FINISH GARAGE FLOOR = 867.0±

This plan was made at the direction of the parties hereon and intended solely for their immediate use and no survey has been made and no property lines were monumented, all easements recorded or unrecorded may not be shown, unless specifically noted, and no dimensions are intended for use in establishing property lines.

- R = Recorded Distance
- x = Existing Elevation
- = Silt Fence
- D = Surface Drainage
- = Deed Line
- 800.00 = Proposed Finish Grade
- - - = Distance Not to Scale
- ▨ = Deck, Porch, Sidewalk, & Patio Areas

KEBS, INC. KYES ENGINEERING
BRYAN LAND SURVEYS

2116 HASLETT ROAD, HASLETT, MI 48840
PH. 517-339-1014 FAX. 517-339-8047

13432 PRESTON DRIVE, MARSHALL, MI 49068
PH. 269-781-9800 FAX. 269-781-9805

ERICK R. FRIESTROM

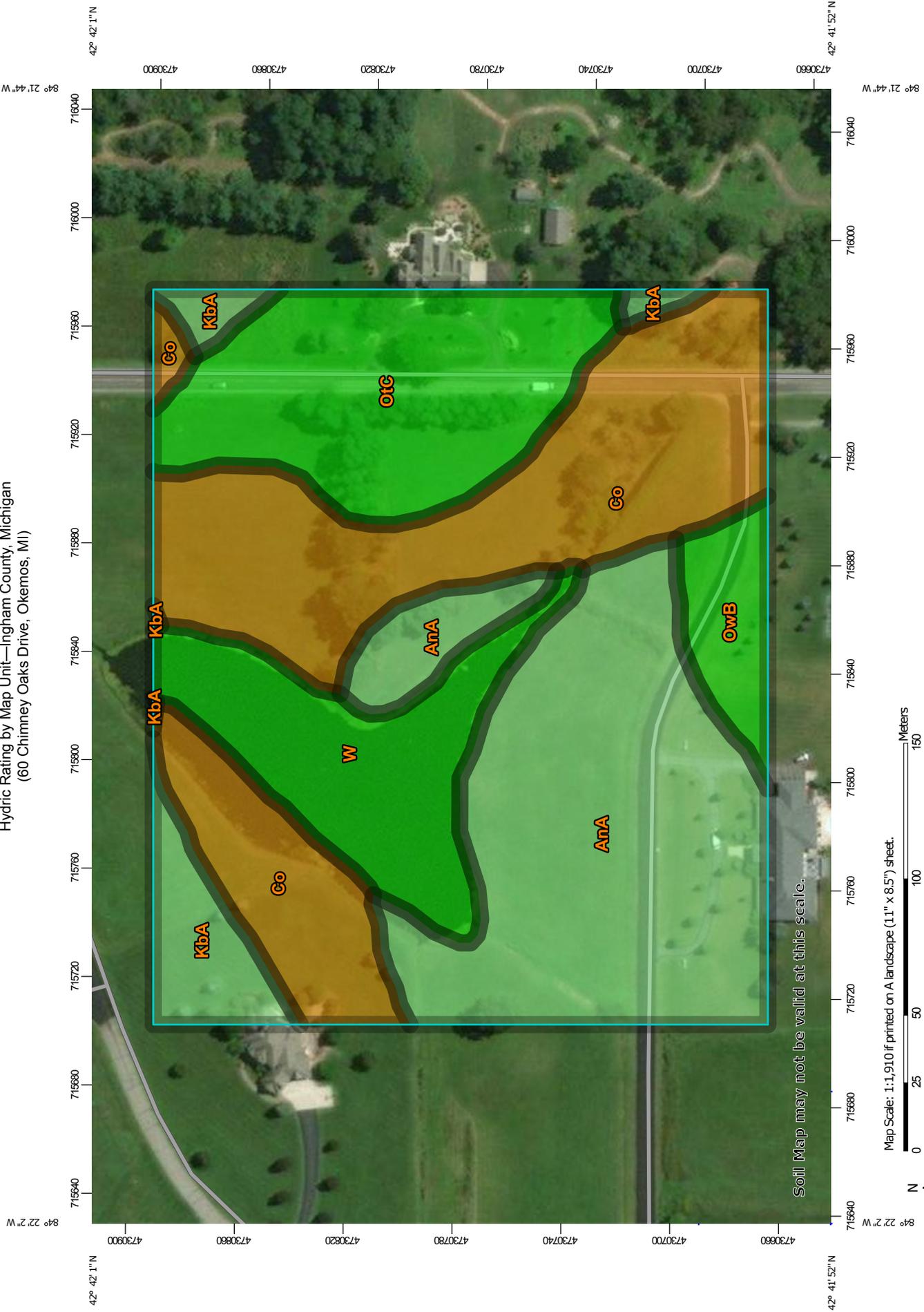
09/26/18

ERICK R. FRIESTROM DATE
PROFESSIONAL SURVEYOR NO. 53497

DRAWN BY SLH	SECTION 25, T4N, R1W
FIELD WORK BY ---	JOB NUMBER:
SHEET 1 OF 2	93525.HSE

Appendix 2

Hydric Rating by Map Unit—Ingham County, Michigan
(60 Chimney Oaks Drive, Okemos, MI)



Soil Map may not be valid at this scale.

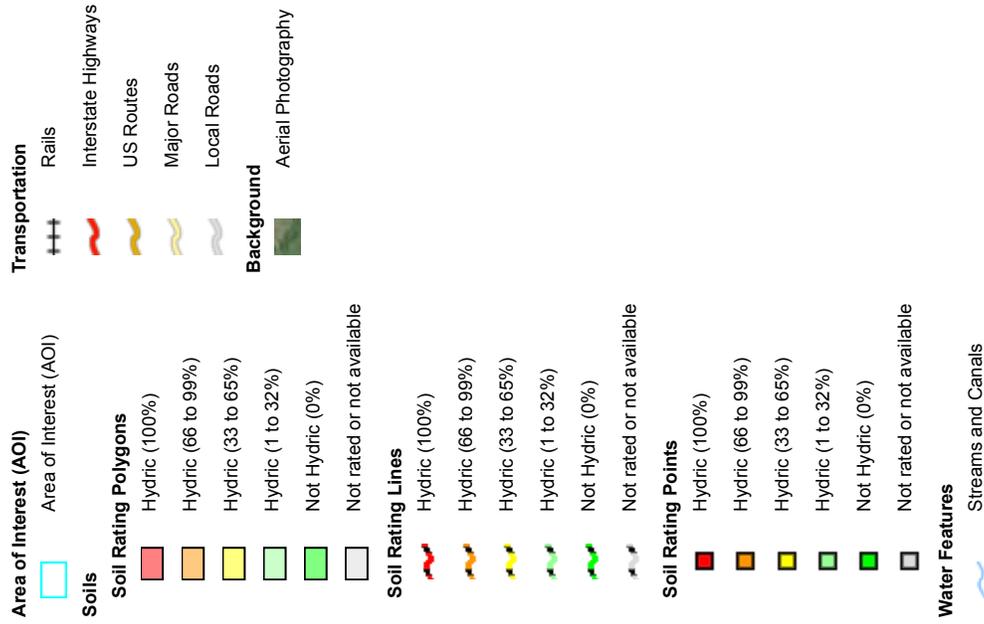
Map Scale: 1:1,910 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

0 50 100 200 300 Feet

0 25 50 100 150 Meters

MAP LEGEND



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ingham County, Michigan
 Survey Area Data: Version 16, Sep 6, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 17, 2011—Oct 11, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AnA	Aubbeenaubbee-Capac sandy loams, 0 to 3 percent slopes	8	4.6	30.3%
Co	Colwood-Brookston loams	80	4.7	30.7%
KbA	Kibbie loam, 0 to 3 percent slopes	10	0.8	5.5%
OtC	Oshtemo-Spinks loamy sands, 6 to 12 percent slopes	0	2.6	17.2%
OwB	Owosso-Marlette sandy loams, 2 to 6 percent slopes	0	0.6	4.0%
W	Water	0	1.9	12.4%
Totals for Area of Interest			15.2	100.0%

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

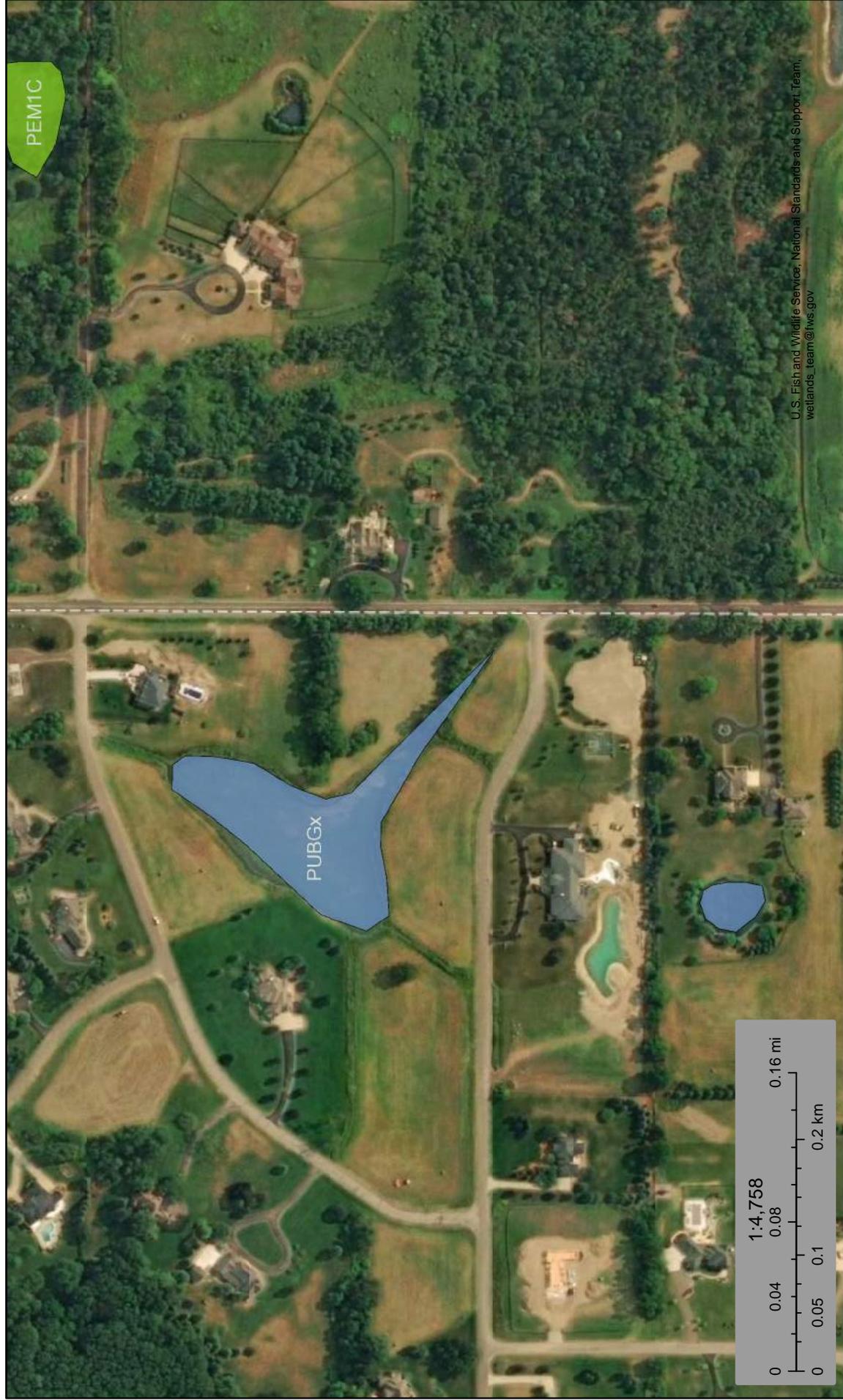
Appendix 3



U.S. Fish and Wildlife Service

National Wetlands Inventory

60 Chimney Oaks Drive, Okemos, MI



U.S. Fish and Wildlife Service, National Standards and Support Team, wetlands_team@fws.gov

October 11, 2018

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Appendix 4

Fishbeck, Thompson, Carr & Huber, Inc.

Site Photographs

60 Chimney Oaks Drive, Okemos, MI

fiC&h

Project No. 181578



Sampling Point SP-A

Views of Channel from SP-A



Looking West



Looking East

Views of Depressional Wetland



Looking East



Looking West

Appendix 5

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: 60 Chimney Oaks Drive **City/County:** Meridian Twp\Ingham **Sampling Date:** 17-Oct-18
Applicant/Owner: Sierra Homes of Michigan **State:** Michigan **Sampling Point:** SP-A
Investigator(s): Elise Tripp **Section, Township, Range:** S. 25 T. 4N R. 1W
Landform (hillslope, terrace, etc.): Channel (active) **Local relief (concave, convex, none):** convex **Slope:** 0.0 % / 0.0 °
Subregion (LRR or MLRA): LRR L **Lat.:** 42.698636890 **Long.:** -84.364034858 **Datum:** WGS84
Soil Map Unit Name: Colwood-Brookston **NWI classification:** PUBGx

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: (Explain alternative procedures here or in a separate report.) 	

Hydrology

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of 2 required)</u>	
<u>Primary Indicators (minimum of one required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches):	0
Water Table Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches):	1
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches):	0
		Wetland Hydrology Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Adjacent channel has 11 inches of water in it.			

VEGETATION - Use scientific names of plants

Sampling Point: SP-A

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30'</u>)				Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. <u>Salix nigra</u>	10	<input checked="" type="checkbox"/>	OBL	
2. _____	0	<input type="checkbox"/>	_____	
3. _____	0	<input type="checkbox"/>	_____	
4. _____	0	<input type="checkbox"/>	_____	
5. _____	0	<input type="checkbox"/>	_____	
6. _____	0	<input type="checkbox"/>	_____	
7. _____	0	<input type="checkbox"/>	_____	
10 = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>50</u> x 1 = <u>50</u> FACW species <u>70</u> x 2 = <u>140</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>120</u> (A) <u>190</u> (B) Prevalence Index = B/A = <u>1.583</u>
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				
1. <u>Salix nigra</u>	10	<input checked="" type="checkbox"/>	OBL	
2. _____	0	<input type="checkbox"/>	_____	
3. _____	0	<input type="checkbox"/>	_____	
4. _____	0	<input type="checkbox"/>	_____	
5. _____	0	<input type="checkbox"/>	_____	
6. _____	0	<input type="checkbox"/>	_____	
7. _____	0	<input type="checkbox"/>	_____	
10 = Total Cover				
Herb Stratum (Plot size: <u>5'</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0¹ <input type="checkbox"/> Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Phalaris arundinacea</u>	70	<input checked="" type="checkbox"/>	FACW	
2. <u>Lemna minor</u>	30	<input checked="" type="checkbox"/>	OBL	
3. _____	0	<input type="checkbox"/>	_____	
4. _____	0	<input type="checkbox"/>	_____	
5. _____	0	<input type="checkbox"/>	_____	
6. _____	0	<input type="checkbox"/>	_____	
7. _____	0	<input type="checkbox"/>	_____	
8. _____	0	<input type="checkbox"/>	_____	
9. _____	0	<input type="checkbox"/>	_____	
10. _____	0	<input type="checkbox"/>	_____	
11. _____	0	<input type="checkbox"/>	_____	
12. _____	0	<input type="checkbox"/>	_____	
100 = Total Cover				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 (1m) tall.. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine - All woody vines greater than 3.28 ft in height.
Woody Vine Stratum (Plot size: _____)				
1. _____	0	<input type="checkbox"/>	_____	
2. _____	0	<input type="checkbox"/>	_____	
3. _____	0	<input type="checkbox"/>	_____	
4. _____	0	<input type="checkbox"/>	_____	
0 = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>

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

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

APPENDIX III

Site Photos Log

SITE PHOTOS



1) A north-facing view of the proposed site north of Chimney Oaks Drive and west of Meridian Road.



2) An east-facing view of existing on-site wetland/drain proposed for the driveway crossing (Photo taken 11/29/2018).



3) A west-facing view of Wetland A/Drain at the proposed driveway crossing locations (Photo taken 11/29/2018).



4) Another view of the driveway crossing, which will avoid the isolated, small 700 square foot wetland.

SITE PHOTOS



5) A west-facing view of the on-site pond. The proposed wetland mitigation will be located approximately 250 feet northwest of where the drain discharges into on-site pond.



6) View of the proposed house location, north of the existing drain/wetland.



7) View of the site from Chimney Oaks Drive (Photo taken 11/29/2018).



8) View of Meridian Road and Chimney Oaks Drive (Photo taken 11/29/2018).

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NOTICE OF AUTHORIZATION

Permit Number: WRP014628 v. 1

Date Issued: December 14, 2018

Site Name: 33-60 Chimney Oaks Drive-Okemos-Lot 30

Expiration Date: December 14, 2023

The Michigan Department of Environmental Quality, Water Resources Division, P.O. Box 30458, Lansing, Michigan 48909-7958, under provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; specifically:

- Part 31, Floodplain Regulatory Authority of the Water Resources Protection.
- Part 301, Inland Lakes and Streams.
- Part 303, Wetlands Protection.
- Part 315, Dam Safety.

Authorized activity:

Construct a 40-foot-long, 38-inch by 57-inch diameter elliptical corrugated metal culvert on the Povey Drain at Lot 30 Chimney Oaks, including 80 cubic yards of backfill and 10 cubic yards of natural stone riprap at the end sections.

To be conducted at property located in: Ingham County, Waterbody: Povey Drain
Section 25, Town 04N, Range 01W, Meridian Charter Township

Permittee:

Sierra Homes of Michigan, Inc.
Attention Mr. Chris Thelen
10476 West Walker Road
Fowler, MI 48835-9714

A handwritten signature in blue ink, appearing to read 'C. Valor', is positioned above the printed name and title.

Carol Valor
Lansing District Office
Water Resources Division
517-388-3667

*This notice must be displayed at the site of work.
Laminating this notice or utilizing sheet protectors is recommended.*
Please refer to the above permit number with any questions or concerns.

RECEIVED
NOV 16 2018

Ingham County Drain Commissioner
Patrick E. Lindemann

707 BUHL STREET P. O. BOX 220 MASON MI 48854 PH. (517) 676-8395 FAX (517) 676-8364

PERMIT TO CROSS A COUNTY / INTERCOUNTY DRAIN

Date Issued 10/8/2018	<input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Agricultural	Permit 18-088
Drain Number P39-00	Drainage District POVEY DRAIN	

PERMITTED ACTIVITY:

Install a 36" 14 guage CMP culvert in the inlet to the Chimney Oaks detention basin to be used as a driveway for a single family home (I.E. 853.4).

PERMITTEE:

Permittee: Sierra Homes of Michigan - Jim Houthoold
 Address: 10476 W. Walker Road
 City: Fowler State: MI Zip: 48835
 Phone: 517.204.3641 Fax: _____
 E-Mail: christhelen@yahoo.com

CONTRACTOR:

Contractor: Sierra Homes of Michigan
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Fax: _____
 E-Mail: _____

PERMIT CONDITIONS:

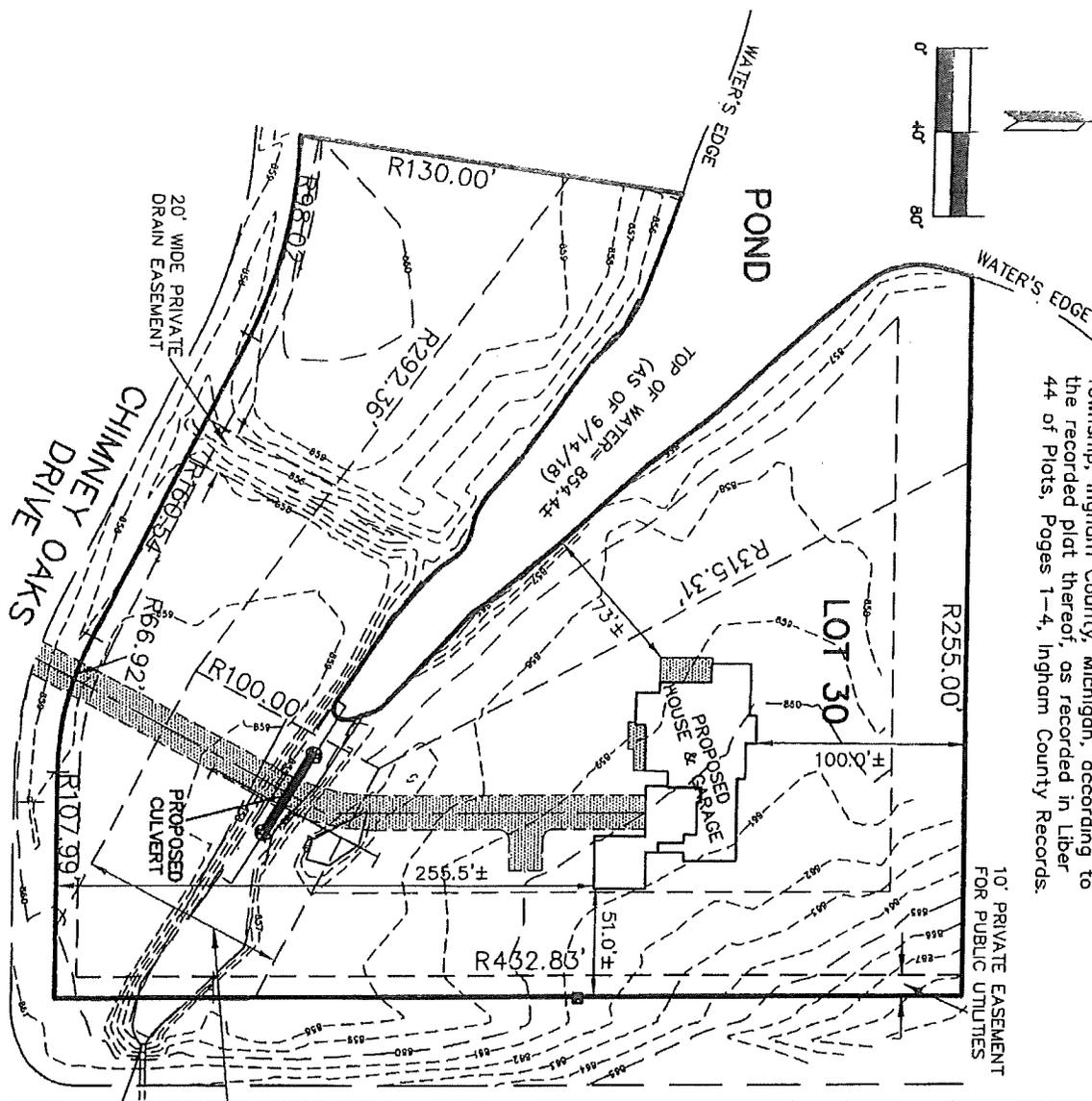
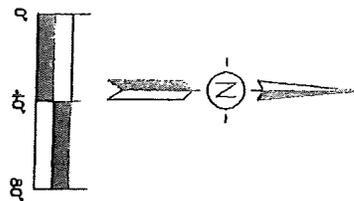
1. The permitted activity shall be completed in accordance with the approved plans and specifications, and the attached general conditions and responsibilities.
2. Initiation of work approved under this permit confirms the permittee's acceptance and agreement to comply with the terms and conditions of this permit.
3. This permit does not waive the necessity for obtaining all other required federal, state, or local permits.
4. Permit must be posted visibly on-site. (Post permit near entrance to site)

Additional Conditions:

Call Dave Solberg at least 3 days before starting the work (719-4898).
Drain Commissioner's inspector must be onsite during construction authorized by permit.

APPROVED BY  APPROVAL DATE 10/8/2018

Exhibit A

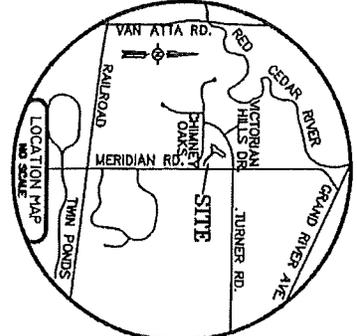


Legal Description (as provided):
 Lot 30, Chimney Oaks Subdivision, Meridian Township, Ingham County, Michigan, according to the recorded plat thereof, as recorded in Liber 44 of Plots, Pages 1-4, Ingham County Records.

LOT 30, CHIMNEY OAKS
 MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

10' PRIVATE EASEMENT FOR PUBLIC UTILITIES

MERIDIAN ROAD



100' WIDE PRIVATE EASEMENT FOR POVEY DRAIN
 50" RCP IE- 855.77



SHEET 1 OF 3	REVISIONS
	9-28-18
	10-2-18
	10-5-18



KEBS, INC.
 2116 HASLETT ROAD, HASLETT, MI 48840
 PH. 517-339-1014 FAX. 517-339-8047
 Marshall Office
 Ph. 248-761-6800

SCALE: 1"=80'
 PROJECT MGR. GLV
 APPROVED BY:
 DRAWN BY: SLH
 DRAWING NOT TO SCALE

Lot 30, Chimney Oaks
PROPOSED HOUSE & GARAGE
 AUTHORIZED BY: SIERRA HOMES, INC.
 JOB #: 93525.HSE

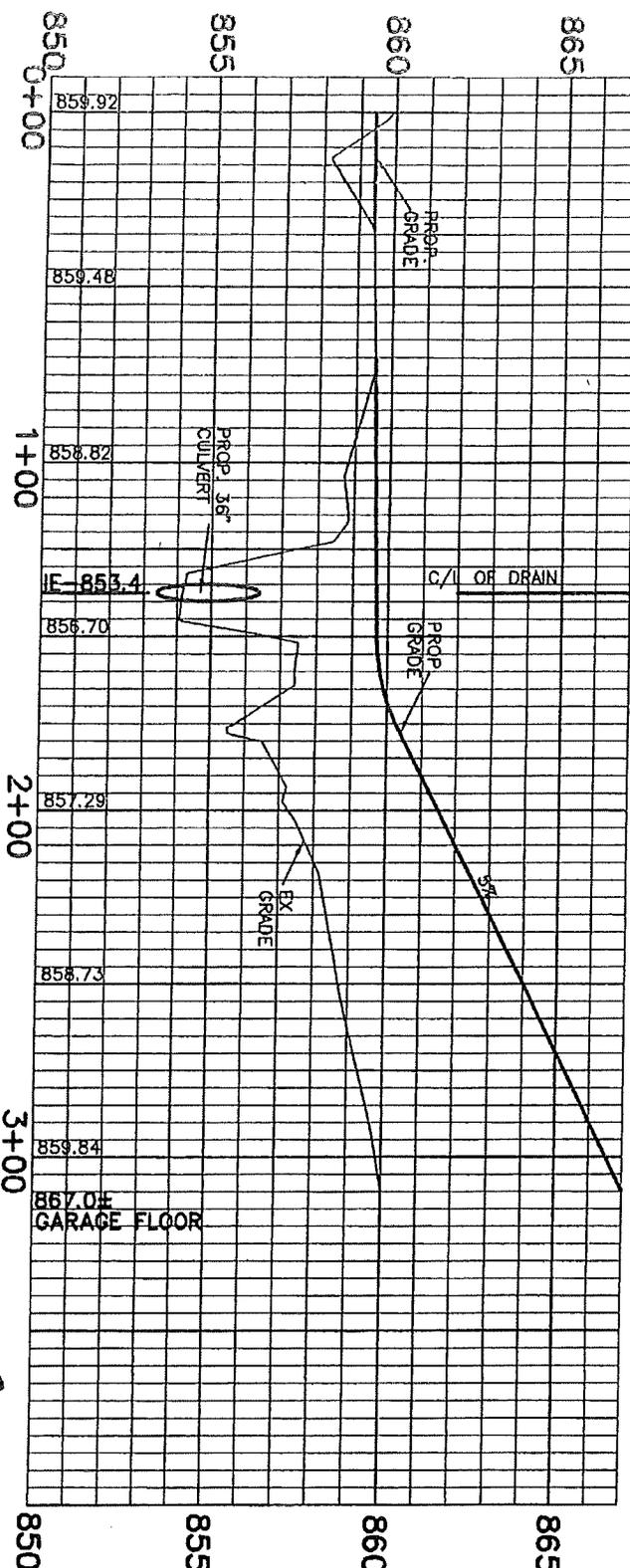
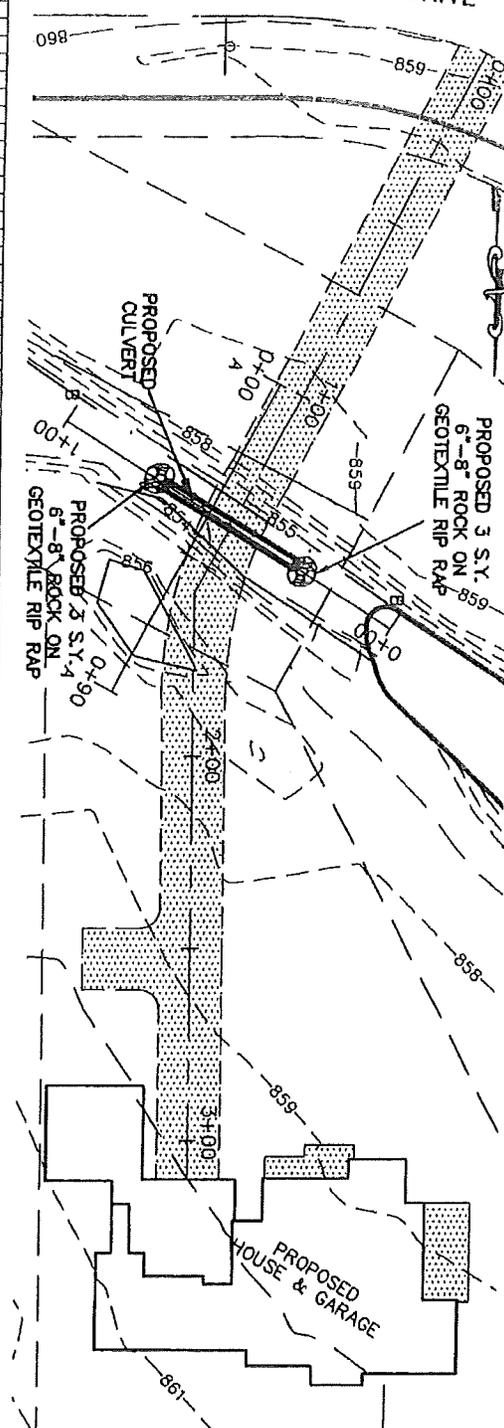
Exhibit A

CHIMNEY OAKS DRIVE



PLAN VIEW
SCALE: 1" = 50'

LOT 30, CHIMNEY OAKS
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN



PROFILE VIEW
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



REVISIONS
9-28-18
10-2-18
10-5-18



KEBS, INC.
2116 HASLETT ROAD, HASLETT, MI 48840
PH. 517-339-1014 FAX. 517-339-8047
Marshel Office
Ph. 288-781-9600

SCALE: 1"=50'
PROJECT MGR. GLV
APPROVED BY:
DRAWN BY: SLH
DRAWING NOT TO SCALE

Lot 30, Chimney Oaks
PROPOSED HOUSE & GARAGE
AUTHORIZED BY: SIERRA HOMES, INC.
JOB #: 93525.HSE

SHEET 2 OF 3

PLAN VIEW
SCALE: 1" = 50'

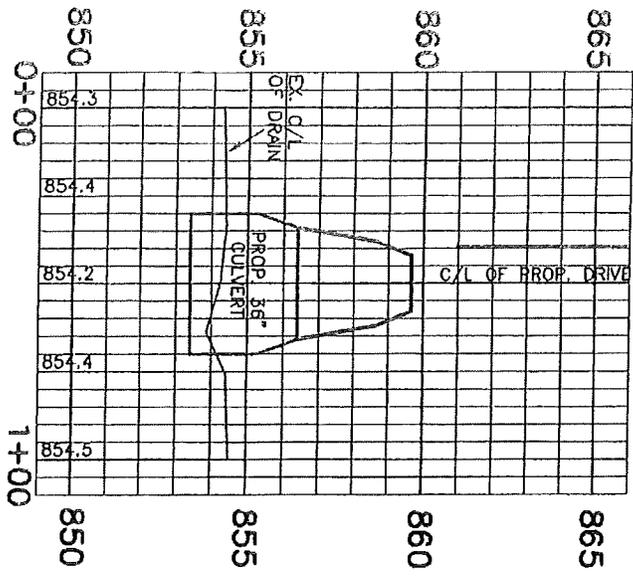
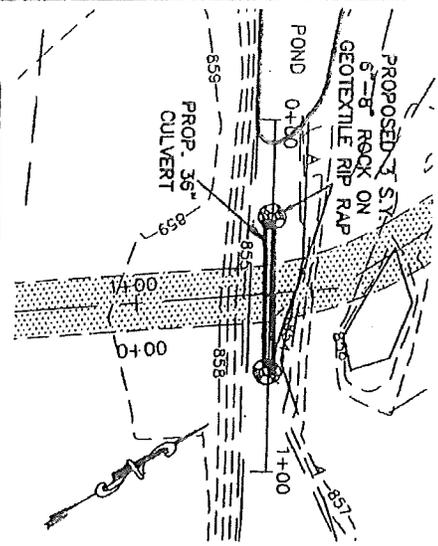
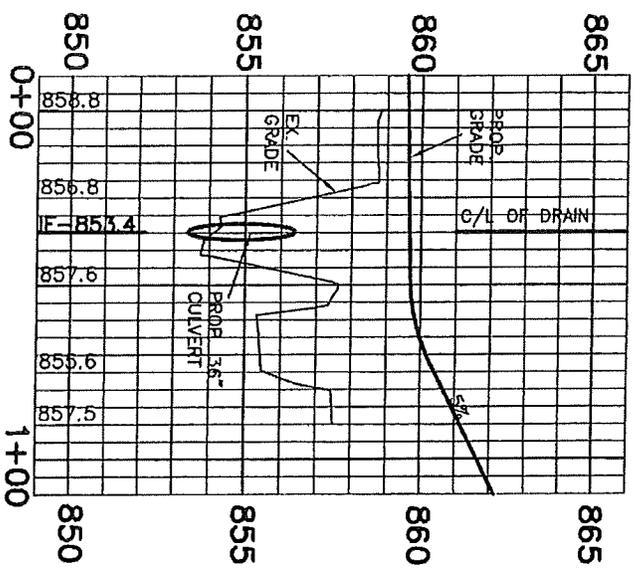
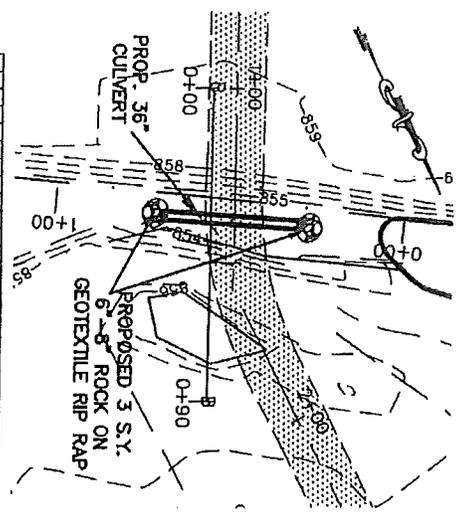


EXHIBIT A
LOT 30, CHIMNEY OAKS
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN



PROFILE VIEW
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



REVISIONS
9-28-18
10-2-18
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KEBS, INC.
2116 HASLETT ROAD, HASLETT, MI 48840
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SCALE: 1"=50'
PROJECT MGR. GLV
APPROVED BY:
DRAWN BY: SLH
DRAWING NOT TO SCALE

Lot 30, Chimney Oaks
PROPOSED HOUSE & GARAGE
AUTHORIZED BY: SIERRA HOMES, INC.
JOB #: 93525.HSE



January 4, 2019
Project No. 181842

Mr. Mark Kieselbach
Charter Township of Meridian
5151 Marsh Road
Okemos, MI 48864

Re: Wetland Use Permit (WUP) #18-04 Application Review
60 Chimney Oaks Drive
Lot 30 of the Chimney Oaks Subdivision

Dear Mr. Kieselbach:

Sierra Homes of Michigan, Inc. (the Applicant) is requesting to construct an access drive from Chimney Oaks Drive to a proposed house development located at 60 Chimney Oaks Drive, Okemos, Michigan (the Site). The drive will traverse a county drain (FKA Povey, Chimney Oaks Branch Drain) that crosses the Site. The drain contains emergent wetland approximately three feet wide at the toe of its banks.

At the request of the Township of Meridian (Township), FTCH reviewed the Wetland Use Permit (WUP) request, including the following:

- A Joint Permit Application (JPA) prepared by the Applicant, dated November 5, 2018;
- *Meridian Wetland Use Permit Application & Wetland Mitigation Plan Summary Report (Report)*, dated December 5, 2018, prepared by Marx Wetlands LLC (Marx)

This report provides a brief description of the resources that would be impacted by the proposed work, evaluates WUP Application #18-04 according to review standards in the Township Wetland Protection Ordinance (Article IV of Chapter 22 of the Code of Ordinances of the Charter Township of Meridian), and makes recommendations to the Township regarding issuance or denial of the WUP application.

Overview of Proposed Wetland Impacts

The proposed activities are located in Parcel Number 33-02-02-25-478-004 in the southeast quarter of Section 25, Town 4 North, Range 1 West, Ingham County, Michigan. The approximately 1.5-acre parcel is currently undeveloped. A stormwater detention basin owned by the Ingham County Drain Commissioner (ICDC) is located along the Site's western boundary. The Povey Drain flows across the southeast end of the Site into the basin. FTCH delineated wetlands in the vicinity of the proposed driveway in October 2018. Emergent wetland was delineated along the edge of the channel. In addition, a separate, 700-square ft wetland was present north of the channel in a steep depression. Both wetlands are contiguous to the Povey Drain and are therefore regulated by both the State of Michigan and the Township.

The Applicant has submitted a WUP application to the Township requesting the following:

- Construct an access drive that crosses the Povey Drain and associated wetlands. The access drive will not impact the 700-square foot wetland. The access drive will terminate at a single-family house with attached garage.

- Install a 40-foot long culvert in the drain. The JPA notes discrepancies in culvert size (36-inch diameter and 57-inch by 38-inch pipe arch).
- Place fill in 240 square feet of wetland, due to culvert construction. FTCH noted discrepancies in the proposed fill volume. Marx's cover letter and the Report note 930 cubic yards of wetland fill and 5 cubic yards of riprap at either end of the culvert. Page 7 of the JPA includes updated calculations of wetland fill area and volume, reflecting filling the three-foot wide wetlands along the 40-foot long culvert to a depth of five feet (as noted in the design cross-section). The resultant fill volume is 45 cubic feet.
- Construct a 360 square-foot mitigation wetland east of the stormwater detention basin at the northwest end of the Site. The mitigation plan did not note if pre-existing wetland is present in this area. The mitigation wetland is designed to be approximately three feet east of the stormwater detention pond's edge of water.

Review of WUP Application

The review standards used to evaluate WUP applications are found in Section 22-157 of Article IV (Wetland Protection) of Chapter 22 of the Township's Code of Ordinances. WUPs are not to be issued unless the proposed activity is found to be in the public interest, the permit is necessary to realize the benefits from the activity, and the proposed activity is otherwise lawful in all respects. Section 22-157(2) lists eleven general criteria to be considered when evaluating whether or not a proposed activity is in the public interest. An evaluation of the proposed activity, according to each of the eleven criteria, is as follows:

Section 22-157(2)(a) *The relative extent of the public and private need for the proposed activity.*

- No information regarding the relative extent of the public and private need for the proposed housing development was provided.

Section 22-157(2)(b) *The availability of feasible and prudent alternative locations and methods to accomplish the expected benefits from the activity.*

- The WUP application discussed alternative locations for the access drive and house placement. There is not enough room for placement of the house on the south side of the drain, due to required setbacks. The chosen drain crossing location has the least possible impact on site wetlands and entirely avoids the 700-square ft depressional wetland.
- Access to the house from Meridian Road was deemed unsafe due to moderate traffic flow on Meridian Road and limited visibility from the house.
- Alternative culvert sizes were discussed with the ICDC. A 57-inch by 38-inch diameter culvert was selected, as noted in the design drawings, however, the rationale for selecting this culvert size was not discussed in the reviewed documents.

Section 22-157(2)(c) *The extent and permanence of the beneficial or detrimental effects which the proposed activity may have on the public and private uses to which the area is suited, including the benefits the wetlands provide.*

- FTCH's wetland delineation report indicated the emergent wetland on the edge of the drain varied from two to three-feet wide and primarily consisted of reed canarygrass (*Phalaris arundinacea*), which is an invasive species.

- Due to its narrow width and poor floristic quality, the impacted wetland provides limited functions and values. These functions and values include sediment retention, flood control, and wildlife habitat.
- The proposed access drive construction will result in permanent loss of 240 square feet of wetland. This loss will be compensated by construction of a 360 square foot mitigation wetland on the Site. The mitigation wetland will likely be of higher quality than the wetland impacted by this project.
- The proposed access drive construction will allow construction of a single-family residence, a use for which this Site is well suited. The Site is part of a housing subdivision.

Section 22-157(2)(d) *The probable impact of each proposal in relation to the cumulative effect created by other existing and anticipated activities in the watershed.*

- There are no identified cumulative impacts of the proposed project.

Section 22-157(2)(e) *The probable impact on recognized historic, cultural, scenic, ecological, or recreational values and on the public health or safety, or fish or wildlife.*

- Construction of the access drive from Chimney Oak Drive provides a safer alternative than providing site access directly from Meridian Road. However, access from Chimney Oaks Drive requires an unavoidable drain and wetland crossing.
- Limited ecological impact will result from the access drive construction, due to the minimal wetland impacts and the incised nature of the drain at the proposed drain crossing.
- No other impacts on recognized historic, cultural, scenic or recreational values are apparent for the proposed activities. In addition, no impacts on fish are apparent.

Section 22-157(2)(f) *Economic value, both public and private, of the proposed land change to the general township area.*

- The question of economic value associated with the proposed activity is beyond the scope of the issues FTCH was retained to address. Accordingly, FTCH offers no opinion, recommendations, or advice with respect to this criterium.

Section 22-157(2)(g) *The size and quality of the wetland being considered.*

- The proposed activities will result in placement of 45 cubic yards of fill in 240 square feet of wetland. The impacted wetland is low quality. The dominant vegetation consists of an invasive species.

Section 22-157(2)(h) *The findings of necessity for the proposed activity which have been made by other agencies.*

- FTCH is not aware of any findings of necessity for the proposed activity which have been made by other agencies.

Section 22-157(2)(i) *Amount of wetland remaining in the general area and proximity to a waterway.*

- The Township wetland map for Section 25 indicates the stormwater detention basin on the west edge of the Site and associated drainageway is part of Township Wetland 25-1D, a 12.17-acre, open water and forested wetland that is a tributary to the Red Cedar River and a designated county drain.
- The ICDC Preliminary Meridian Township Southeast Drain map confirms the stormwater detention basin, the channel that crosses the Site, and a second short swale that connects to the channel from Chimney Oaks Drive on the Site are all part of the FKA Povey, Chimney Oaks Branch Drain.

Section 22-157(2)(j) *Proximity to any waterbody.*

- The Red Cedar River is located approximately one-third mile west-northwest of the proposed drain crossing.

Section 22-157(2)(k) *Extent to which upland soil erosion adjacent to the protected wetland is controlled.*

- Erosion control measures are noted on *Sheet: Mitigation 2, Mitigation Construction Notes* (see *Sequence of Construction and Grading Specifications*). The notes indicate that damage to wetlands will be repaired immediately and wetlands will be restored to their original character.

Recommendations

Section 22-158(6) of the Township ordinance states “wetland mitigation plans that create less than two-acre wetlands shall meet one of the conditions listed subsection 22-156(a).” Of the listed conditions, the proposed mitigation wetland provides the following functions and values: flood and stormwater control, wildlife habitat, and erosion control.

Based upon our review of the submitted materials, FTCH recommends the Township approve a WUP for the proposed project and the proposed wetland mitigation plan, with the following conditions/modifications:

- Mitigate wetland impacts at a ratio of 1.5:1, constructing an emergent wetland at the northwest end of the Site. The minimum size of the mitigation wetland will be 360 square-feet.
- Clarify if wetland is present along the edge of the stormwater detention pond at the proposed wetland mitigation site. If wetland is present, update *Sheet: Mitigation 1* to include the delineated wetland boundary and verify the mitigation wetland does not overlap with existing wetland.
- Installation of only one habitat structure is required. Delete snags and sand mounds from the mitigation plan as acceptable habitat structures.
- Soil placed within the surface six inches of the mitigation wetland shall consist of mineral topsoil (not organic soil, such as muck). It is acceptable to utilize topsoil removed from mitigation wetland site if it is of sufficient quality and quantity to support wetland vegetation.
- The mitigation wetland shall be monitored for a period of five years, starting in the first full growing season after construction. Therefore, if construction is finalized after June 1, a monitoring report will not be required until the following year.
- Due to the small size of the mitigation wetland, only one permanent station is required for obtaining hydrology data (i.e. monitoring well or staff gage).
- The wetland boundary in the mitigation wetland only needs to be flagged in the fifth year of monitoring, not yearly. However, estimating wetland area yearly is recommended to determine if permit requirements are being met.
- The mitigation wetland must meet the following performance standards at the end of five full growing seasons:
 - 60% cover of native, wetland species comprised of at least 15 species
 - Less than 10% cover of invasive species, as noted in the mitigation plan.

Mr. Mark Kieselbach
Page 5
January 4, 2019



We appreciate the opportunity to assist in the review of this file. If you have any questions or require additional information, please contact me at 616.464.3738 or ehtripp@ftch.com.

Sincerely,

FISHBECK, THOMPSON, CARR & HUBER, INC.

A handwritten signature in black ink that reads "Elise Hansen Tripp". The signature is written in a cursive, flowing style.

Elise Hansen Tripp, PWS

pmb

By email

cc: Mr. Peter Menser – Township