AGENDA

CHARTER TOWNSHIP OF MERIDIAN
PLANNING COMMISSION – REGULAR MEETING
August 13, 2018 7PM

1. CALL MEETING TO ORDER
2. PUBLIC REMARKS
3. APPROVAL OF AGENDA
4. APPROVAL OF MINUTES
   A. July 23, 2018 Regular Meeting

5. COMMUNICATIONS
   A. Michael & Betty Casby RE: PUD #18014
   B. Craig O'Neill RE: PUD #18014
   C. Christina Morey RE: PUD #18014
   D. Dawn Kettinger & Denise Kane RE: PUD #18014

6. PUBLIC HEARINGS
   A. Planned Unit Development #18014 (Haslett Road LLC), develop Copper Creek PUD consisting of 91 single family homes on 44 acres located on the north side of Haslett Road, east of Creekwood Lane.

7. UNFINISHED BUSINESS
   A. Rezoning #18090 (M&J Management LLC), rezone approximately 5 acres located at 1999 East Saginaw Highway from I (Industrial) to C-2 (Commercial).
   B. Rezoning #18100 (HOS Management), rezone approximately 0.42 acres located at 7080 Saginaw Highway from I (Industrial) to C-2 (Commercial).

8. OTHER BUSINESS
9. TOWNSHIP BOARD, PLANNING COMMISSION OFFICER, COMMITTEE CHAIR, AND STAFF COMMENTS OR REPORTS
10. PROJECT UPDATES
    A. New Applications - NONE
    B. Site Plans Received - NONE
    C. Site Plans Approved
       1. Site Plan Review #18-97-31, renovation of existing Arby's restaurant at 2214 Jolly Road.

11. PUBLIC REMARKS
12. ADJOURNMENT
13. POST SCRIPT: JOHN SCOTT-CRAIG

TENTATIVE PLANNING COMMISSION AGENDA

August 27, 2018

1. PUBLIC HEARINGS
   - A. Special Use Permit #18071 (Meridian Township), construct pedestrian boardwalk in the floodplain over the Mud Lake Outlet Drain located along the east side of Okemos Road, south of Gaylord C. Smith Court, and north of the existing pathway along the east side of Okemos Road.
   - B. Rezoning #18110 (Buckley), rezone approximately 0.18 acres located at 5998 Martinus Street and a vacant lot to the south recognized as Tax I.D. #10-205-005 from C-1 (Commercial) to RB (Single Family-High Density).

2. UNFINISHED BUSINESS
   - A. Planned Unit Development #18014 (Haslett Road LLC), develop Copper Creek PUD consisting of 91 single family homes on 44 acres located on the north side of Haslett Road, east of Creekwood Lane.

3. OTHER BUSINESS
   - A. Future Land Use Map review.

CHARTER TOWNSHIP OF MERIDIAN **DRAFT**
PLANNING COMMISSION
REGULAR MEETING MINUTES

July 23, 2018
5151 Marsh Road, Okemos, MI 48864-1198
517-853-4560, Town Hall Room, 7:00 P.M.

PRESENT: Commissioners Richards, Cordill, Ianni, Scott-Craig, Trezise, Stivers, Premoe and Lane
ABSENT: Commissioners Shrewsbury
STAFF: Director of Community Planning and Development Mark Kieselbach, Principal Planner Peter Menser

1. Call meeting to order

Chair Ianni called the regular meeting to order at 7:01 P.M.

2. Public Remarks

A. Mr. Brian Lick, 2613 Elderberry Dr., spoke in opposition to Rezoning #18080.
B. Mr. Jim Giguere, 6253 Fenwick Ct., spoke in support of Rezoning #18080.
C. Ms. Alina Gorelik, 2577 Robins Way, spoke in opposition to Rezoning #18080.

3. Approval of Agenda

Vice-Chair Scott-Craig moved to approve the agenda as written.
Supported by Commissioner Cordill.
VOICE VOTE: Motion approved unanimously.

4. Approval of Minutes

June 25, 2018 and July 9, 2018
Vice-Chair Scott-Craig moved to approve both sets of minutes with minor corrections.
Supported by Commissioner Cordill.
VOICE VOTE: Motion approved unanimously.

5. Communications

A. Jay Murthy RE: Rezoning #18080
B. Brent Felton RE: Rezoning #18080

6. Public Hearings

A. Rezoning #18090 (M&J Management LLC), rezone approximately 5 acres located at 1999 East Saginaw Highway from I (Industrial) to C-2 (Commercial).

Chair Ianni opened the public hearing at 7:06 p.m.

Principal Planner Menser outlined Rezoning #18090 for discussion.

Mr. David Pierson spoke on behalf of the applicant, he explained when the parcels along Saginaw Highway were originally zoned Industrial it was due to the belief that the highway would be a thoroughfare for industrial traffic but the reality of the current development in the surrounding area is commercial. With the addition of the Bath Township Meijer across the highway the small portion of this parcel right next to the highway would be better used as a commercial parcel while the remainder of the parcel remains Industrial in anticipation of use as a vocational school in the future. Mr. Pierson stated sanitary sewer is available to the site from Bath Township.

There was no public comment.

Vice-Chair Scott-Craig commented he had gone on a site visit. He commented the commercial development surrounding the parcel would be consistent with the rezoning request.

Commissioner Cordill stated she was concerned about the traffic increase which could occur if the rezoning to commercial was approved.

Principal Planner Menser replied that traffic could increase dramatically so it would be a judgement made by the Planning Commission. He stated Saginaw Highway would most likely be able to handle the increase with some adjustments by the Michigan Department of Transportation.

Commissioner Stivers asked if the extension of sanitary sewer could benefit Mr. Singh with his recently approved rezoning.

Principal Planner Menser replied it was possible that Mr. Singh would benefit.

Commissioner Richards commented Saginaw Highway is a divided highway which should be able to handle the traffic increase with some minor changes.

A straw poll indicated the Planning Commission would be in favor of approval of Rezoning #18090 and staff was asked to prepare a resolution of approval for the next meeting.

Chair Ianni closed the public hearing at 7:36 p.m.

B. Rezoning #18100 (HOS Management), rezone approximately 0.42 acres located at 7080 Saginaw Highway from I (Industrial) to C-2 (Commercial).

Chair Ianni opened the public hearing at 7:38 p.m.

Principal Planner Menser outlined Rezoning #18100 for discussion.

Mr. David Pierson spoke on behalf of the applicant, he stated the parcel in question is less than an acre so it could not be developed as Industrial unless is was combined with another parcel to bring it to the minimum size for an Industrial zoned project.

Ms. Sumera Sumbal who owns the business across the highway stated traffic is a real concern in the area and that Bath Township has had several meeting in an attempt to remedy the problem. In her opinion the traffic issue should be addressed prior to any rezoning approval.

Commissioner Trezise stated he supports the rezoning and agreed the traffic issue needs to be addressed by the Michigan Department of Transportation as soon as possible.

Vice-Chair Scott-Craig stated he was in support of the rezoning.

Commissioner added her support but said she would like to hear the opinion of Bath Township regarding the traffic issue.

Commissioner Lane asked if the business currently operating from the site would be able to continue operation if the rezoning request was denied.

Principal Planner Menser said they would be allowed to continue operation but the use would be non-conforming.

Vice-Chair Scott-Craig asked if it was possible to get the input of Bath Township.

Principal Planner Menser replied that staff has had ongoing discussions with their counterparts at Bath Township regarding the issues of rezoning and development.

A straw poll conducted indicated the Planning Commission would be in favor of approval for Rezoning #18100. Staff was asked to draft a resolution of approval for the next meeting.

Chair Ianni closed the public hearing at 7:50 p.m.

7. Unfinished Business

A. Rezoning #18080 (Giguere Homes), rezone approximately 7.36 acres located at 3760 Hulett Road from RR (Rural Residential) to RA (Single Family-Medium Density).

Principal Planner Menser outlined Rezoning #18080 for discussion. He stated the applicant had provided the deed restrictions for the Sanctuary as he was asked to at the previous meeting.

Commissioner Trezise moved to approve Rezoning #18080 as outlined in the resolution.
Supported by Vice-Chair Scott-Craig.

VOICE VOTE:
YEAS: Commissioners Trezise, Vice-Chair Scott-Craig, Premoe, Cordill, Stivers, and Chair Ianni
NAYS: Commissioners Richards and Lane
MOTION CARRIED: 7-1.

8. Other Business-None

9. TOWNSHIP BOARD, PLANNING COMMISSION OFFICER, COMMITTEE CHAIR, AND STAFF COMMENTS OR REPORTS

Vice-Chair Scott-Craig gave a brief summary of the July 12, 2018 Economic Development Corporation (EDC) meeting. He said the August meeting has been cancelled.

Commissioner Stivers gave a brief summary of the July 9, 2018 Downtown Development Authority (DDA) meeting.

Principal Planner Menser commented the tentative agenda for the August 13th meeting did not list any public hearings but one had been added for a Planned Unit Development on Haslett Road called Copper Creek.

10. PROJECT UPDATES

A. New Applications - None
B. Site Plan Received
   1. Site Plan Review #18-97-31, renovation of existing Arby's restaurant at 2214 Jolly Road.
C. Site Plans Approved - None

11. PUBLIC REMARKS - NONE

12. ADJOURNMENT

Commissioner Richards moved to adjourn the meeting.
Supported by Commissioner Lane.
VOICE VOTE: Motion carried unanimously.

Chair Ianni adjourned the regular meeting at 8:07 p.m.

Respectfully Submitted,

Angela M. Ryan
Recording Secretary

Peter Menser

From: M W. Casby <casbymw@yahoo.com>
Sent: Thursday, August 02, 2018 10:23 AM
To: Peter Menser
Subject: Planned Unit Development #18090 (M&J Management LLC), east of Creekwood Lane in section 12 of the Township.

My name is Michael W. Casby. My wife and I – Betty – are long-term residents of: 5624 Creekwood Lane, Haslett, MI 48840. With this correspondence we would like to submit the following comments for the record with regard to: Planned Unit Development #18090 (M&J Management LLC), east of Creekwood Lane in section 12 of the Township. Please submit this to the Planning Commission record for the planned meeting of August 13, 2018.

The woodland/wetland/nature area running just east of the length Creekwood Lane must be preserved. It is a habitat for numerous protected migratory birds, to include – cardinals, blue birds, robins, woodpeckers, as well as others. This area also serves an important drainage function for the land. New home owners to its east will, no doubt, want this area to remain as well, as it will act as a natural sight and sound buffer and nature preserve.

Construction traffic must be prohibited from Creekwood Lane/Wood Knoll Lane. It is a narrow street, and heavily parked on; many times making two-way traffic impossible. Furthermore, it is very busy with young children throughout the day and evening.

Entrance to any new subdivision in this area should be off of Haslett Road, and not via Creekwood Lane/Wood Knoll Lane. Creekwood Lane is a long-established, no-outlet/dead-end, cul-de-sac that needs protection from any ingress/egress to the property to its east. Any increase in traffic would add considerable health, safety, and quality-of-life concerns.

We believe that the needs, requests of the citizens should be upheld. These are simple, necessary requests that will support positive health, safety, and quality of life. We believe that they are very reasonable, non-obstructive, and should take precedence over rebuttals of a developer.

Thank you, and the Planning Commission for its consideration.

Cordially,
Michael W., and Betty Casby
(517-648-1665)

Peter Menser

From: Oneill, Craig <oneillc@osp.msu.edu>
Sent: Friday, August 03, 2018 2:05 PM
To: Peter Menser
Subject: PUD 18014
Attachments: MERIDIAN TOWNSHIP MASTER PLAN June 27 2016-.pdf

Hi Peter,
Thanks for discussing the Planned Unit Development #18014 today. I appreciate your expertise and understanding regarding development of the 98 lots with 39 lots on the western portion of the property identified on your provided map. If the approximate space is 44.70 acres and is Zoned RA (Single Family, Medium Density), the math would mean that it would be about .45 per acre lots or 2.2 houses per acre assuming all the land is usable.

My concern is that using the RA higher scale levels of houses/acre would not be consistent with the abutting neighborhoods. Based on the known issues with wetlands*, it appears that not all this land will be buildable. So I guess the spaces between the houses could be very tight. Assuming that I have the correct definition ("R2" from the June Meridian Township Master Plan), the developer is allowed to build up to 3.5 houses on each acre if the plan is approved. Assuming the max, that would mean that about 28 acres could be used out of the approximate 44.7 leaving the other 16.7 acres for drainage and wetlands (if my math his right). So maybe the location cannot or should not support the proposed number of lots.

My concern is that the new development will encroach on the current drainage system called the Jefferies Drain System (http://www.inghamdrains.org/Drains/township_maps/Meridian_NE_36x41_10.2.pdf) including the adjacent wetlands* and that this will cause major issues for upstream home-owners from the proposed PUD (as well as the wildlife that lives in those wetlands) if not addressed in the plan. Maybe the developer will need to provide a proven drainage plan to ensure that water will not backup during spring flooding and high rain seasons.

I trust that these concerns will be addressed by the Meridian Township Planning Commission before giving the ?Haslett Development LLC? the go-ahead. Please feel free to share these comments and images provided below at the August 8th meeting if appropriate.

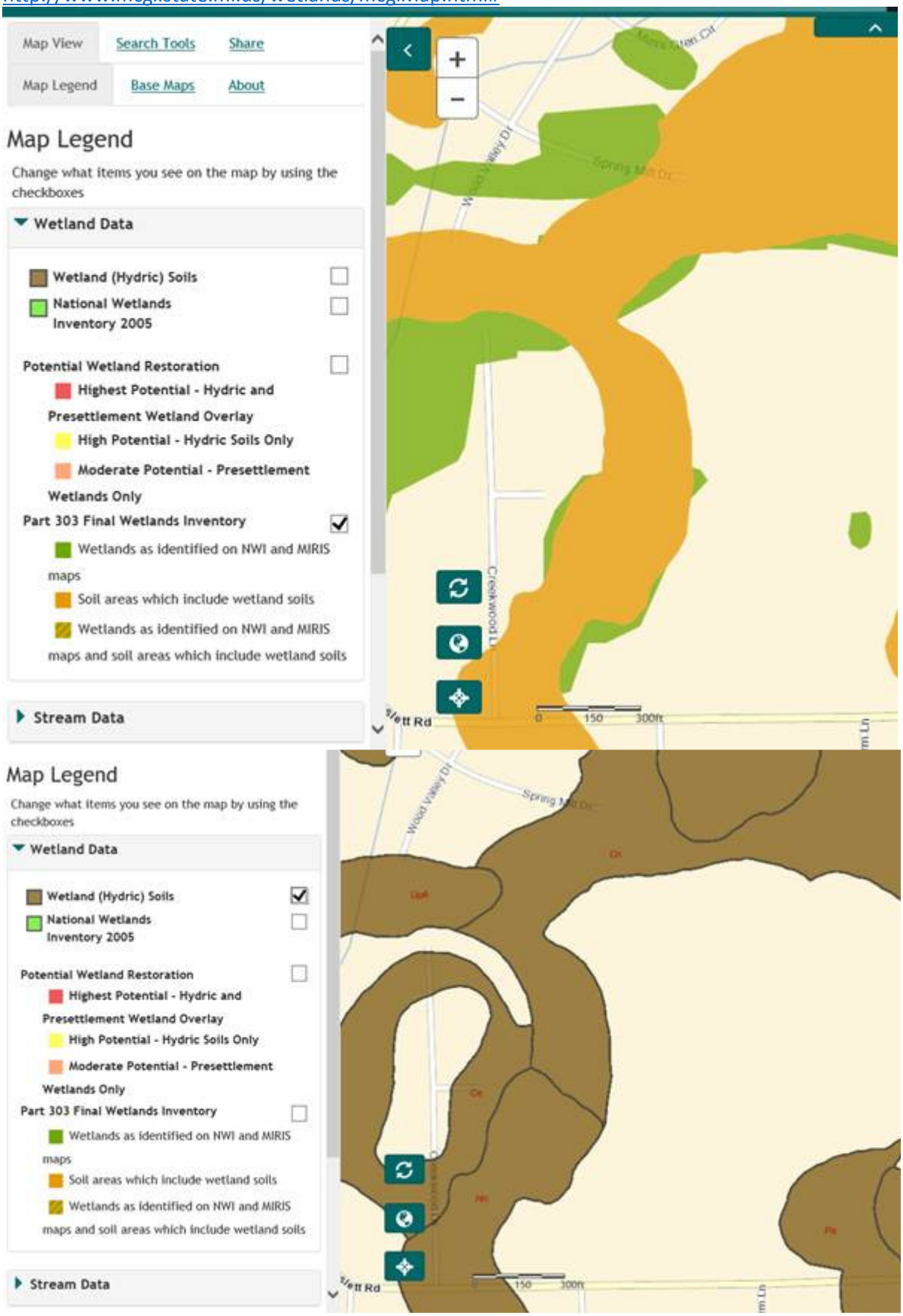
Kindest regards,
Craig O'Neill
861 Moss Glen Circle
Haslett

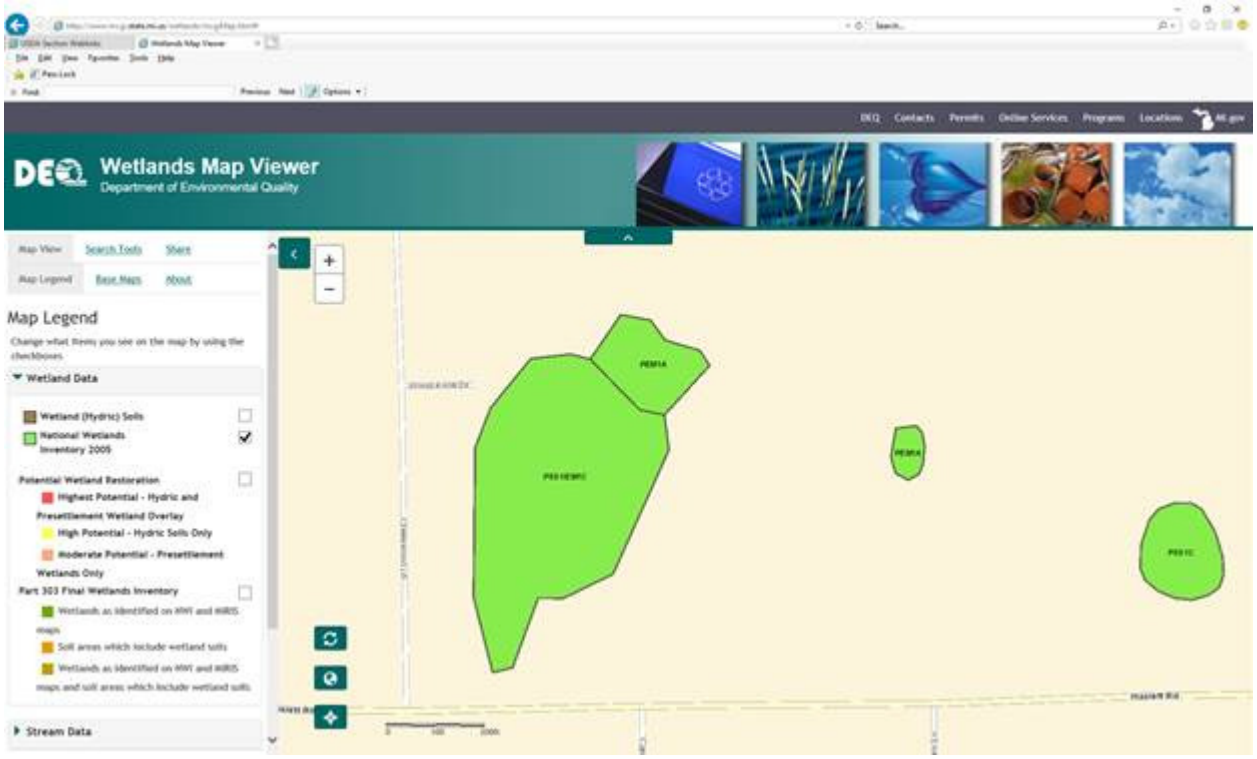
From the June 27, 2016 Meridian Township Master Plan:
The most prevalent residential category in the Township, these medium density areas are characterized by suburban amenities, planned aesthetic, and proximity to retail centers.
…R2) Single-family Residential 1.25-3.5 DU/A (6086 acres, 32.35%) The most prevalent residential category in the Township, these medium density areas are characterized by suburban amenities, planned aesthetic, and proximity to retail centers. These areas are found throughout the western two-thirds of the Township. New development should be encouraged to include 20% of all units specifically designated as workforce housing
(100% Area Median Income (AMI)) and 15% of all units designated for affordable housing (30-80% AMI).

PUD 18014

*

http://www.mcgi.state.mi.us/wetlands/mcgiMap.html#

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Department of Environmental Quality
Map View
Search Tools
Share
Map Legend
Base Maps
About
Map Legend
Change what items you see on the map by using the checkboxes
Wetland Data
Wetland (Hydric) Soils
National Wetlands Inventory 2009
Potential Wetland Restoration
Highest Potential - Hydric and Presettlement Wetland Overlay
High Potential - Hydric Soils Only
Moderate Potential - Presettlement Wetlands Only
Part 303 Final Wetlands Inventory
Wetlands as identified on NWI and MiRIS maps
Soil areas which include wetland soils
Wetlands as identified on NWI and MiRIS maps and soil areas which include wetland soils
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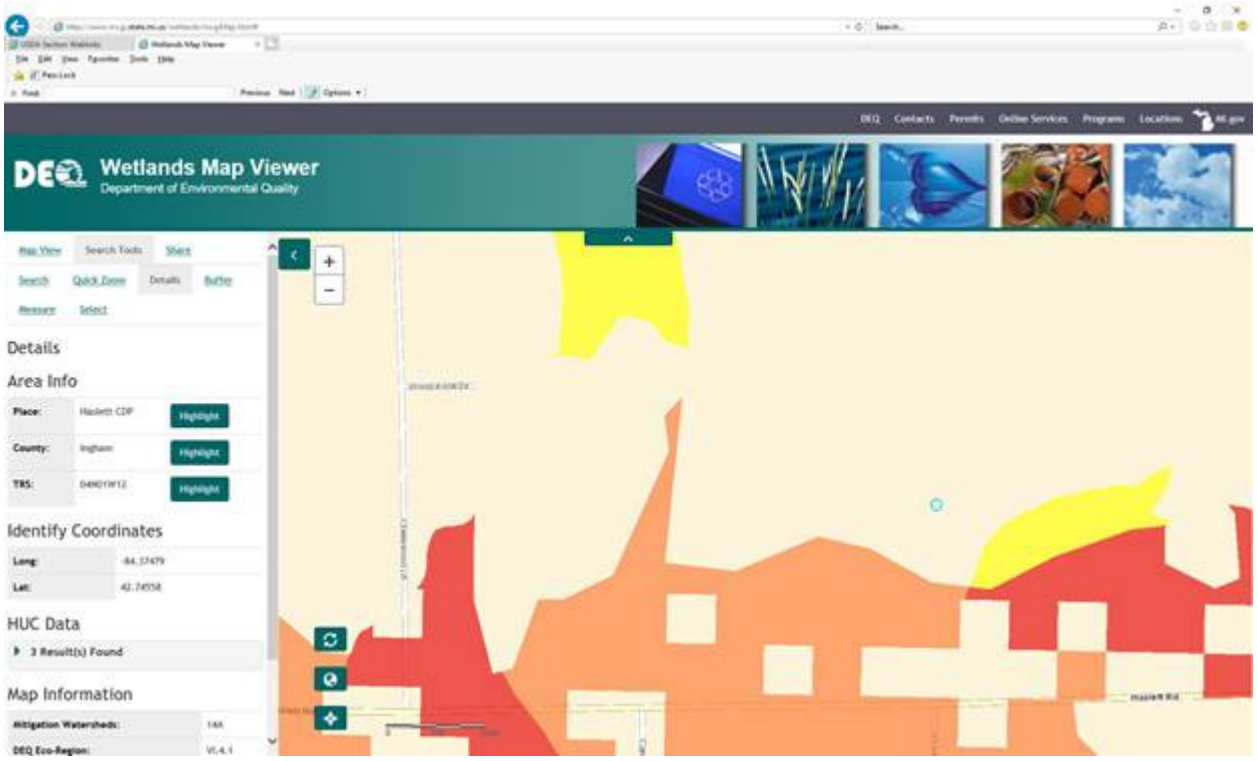
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Details
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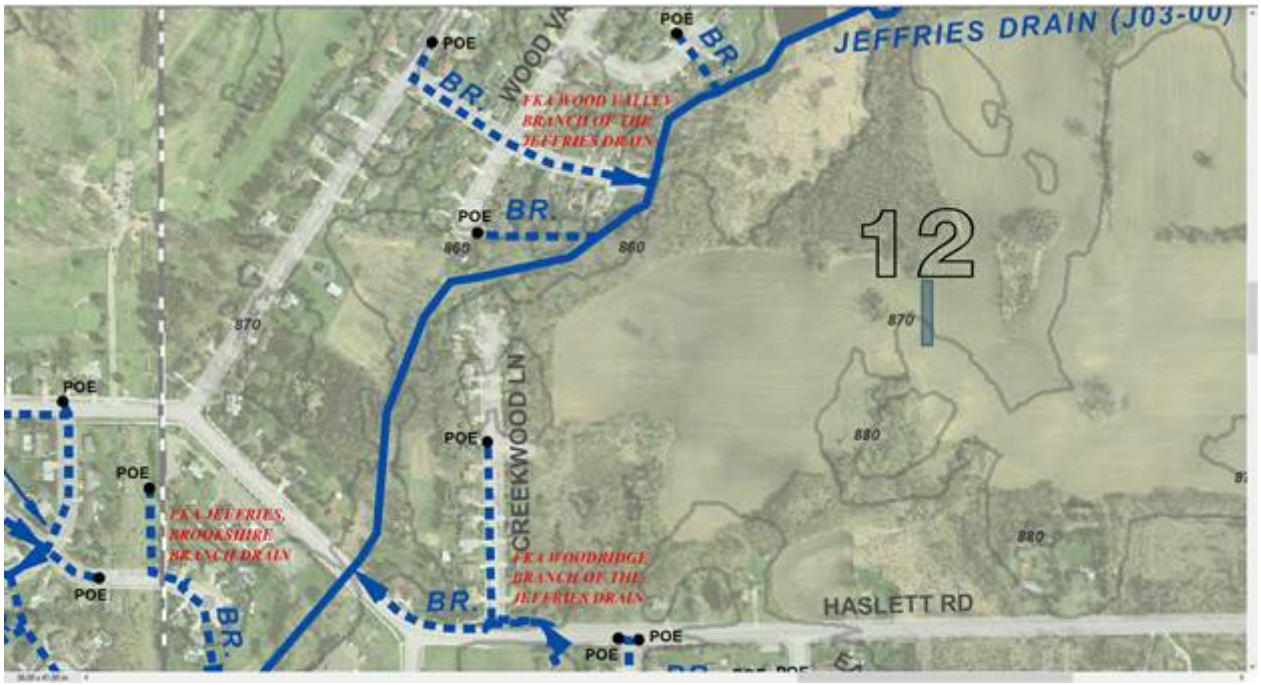
Select
Details
Area Info
Place:
Highlight
County:
Highlight
TRS:
Highlight
Identify Coordinates
Long:
Lat:
HUC Data
3 Result(s) Found
Map Information
Mitigation Watersheds:
DEQ Eco-Region:



PUD 18014

RE: Planned Unit Development #18090 (M & J Management LLC)

Dear Property Owner/Occupant:

This is to notify you that the Planning Commission of the Charter Township of Meridian will hold a public hearing regarding a request from Haslett Holding LLC for a proposed planned unit development consisting of 98 lots with 39 lots on the western portion of the property being in phase 1. The approximate 44.70 acre parcel is zoned RA (Single Family, Medium Density). The subject site is located on the north side of Haslett Road, east of Creekwood lane in section 12 of the Township.

The public hearing will be held during the Planning Commission's regular meeting on **Monday, August 13, 2018**. The meeting will begin at 7:00 p.m. in the Town Hall Room of the Meridian Municipal Building, 5151 Marsh Road, Okemos, Michigan, 48864.

The purpose of the public hearing is to give the Planning Commission an opportunity to hear all persons interested or involved in the request. Your comments may be made in writing addressed to Peter Menser, Principal Planner, 5151 Marsh Road, Okemos, Michigan, 48864, by email to menser@meridian.mi.us, or at the meeting.

If you have any questions about the proposed rezoning please contact me at (517) 853-4576.

Sincerely,

Peter Menser
Principal Planner


equest to establish a planned unit development
consisting of 98 lots located east of
Creekwood Lane, north of Haslett Road,
and west of Meridian Road
Spring Mill Dr
LOCATION
Creekwood Ln
Haslett Rd

Future Land Use Classifications and Summaries

Current (Summarized)	Proposed
Agricultural / Educational *Agricultural land owned entirely by Michigan State University and used for research and classes, helping to preserve the agricultural character once prevalent throughout the Township.*	**Agricultural / Educational** (1470 acres, 7.82%) *No Changes Proposed*
Single-family Residential 0-0.5 DU/A *The lowest density residential areas are intended to preserve the rural and agricultural character of the eastern one-third of the Township.* **Single-family Residential 0.5-1.25 DU/A** *Low density single-family residential areas which are characterized by natural settings, wetlands, and stands of vegetation.*	**(R1) Single-family Residential 0-1.25 DU/A** (4724 acres, 25.11%) *The low density residential areas are intended to preserve rural and agricultural character. These areas, characterized by agricultural fields, natural settings, wetlands, and stands of vegetation, are generally found in the eastern one-third of the Township. No water and sewer service should be extended to these locations.*
Single-family Residential 1.25-3.5 DU/A *The most prevalent residential category in the Township, these medium density areas are characterized by suburban amenities, planned aesthetic, and proximity to retail centers.*	**(R2) Single-family Residential 1.25-3.5 DU/A** (6086 acres, 32.35%) *The most prevalent residential category in the Township, these medium density areas are characterized by suburban amenities, planned aesthetic, and proximity to retail centers. These areas are found throughout the western two-thirds of the Township. New development should be encouraged to include 20% of all units specifically designated as workforce housing (100% Area Median Income (AMI)) and 15% of all units designated for affordable housing (30-80% AMI).*
Single-family Residential 3.5-5 DU/A *High density single-family housing mixed with duplexes and small townhomes are intended to provide a more walkable community character, with access to numerous amenities nearby.*	**(R3) Single-family Residential 1.25-3.5 DU/A, with Infill Density Encouraged up to 5 DU/A** (810 acres, 4.30%) *This single-family residential category is similar in feel and function to the R2, characterized by suburban amenities and proximity to retail centers. These areas have the additional benefit of proximity to mixed-use cores of activity. Efforts to increase walkability and residential density through infill development, accessory dwelling units, and prioritization of pedestrian movement should be encouraged in these areas. Accessory units that qualify as affordable housing (30-80% AMI) should be encouraged.*
Multi-family Residential 5-8 DU/A *Multi-family residential character of light intensity, this density provides for housing types that transition between high-intensity uses and lower-intensity single-family residential development.* **Multi-family Residential 8-14 DU/A** *The highest residential density permitted within the Township, this category provides multiple-family housing along major thoroughfares with access to public transportation routes and amenities.*	**Multi-family Residential 5-14 DU/A** (883 acres, 4.69%) *The multi-family residential category provides housing opportunities of varying intensity. These areas are found throughout the western two-thirds of the Township, regularly adjacent to main transportation routes and public transit opportunities. These areas are also found in transition zones between high-intensity commercial uses and low-intensity single-family housing. New multiple-family developments should be required to provide affordable housing (30-80% AMI) in 35% of all new units.*
Commercial *Community and neighborhood service businesses scaled to supplement the commercial core in strategic locations throughout the Township.* **Office** *Commercial businesses intended to directly provide services or employment opportunities within the Township, including small-scale professional offices and larger scale office parks and corporate headquarters.* **Commercial Core** *The Commercial Core is the aggregation of nationally and regionally significant businesses surrounding and including the Meridian Mall.*	**Mixed-Use Core** (268 acres, 3.38%) *The mixed-use core should promote walkable, self-sustaining districts by combining residential and neighborhood-focused commercial opportunities. Building and streetscape forms should be pedestrian-friendly, with outdoor dining and entertainment options, easy access to public transit, and upper-floor residential options.* **Commercial** (637 acres, 3.38%) *Commercial areas are those that provide goods and services on a regional and Township-wide scale. Large, national retailers and restaurants mix with regional draws and specialty stores at varying scales. Indoor malls, stores requiring large lots, and smaller strip malls all characterize the retail opportunities in the commercial areas. Service providers, professional offices, banks, and other regional office uses should be encouraged in commercial areas throughout the Township.*
Industrial *Land and facilities intended to provide light industrial, warehousing, research, and related uses to the community and region.* **Research Park** *Research parks are provided as employment centers for Township and region residents and are not intended to directly provide goods and services to the community.*	**Business and Technology** (388 acres, 2.06%) *Business and Technology areas are employment centers for residents of the Township and the Lansing region. These areas should serve the community's need for research facilities, light industrial opportunities, or corporate campuses. These areas are not intended to directly provide goods and services to the community.*
Institutional *Publicly or privately owned facilities providing recreational, educational, religious, governmental, or other public services to the community.*	**Institutional** (1312 acres, 6.98%) *No Changes Proposed*

Peter Menser

From: Christina Morey <morey.christina@gmail.com>
Sent: Thursday, August 09, 2018 12:29 PM
To: Peter Menser
Subject: Copper Creek Condominium
Attachments: IMG_5866.JPG; IMG_5865.JPG

My name is Christina Morey and I am a resident at 5609 Creekwood Lane, Haslett MI 48840. I would like to submit the following comments for the record with regard to: Planned Unit Development #18090 (M&J Management LLC), east of Creekwood Lane in section 12 of the Township. Please submit this to the Planning Commission record for the planned meeting of August 13, 2018.

I have concerns I would like to share in regards to this proposal. The first is construction traffic using Creekwood lane to access the new build. There are many young children on this street and such traffic would be a safety concern as would any possible connection to the new subdivision in the future. With cars parked on the road it is often reduced to a one lane street.

My second concern is the crosswalk located on the east end of the Van Atta and Haslett Rd intersection. This is already a dangerous place to cross with very limited visibility on Haslett Rd of oncoming east bound traffic. Many people use this crosswalk for biking and walking and I use it to access preschool at St. Lukes. My worry is that with more residents using this in the future that another accident will happen involving a pedestrian. Are there any plans to change the crosswalk further east on Haslett Rd? Please see attached photos of view from crosswalk.

My third concern is the current speed limit in this area of Haslett Road. As of now, the speed decreases from 55mph to 45mph to 35mph in rapid succession when traveling westbound on Haslett road. Many drivers already ignore this reduction of speed and only slow down when they reach the curve at Van Atta. In contrast, as mentioned before, drivers are already accelerating out of this curve before the speed limit increases. This is a normal occurrence and is increasingly dangerous in the morning as I have witnessed many cars speed past the school bus with it's lights flashing. There have been accidents with cars not making the curve and crashing into the pedestrian crossing sign. After Copper Creek is built there will be even more vehicles and pedestrians in this area adding to the issue. The speed limit needs to be adjusted so that the speed limit change occurs more eastward on Haslett road before Strawberry Farms and the proposed Copper Creek.

Thank you for you time and consideration.

Christina Morey
765-532-8952

August 9, 2018

Dear Meridian Township Planning Commission,

We would like to submit the following comments for the record with regard to: Planned Unit Development #18090 (M&J Management LLC), east of Creekwood Lane in section 12 of the Township. Please submit this to the Planning Commission record for the planned meeting of August 13, 2018.

We live at 5600 Creekwood Lane. We believe it is possible to facilitate township growth like that proposed while maintaining long-standing neighborhoods like ours. This new development will be significantly larger than ours and will change the area significantly, though, so we appreciate careful consideration of the following requests as the process progresses:

- Prohibit construction equipment and materials from traveling or parking on Creekwood Lane. Allowing construction equipment/traffic on our narrow street could endanger the children on our block, as well as inhibit health and safety for all current residents.

- Maintain the current treeline/natural area behind the homes on the east side of Creekwood Lane. This is an important habitat for many birds and a sound and sight buffer between homes that we believe the residents of the new development would appreciate as much as current residents do. Our block has also had basement flooding problems in the past and it's important to ensure that any development doesn't increase the area's flooding risks.

- Protect current residents from the hazards of excessive traffic and speeding vehicles. Entrance to any new subdivision should be off Haslett Road, rather than via Creekwood Lane/Wood Knoll Lane. In addition, the curve on Haslett Road (passing by Van Atta Road) is already dangerous; the crosswalk is unsafely placed and vehicles tend to speed around the semi-blind curve without concern for possible pedestrians. At the least, that section of road needs a reduced speed limit, and perhaps even a flashing yellow light.

  Protecting safety would also include extending the sidewalk along the north side of Haslett Road. This will ensure safer walking access for the nearly 100 additional families coming in to the area, as well as current residents.

Thank you for your consideration of input from our neighborhood as this proposal moves forward.

Sincerely,

Dawn Kettinger and Denise Kane
Dawn: (517) 721-9688

To: **Planning Commission**

From: **Peter Menser, Principal Planner**

Date: **August 6, 2018**

Re: **<u>Planned Unit Development #18014 (Haslett Holding LLC)</u>, develop Copper Creek PUD consisting of 91 single family residential lots on the north side of Haslett Road, east of Creekwood Lane.**

Haslett Holding LLC has submitted a planned unit development (PUD) proposal for a project identified as Copper Creek. The overall PUD proposal includes the construction of 91 single family homes on 44.70 acres of a larger 191 acre parcel located on the north side of Haslett Road, east of Creekwood Lane. The first phase of the project includes 35 lots. The property is located in the RA (Single Family-Medium Density) zoning district.

The intent of the PUD ordinance is to permit greater flexibility and more creative design of residential areas than is possible under conventional zoning regulations. The PUD ordinance allows a developer to propose a residential project with diverse housing types and different lot dimensions and yard setbacks as those prescribed in the underlying zoning district. Lot size, yards, frontage requirements, setbacks, building height, and type and size of dwelling unit restrictions are generally waived in a PUD. In exchange for the flexible standards, a minimum of 50% of the project area, excluding wetlands and floodplains, must be preserved as open space.

Master Plan

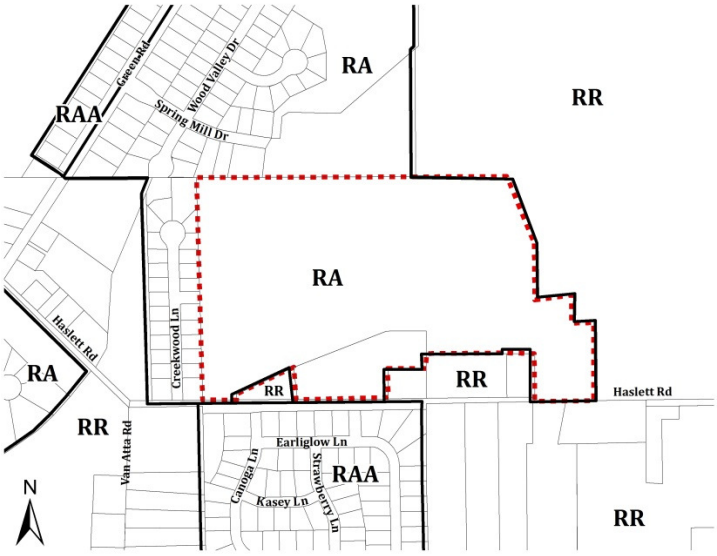
The property is designated on the Future Land Use Map from the 2017 Master Plan as R-2 Residential, 0.5-3.5 dwelling units per acre (du/a). A 5.03 acre portion of the project area, recently rezoned (Rezoning #18030) from RR (Rural Residential) to RA (Single Family-Medium Density) is designated in the R-1 Residential, 0.0-0.5 du/a category. This rezoned parcel is included in the submitted PUD project area.

FUTURE LAND USE MAP

Zoning

The property proposed for development is located in the RA (Single Family-Medium Density) zoning district. A PUD is allowed in any residential zoning district on any sized property. All uses in all residential zoning districts are allowed in a PUD, which means any type and mix of housing (detached or attached single family dwellings or multiple family dwellings) are permitted.

ZONING MAP



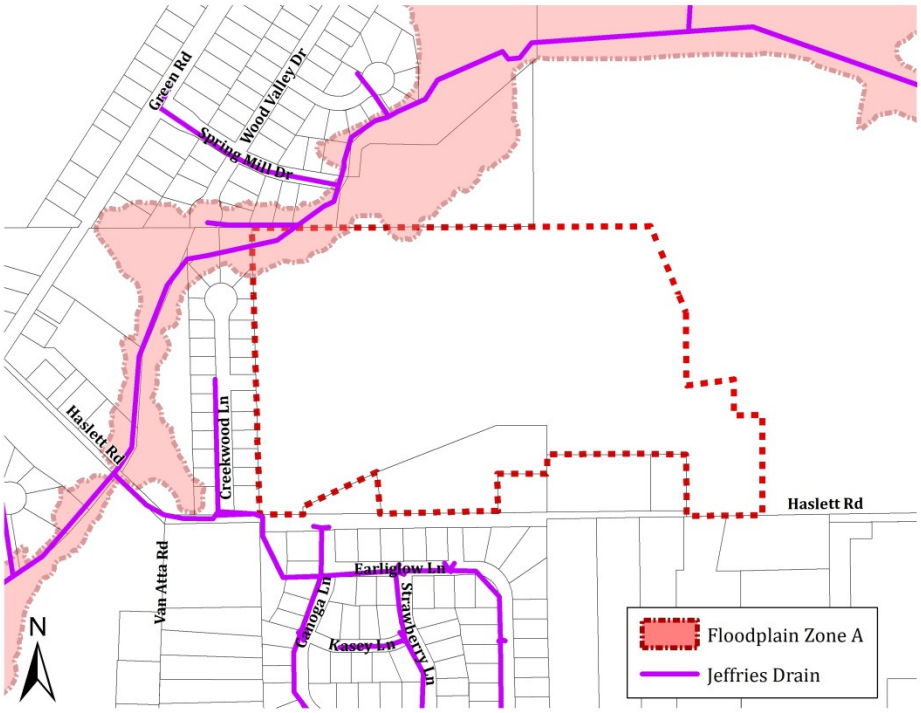
Physical Features

The property is currently occupied by wooded areas and farm fields. Two dilapidated agricultural buildings of undetermined age are located in the central part of the property and slated for removal. A 1,147 square foot, one-story single family residence built in 1937 occupies the parcel currently addressed as 580 Haslett Road and is slated for demolition as part of the PUD.

Floodplain

The northern portion of the project area is adjacent to the floodplain of the Jeffries Drain. The floodplain in this area is classified as Zone A, which is a category used to identify areas where the flood elevation is not provided by the Federal Emergency Management Agency (FEMA) and must be determined by hydraulic analysis. The applicant conducted the necessary modeling and submitted it to the Michigan Department of Environmental Quality (MDEQ) for approval, which was granted. The flood elevations around the drain are depicted on the submitted site plan. There are no residential lots or work proposed in the floodplain.

FLOODPLAIN MAP

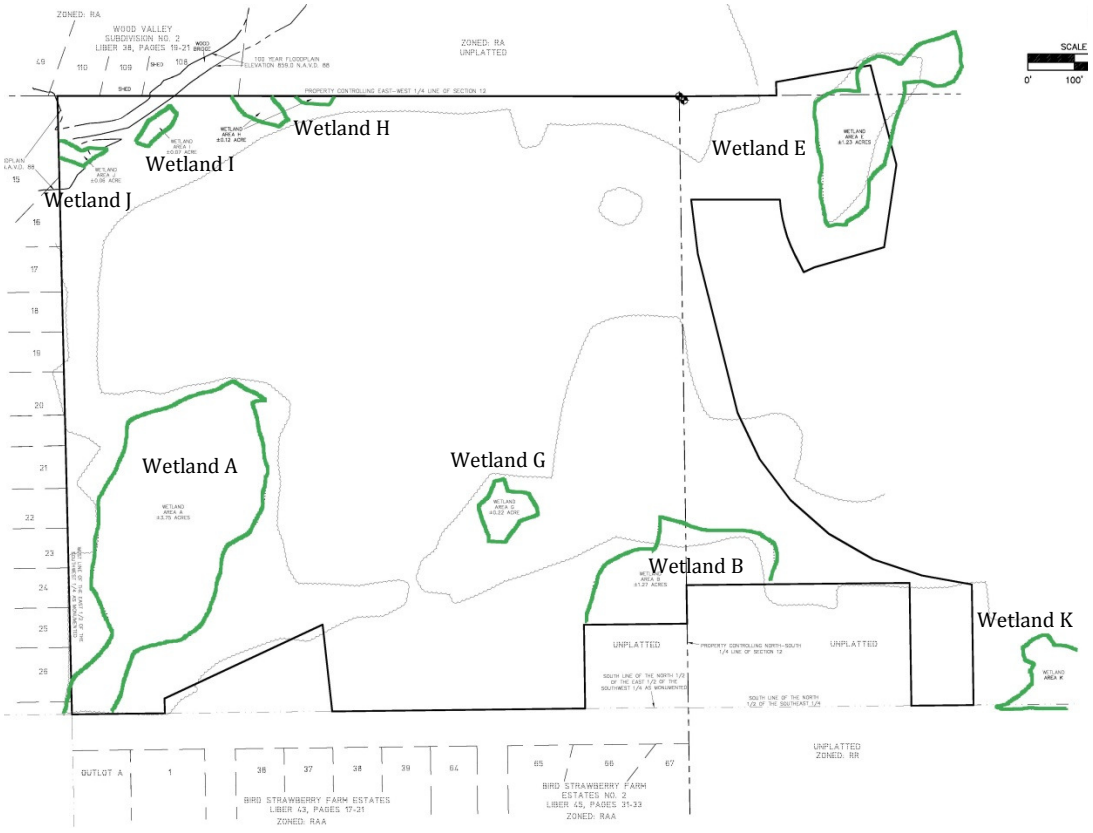


Wetlands

Wetlands on the project site were delineated by the Township's wetland consultant in late 2017. The delineation identified eight wetlands on the property, each of which is designated on the submitted site plan by letters A-K. Of the eight wetlands identified, Wetlands A, B, H, I, J, and K are regulated by both the Michigan Department of Environmental Quality (MDEQ) and Meridian Township based on either their size or distance from a regulated water body (river, stream/drain, or inland lake). Regulated wetlands equal to or greater than two acres in size require a 40 foot setback from the delineated boundary and wetlands greater than one quarter acre but smaller than two acres require a 20 foot setback.

At 0.22 acre in size, Wetland G is not regulated by the Township or the MDEQ as it is below the 0.25 acre standard established for regulation in the Wetland Protection ordinance. At 1.23 acres, Wetland E is not regulated by the MDEQ but could be regulated by Meridian Township if it is determined by the Township Board to be essential to the preservation of the natural resources of the Township. At this time there are no activities proposed within or near Wetland E.

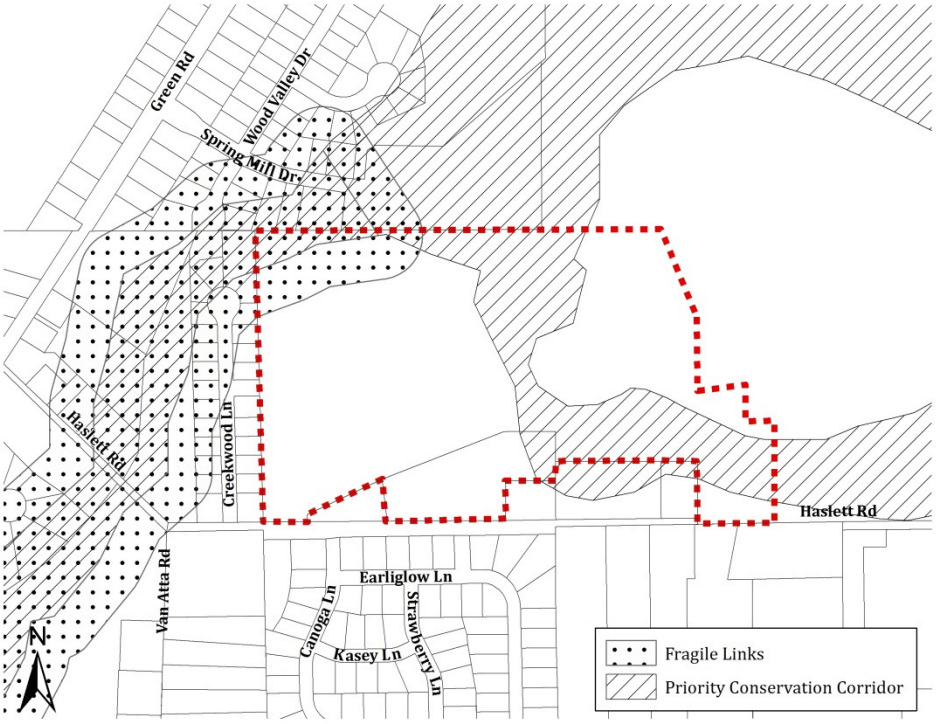
WETLAND MAP



Greenspace Plan

The Township Greenspace Plan shows a Priority Conservation Corridor (PCC) and Fragile Link on portions of the property. A PCC is a network of ecologically significant open spaces. A Fragile Link describes an area where the Priority Conservation Corridor (PCC) is exceptionally narrow or fragmented.

GREENSPACE MAP



Streets and Traffic

The subject site is located on the north side of Haslett Road. Haslett Road is a two-lane road designated as a Minor Arterial. The most recent (2010) traffic count information from the Ingham County Road Department (ICRD) for Haslett Road, between Meridian Road and Bird Farm Lane, showed a total of 4,591 vehicles in a 24 hour period, with 2,354 eastbound trips and 2,237 westbound trips.

The 2017 Master Plan shows a proposed seven foot wide pathway along the north side of Haslett Road. The applicant will be required to construct the portion of the pathway located along the Haslett Road property frontage as part of the PUD.

A traffic study is required for PUDs which would generate over 100 vehicle trips during the peak hours of traffic on adjacent roadways. The applicant submitted a traffic impact study prepared by Traffic Engineering Associates, Inc. dated January 2018 that provides information on traffic generated by the proposed PUD. The study looks at existing, background (future traffic volumes without the traffic generated by the proposed development), and future level of service (LOS) during the AM (7:15-8:15 a.m.) and PM (5:00-6:00 p.m.) peak hours at the following four intersections around the project site:

- Haslett Road and Van Atta Road
- Haslett Road and Creekwood Lane
- Haslett Road and Bird Farm Lane
- Haslett Road and Meridian Road

The traffic study notes that existing traffic at the studied intersections all operate at a good LOS (LOS C or better) during the AM and PM peak hours. The study shows that background traffic at the studied intersections will operate at a good level of service during AM and PM peak hours. For future traffic, the report indicates that all studied intersections will continue to operate at a good LOS during the AM and PM peak hours.

The traffic impact study estimated traffic generation for the proposed project based on a 102 unit PUD consisting of *Single-Family Detached Housing*, which is Land Use Code 210 in the Institute of Transportation Engineers (ITE) Trip Generation Manual. Land Use Code 210 describes single-family detached housing on individual lots. The following table estimates traffic generation for the proposed project.

	Proposed PUD
Peak Hour trips	77 (a.m.) 104 (p.m.)
Total Weekday Traffic	1,059 trips

The findings of the submitted traffic study show that there are no recommendations to the existing road system. Under future conditions, all studied intersections are projected to continue to operate at a good level of service (LOS C or better).

Utilities

Municipal water and sanitary sewer is available in the vicinity of the subject site and would have to be extended to serve the proposed development. The location and capacity of utilities for any proposed development will be reviewed in detail by the Department of Public Works and Engineering during the Site Plan Review process.

Staff Analysis

The applicant has requested to develop Copper Creek, a single family residential neighborhood with 91 lots. In a PUD request the Planning Commission makes a recommendation on the project and the Township Board makes the final decision.

When reviewing the project the Planning Commission should consider whether or not the project meets the purpose and minimum PUD performance objectives found in Sections 86-439(a) and (b) of the Code of Ordinances, the appropriateness of the requested waivers, and the general restrictions and standards for a PUD as outlined in Section 86-439(c) of the Code of Ordinances. The following is a summary of the project's consistency with the provisions of the PUD ordinance.

Density: To determine the maximum number of residential dwelling units in a PUD the applicant is first required to submit a yield plan that shows the number of lots that could be developed on the property as if it were a typical platted subdivision. The yield plan is reviewed using the standards established in the subdivision regulations. If the yield plan is deemed to be acceptable, the number of units depicted in the plan is what can be developed in the PUD.

For properties with wetlands or floodplain, as is the case with the Copper Creek proposal, a formula is applied whereby the number of lots depicted in the yield plan is multiplied by the percent of the site covered by wetlands and floodplain (expressed as a decimal) plus one. Computation of this formula establishes the final maximum number of residential units for the project. Applying this formal, the maximum number of lots allowed in Copper Creek is 94. The applicant is proposing 91 lots. The total density for the project is 2.04 dwelling units per acre (du/a).

The PUD ordinance allows the maximum density to be increased by up to 25% with the provision of unique and extraordinary amenities such as preservation of woodlots, provisions of lakes, provision of recreational facilities, provision of affordable housing, or other amenities deemed acceptable. The applicant is not seeking the density bonus for this project.

Open space: In a PUD a minimum of 50% of the project area, excluding wetlands and floodplains, must be preserved as "common open space," which is defined as "a parcel or parcels of land or an area of water or a combination of land and water designed and intended for the use or enjoyment of the residents of the PUD or of the general public." The ordinance prohibits proposed streets, rights-of-way, and open parking areas or commercial areas from counting towards the 50% open space requirement. It further notes that features such as recreational trails, picnic areas, children's play areas, greenways, or linear parks may be included in a common open space. All common open space is required by ordinance to be protected in perpetuity by establishment of a restrictive covenant or other such mechanism.

With a total of 38.33 acres of developable area, the proposed PUD is required to preserve at least 50 percent of the site, or 19.17 acres, as open space. The submitted PUD plan provides 20.18 acres of open space. The submitted site plan depicts the areas proposed by the applicant as open space, which includes an area between lots and strips of land between the lots and the road. In its review of the PUD the Planning Commission and Township Board may consider if the areas proposed for designation as open space are acceptable.

Phasing: The submitted site plan shows that three phases are proposed for the development of the PUD. Phase 1 will include 35 lots, Phase 2 has 18 lots, and Phase 3 has 38 lots.

Streets/Circulation Facilities: The PUD ordinance encourages public streets but does allow private streets when they are designed to allow sufficient access for emergency vehicles (police, fire, ambulance) to the dwelling units they will serve. The streets in the proposed PUD are private with a 50 foot right-of-way, with the only exception being a stub street adjacent to lots 36 and 53, which shows a 66 foot right-of-way. If private streets are proposed and approved, easements of sufficient width acceptable to the Ingham County Road Department (ICRD) are required to be granted to the Township in order to accommodate possible future dedication. The private streets in the proposed development must be designed to meet ICRD standards. Final approval of the streets in the PUD is subject to approval by the ICRD and Meridian Township Engineering Department.

Street Access: The Fire Code contains a provision limiting the number of lots on a single access to 30. The Township's subdivision regulations have a limit of a maximum of 35 lots on a single access. Currently, all of the lots in the proposed PUD will be served by a single access. The Township Fire Department has indicated the PUD cannot be approved until a second access is identified.

Sidewalks: The Township requires sidewalks for internal circulation with a minimum of five feet in width. The submitted site plan shows five foot wide sidewalks along the streets in the PUD.

Waivers

The PUD ordinance generally waives the standard requirements for lot size, yards, frontage requirements, setbacks, building height, and type and size of dwelling unit, provided the purpose and intent of the ordinance are incorporated into the overall development plan. The PUD ordinance is intended to provide flexibility for the Planning Commission and Township Board to set appropriate standards during the review process. Based on the submitted site plan the applicant is requesting the following waivers for the Copper Creek project.

Lot size: The underlying RA zoning district requires parcels have a minimum lot area of 10,000 square feet. The submitted PUD has lots ranging from 5,022 square feet (Lot 67) to 11,008 square feet (Lot 79) in size.

Lot frontage: The underlying RA zoning district requires parcels have a minimum of 80 feet of lot frontage (90 feet for corner lots). The submitted PUD has lots ranging from 57.2 feet of lot width (Lots 8 and 9) to 117.6 feet (Lot 12).

Setbacks: The yard setbacks for the underlying RA zoning district and the proposed PUD are summarized in the table below.

	RA zoning	Proposed setback
Front yard setback	25 feet from street right-of-way (based on street classification)	10 feet from street right-of-way
Side yard setback	10 feet	5 feet
Rear yard setback	30 or 40 feet depending on lot depth	0 feet

The Planning Commission may consider the proposed setbacks and determine whether they are appropriate or whether additional setbacks, like an increased rear yard setback, should be established. Planning staff suggests the applicant establish a rear yard setback to avoid homeowners building up to their rear lot line and then not having a yard or having to amend the PUD to add a deck to their house. Regardless of yard setbacks, the maximum lot coverage for the RA zoning district for all buildings, including accessory buildings, can be no greater than 30% of the total lot area. Maximum lot coverage is not a provision that can be waived as part of the PUD.

Wetland setback: A 40 foot water features setback is required from the delineated boundary of wetlands greater than two acres in size or adjacent to a regulated water body. It appears that grading in the wetland setback for home construction may occur on Lots 87, 88, 89 near Wetland H and on Lot 78 near Wetland A.

If the project is approved by the Township Board, the applicant will be required to submit for Site Plan Review before work on the project can begin. Site Plan Review is a detailed staff-level analysis of the project which includes reviews of storm water, utilities, landscaping, grading, and other issues to ensure compliance with all applicable ordinances as well as confirmation of approvals from local agencies such as the Ingham County Drain Commissioner's Office and Road Department. The applicant must begin construction of the PUD within two years of a final site plan approval. The Planning Commission may grant one, one-year extension of the PUD if requested prior to its expiration.

Planning Commission Options

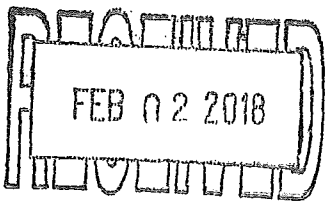
The Planning Commission may recommend approval, approval with conditions, or denial of the proposed PUD. A resolution will be provided at a future meeting.

Attachments

1. Application and attachments.
2. Site plan prepared by Kebs, Inc. dated February 1, 2018 (Revision Date July 16, 2018) and received by the Township on July 18, 2018.
3. Yield plan prepared by Kebs, Inc. dated August 7, 2018 and received by the Township on August 9, 2018.
4. Traffic study prepared by Traffic Engineering Associates, Inc. dated January 2018 and received by the Township on February 27, 2018.
5. Wetland delineation report prepared by Township wetland consultant dated December 19, 2017.

G:\Community Planning & Development\Planning\PLANNED UNIT DEVELOPMENTS (PUD)\2018\PUD 18014 Copper Creek\PUD 18014.pc1.docx

CHARTER TOWNSHIP OF MERIDIAN
PLANNING DIVISION
5151 MARSH ROAD, OKEMOS, MI 48864
PHONE: (517) 853-4560
FAX: (517) 853-4095



Planned Unit Development Permit Application

A. Owner/Applicant HASLETT HOLDING LLC - Bob Schroeder
Address of applicant 1650 KENDALE BLVD EAST LANSING MI 48823
Telephone: Work 517-[redacted]371-5000 Home
Fax Email

B. Applicant's Representative, Architect, Engineer or Planner responsible for request:
Name / Contact Person KEBS INC - DANE PASCOE
Address 2116 HASLETT ROAD HASLETT MI 48840
Telephone: Work 517-339-1014 Home
Fax 517-339-8047 Email dpascoe@kebs.com

C. Site address/location HASLETT ROAD
Legal description (Attach additional sheets if necessary) ATTACHED
Parcel number 33-02-02-12-200-013 & 33-02-02-12-326-006 Site acreage ± 44.70

D. Date of preapplication conference with Director of Community Planning and Development
Total acres of property ± 44.70
Acres in floodplain ± 0.29 Percent of total 0.65 %
Acres in wetland not in floodplain ± 6.08 Percent of total 13.60 %
Total dwelling units 102
Total units/acre 2.28
Dwelling unit mix

Number single family detached	102	for Rent	(Condo)
Number duplex		for Rent	Condo
Number townhouse		for Rent	Condo
Number garden apt. style		for Rent	Condo
Number other		for Rent	Condo

Will commercial be included? (circle one) yes (no) acres
Will all or part of property be platted? (circle one) yes (no)
Percent open space provide exclusive of wetland/floodplain

I (we) hereby grant permission for member of the Charter Township of Meridian Planning Commission, Township staff members and the Township's representatives or experts the right to enter onto the above described property (or as described in the attached information) in my (our) absence for the purpose of gathering information including but not limited to the taking and the use of photographs. ***(Note to Applicant(s): This is optional and will not affect any decision on your application.)***

Signature of Applicant(s) — Date 1/30/18

Signature of Applicant(s) — Date

PUD Permit Application
Page 2

E. Required Data: (check if attached)

Site location map ✓
Site plan ✓ see drawing
Site analysis ✓
Schematic storm sewer layout ✓
Preliminary phasing plan ✓
Reproducible contour map ✓
Traffic study/analysis (if required) ✓ emailed to Peter Menser & Mark Kieselbach
Natural features analysis (if required) ✓ wetland study in Twp possession

Signature of Applicant

1/30/18
Date

Robert H. Schroeder
Print Name

Fee: $1010.00

Received by/Date: Peter Menser 2-5-18

mayberryhomes

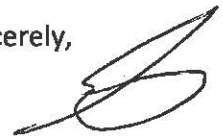
July 3, 2018

Community Planning and Development
Meridian Township
5151 Marsh Road
Okemos, MI 48864

RE: Copper Creek Condominium P.U.D.

This is to provide a description of the proposed phasing program for the Copper Creek Condominium P.U.D. This is a proposed 98 lot development in Meridian Township to be done in several phases with Phase 1 to be the initial phase completed with approximately 39 units in that phase. It should be noted that infrastructure improvements (water, sewer and storm) will be installed from inception for the project in its entirety, leaving roadway improvements to define future phases.

Sincerely,



David Straub, Mayberry Homes, LLC

1650 Kendale Boulevard Suite 200, East Lansing, Michigan 48823 (517) 371-5000 phone (517) 371-5001 fax
mayberryhomes.com

mayberryhomes

July 3, 2018

Community Planning and Development
Meridian Township
5151 Marsh Road
Okemos, MI 48864

RE: Copper Creek Condominium P.U.D.

This document is intended to provide a written site analysis, indicating the principal factors which influenced the design decisions regarding the plan. Mayberry Homes is confident that the proposed Copper Creek PUD meets all of the guidelines, design criteria, and ordinances based upon the Meridian Township Zoning Ordinance. The following key elements were thoughtfully considered in our proposed PUD:

1. The Yield Plan suggests that Copper Creek could include up to 126 homes. The proposed PUD represents 98 homes, with three (3) different lot sizes (60', 70' and 80' wide lots). Thus allowing the community to appeal to a broad spectrum of home buyers
2. All homes will be Energy Star Certified
3. Landscaping, signage, lighting, and building materials are all intended to be of a high design quality and aesthetically pleasing
4. 95% of the homes back up to open space. The PUD exceeds the 50% open space requirement
5. Maintenance of existing wetlands and tree rows preserves existing nature corridors
6. All wetlands, parks and open space will be protected by the condominium documents
7. Soils conditions encountered ranged from top soil and sand within 1' of the ground surface to clay at depths required for development. The soils are very suitable for development
8. Historically, the property was used for farming operations. The topography is relatively flat, with some minor elevation change across the property
9. The property is located away from the city proper, however in rather close proximity to other residential developments. A traffic study will be included in our submittal package, however we don't anticipate a material impact to the pedestrian or vehicular circulation systems

Sincerely,

David Straub, Mayberry Homes, LLC

1650 Kendale Boulevard Suite 200, East Lansing, Michigan 48823 (517) 371-5000 phone (517) 371-5001 fax
mayberryhomes.com

OWNER/DEVELOPER:

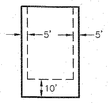
MAYBERRY HOMES
1650 KENDALE BOULEVARD
EAST LANSING, MI 48823
(517) 371-5000
CONTACT: BOB SCHROEDER

ENGINEER/SURVEYOR:

KEBS, INC.
2116 HASLETT RD.
HASLETT, MI. 48840
PH: (517) 339-1014
FAX: (517) 339-8047

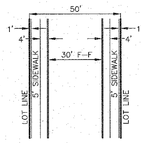
NOTE:

100 YEAR FLOOD ELEVATION = 858.5-859.0 N.A.V.D.88 BASED ON MODELING AS APPROVED BY MDEQ IN LETTER DATED JANUARY 29, 2015.



ROAD
BUILDING SETBACKS
(TYPICAL)
NOT TO SCALE

NOTE: REAR SETBACK ON UNITS THAT BACK UP TO ANOTHER UNIT WILL BE 10'

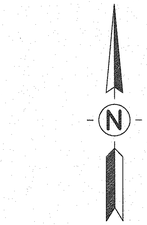


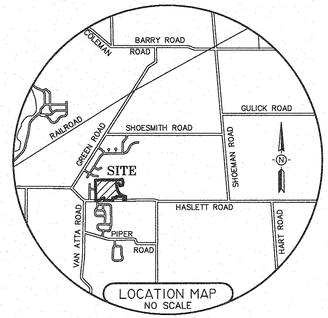
ROAD DETAIL
NOT TO SCALE

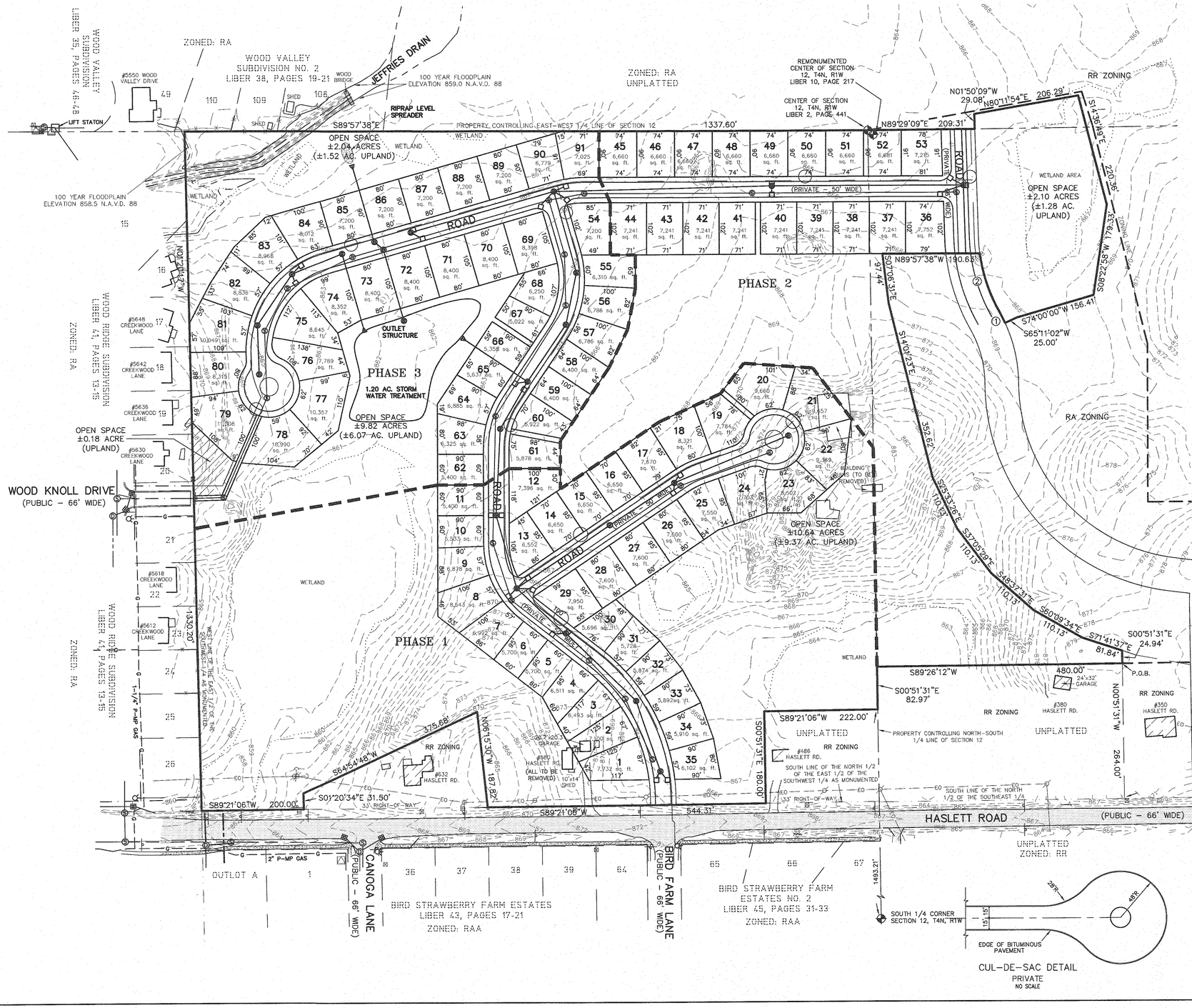
P.U.D. PLAN

COPPER CREEK CONDOMINIUM

A SUBDIVISION OF PART OF THE NORTHEAST 1/4, SOUTHEAST 1/4 & SOUTHWEST 1/4 OF SECTION 12, T4N, R1W, MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN







LEGAL DESCRIPTION:

A parcel of land in the Northeast 1/4, Southeast 1/4, and the Southwest 1/4 of Section 12, T4N, R1W, Meridian Township, Ingham County, Michigan, the boundary of said parcel described as: Commencing at the East 1/4 corner of said Section 12; thence S00°28'42"E along the East line of said Section 12 a distance of 1312.81 feet to the South line of the North 1/2 of said Southeast 1/4 as surveyed and the North line of Haslett Road; thence S89°26'12"W along said North line 2141.72 feet; thence N00°51'31"W parallel with the property controlling North-South 1/4 line of said Section 12 a distance of 264.00 feet to the point of beginning of this description; thence S89°26'12"W parallel with said North line 480.00 feet to a point on said North-South 1/4 line; thence S00°51'31"E along said North-South 1/4 line 82.97 feet; thence S89°21'06"W parallel with the South line of the North 1/2 of the East 1/2 of the Southwest 1/4 as monumented and the North line of Haslett Road 222.00 feet; thence S00°51'31"E parallel with said North-South 1/4 line 180.00 feet to said North line; thence S89°21'06"W along said North line 544.31 feet; thence N06°15'30"W 187.82 feet; thence S64°54'48"W 375.68 feet; thence S01°20'34"E 31.50 feet to said North line; thence S89°21'06"W along said North line 200.00 feet to a point on the West line of the East 1/2 of the North 1/2 of said Southwest 1/4 as monumented, said line also being the East line and it's extension South of Wood Ridge Subdivision, as recorded in Liber 41 of Plats Pages 13-15, Ingham County Records, said point also being S01°20'17"E 27.00 feet from the Southeast corner of Lot 26 of said Subdivision; thence N01°20'17"W along said West line 1330.20 feet to the South line of Wood Valley No. 2 as recorded in Liber 38 of Plats, Pages 19-21, Ingham County Records, also being the property controlling East-West 1/4 line of said Section 12; thence S89°57'38"E along said East-West 1/4 line 1337.60 feet to the property controlling Center of Section 12 as recorded in Liber 2 of corners, Page 441; thence N89°29'09"E continuing along said East-West 1/4 line 209.31 feet; thence N01°50'09"W 29.08 feet; thence N80°11'54"E 206.29 feet; thence S14°36'49"E 220.36 feet; thence S08°22'58"W 179.33 feet; thence S74°00'00"W 156.41 feet; thence S65°11'02"W 25.00 feet; thence Northwesterly 23.56 feet on a curve to the left, said curve having a radius of 283.00 feet, a delta angle of 4°46'11" and a chord length of 23.55 feet bearing N27°12'04"W; thence Northwesterly 122.15 feet on a curve to the right, said curve having a radius of 317.00 feet, a delta angle of 22°04'43" and a chord length of 121.40 feet bearing N18°32'48"W; thence N89°57'38"W 190.63 feet; thence S07°06'31"E 97.44 feet; thence S14°01'23"E 352.62 feet; thence S25°33'26"E 110.13 feet; thence S37°05'29"E 110.13 feet; thence S48°37'31"E 110.13 feet; thence S60°09'34"E 110.13 feet; thence S71°41'37"E 81.84 feet; thence S00°51'31"E 24.94 feet to the point of beginning; said parcel containing 44.70 acres more or less; said parcel subject to all easements and restrictions if any.

NOTES:

1. ALL PROPOSED UNITS ARE FOR SINGLE FAMILY RESIDENTIAL PURPOSES.
2. GAS, SIDEWALKS, STREET LIGHTS & STREET TREES WILL BE INSTALLED FOR ALL UNITS IF REQUIRED.
3. POLICE AND FIRE PROTECTION BY MERIDIAN TOWNSHIP & SCHOOLS BY THE CITY OF HASLETT.
4. WETLANDS AS SHOWN ARE BASED ON DELINEATION BY ELISE TRIPP OF FISHBECK, THOMPSON, CARR & HUBER, INC. COMPLETED ON 11-20-17.
5. CONTOURS ARE BASED ON N.A.V.D. 88 DATUM

LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = BOUNDARY LINE
- = PHASE LINE
- = CURRENT ZONING LINE
- = DISTANCE NOT TO SCALE
- = FENCE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- +860 = EXISTING SPOT ELEVATION
- 860 = EXISTING CONTOUR ELEVATION
- = WETLAND LINE
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- G = GAS LINE
- EO = OVERHEAD WIRES
- = EDGE OF WOODS
- S = SANITARY MANHOLE
- D = DRAINAGE MANHOLE
- E = ELECTRIC MANHOLE
- T = TELEPHONE MANHOLE
- = CATCHBASIN
- SCO = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = SIGN

P.U.D. AREA = ±44.70 ACRES
WETLAND/FLOODPLAIN AREA = ±6.37 ACRES
44.70 AC. - 6.37 AC. = ±38.33 ACRES * 0.5 = ±19.17 ACRES OF OPEN SPACE REQUIRED
OPEN SPACE PROVIDED = ±20.18 ACRES - 0.60 AC. FOR 1/2 OF DETENTION = ±19.58 ACRES
±6.37 AC./±44.70 AC. = 0.1425
NUMBER OF LOTS WITHIN CURRENT P.U.D. AREA PER ORIGINAL YIELD PLAN = 99 LOTS
1.1425 * 99 = 113.11 UNITS ALLOWED
91 UNITS PROPOSED

LAYOUT INFORMATION:

MINIMUM LOT SIZE = 5,022 S.F. (LOT 67)
MINIMUM LOT FRONTAGE = 57.2' (60.0' AT 10' SETBACK LINE) (LOTS 8 & 9)
MAXIMUM LOT SIZE = 11,008 S.F. (LOT 79)
MAXIMUM LOT FRONTAGE = 117.6' (LOT 12)

TOTAL ACREAGE = ±44.70 ACRES
TOTAL WETLAND/FLOODPLAIN ACREAGE = ±6.37 ACRES

TOTAL BUILDABLE AREA = ±38.33 ACRES

TOTAL UPLAND OPEN SPACE = ±20.18 ACRES

TOTAL PROPOSED UNITS = 91

○ DENOTES PROPOSED HYDRANT LOCATIONS

CURVE TABLE					
CURVE	LENGTH	RADIUS	DELTA	CHORD	BEARING
1	23.56'	283.00'	4°46'11"	23.55'	N27°12'04"W
2	122.15'	317.00'	22°04'43"	121.40'	N18°32'48"W

DANE B. PASCOE
PROFESSIONAL SURVEYOR NO. 54434
STATE OF MICHIGAN
LICENSED PROFESSIONAL SURVEYOR
7/10/18

REVISIONS	COMMENTS
2/1/18	ORIGINAL
2/27/18	REVISE OPEN SPACE HATCHING
7/16/18	REVISE LAYOUT

KEBS, INC. ENGINEERING AND LAND SURVEYING
2116 HASLETT ROAD, HASLETT, MI 48840
PH. 517-339-1014 FAX 517-339-8047
WWW.KEBS.COM
Marshall Office - Ph. 269-781-9800

DRAWN BY KDB	SECTION 12, T4N, R1W
FIELD WORK BY ---	JOB NUMBER: 90535.SUB-PUD
SHEET 1 OF 2	

OWNER/DEVELOPER:

MAYBERRY HOMES
1650 KENDALE BOULEVARD
EAST LANSING, MI 48823
(517) 371-5000
CONTACT: BOB SCHROEDER

ENGINEER/SURVEYOR:

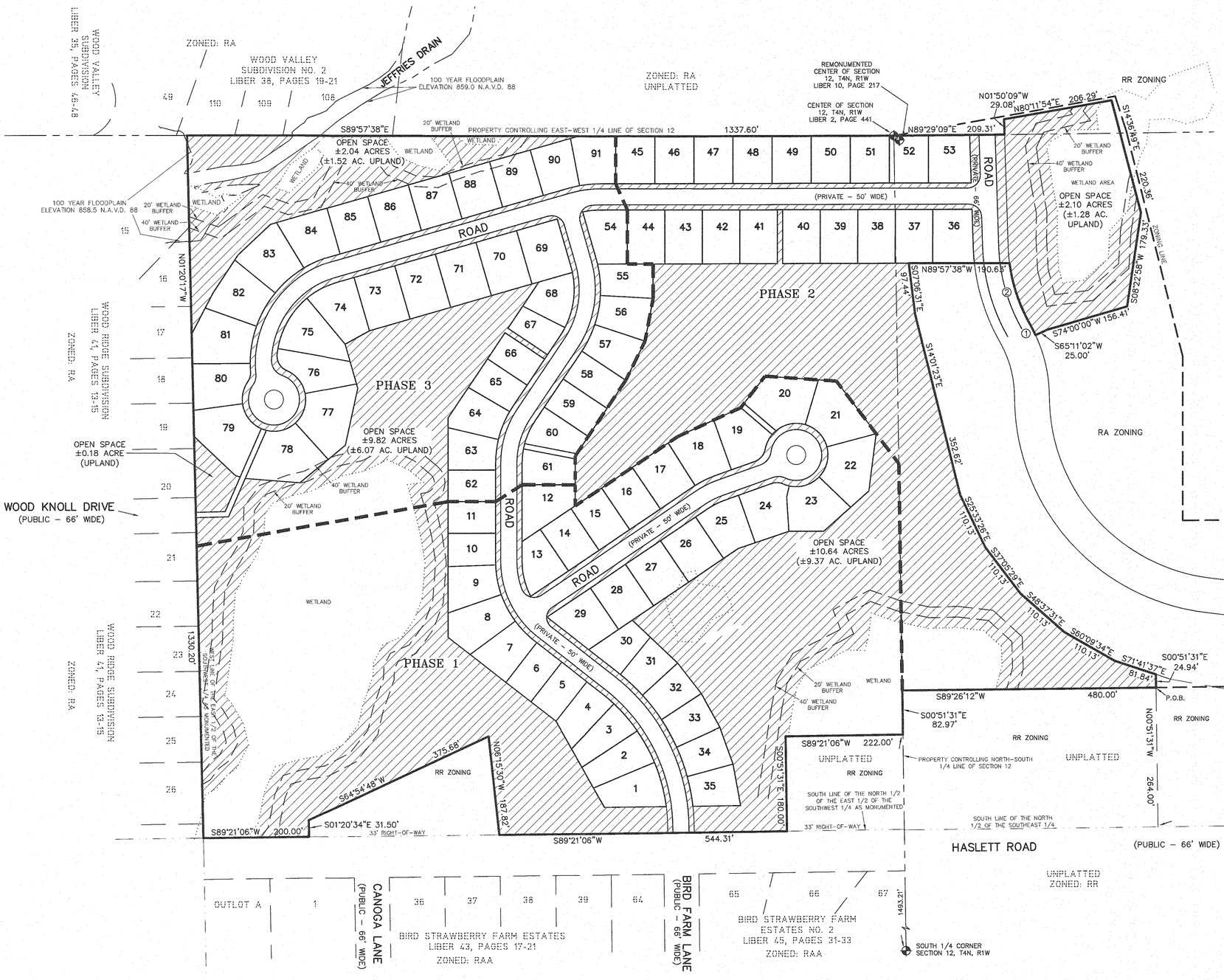
KEBS, INC.
2116 HASLETT RD.
HASLETT, MI. 48840
PH: (517) 339-1014
FAX: (517) 339-8047

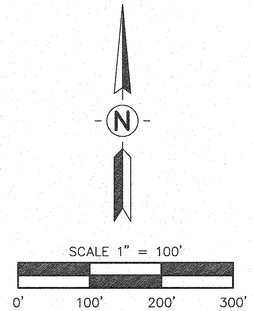
NOTE:

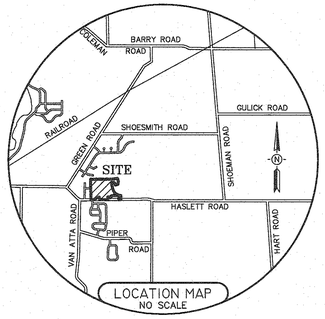
CURRENT 100 YEAR FLOOD ELEVATION = 863.0 N.A.V.D.88

PROPOSED 100 YEAR FLOOD ELEVATION = 858.5-859.0 N.A.V.D.88

P.U.D. PLAN
COPPER CREEK CONDOMINIUM
A SUBDIVISION OF PART OF THE NORTHEAST 1/4, SOUTHEAST 1/4 & SOUTHWEST 1/4 OF SECTION 12, T4N, R1W, MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN







OPEN SPACE DATA:

OPEN SPACE BETWEEN LOTS AND ROAD = ±1.76 ACRES
OPEN SPACE BEHIND LOTS = ±24.79 (±18.42 AC. UPLAND)
TOTAL OPEN SPACE = ±26.55 ACRES
- WETLANDS/FLOODPLAIN ±6.37 ACRES

TOTAL UPLAND OPEN SPACE = ±20.18 ACRES
- 0.60 AC. FOR 1/2 OF DETENTION = ±19.58 ACRES

SITE DATA:

RA ZONING
TOTAL SITE ACREAGE = ±44.70 ACRES

LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = BOUNDARY LINE
- = PHASE LINE
- = CURRENT ZONING LINE
- = DISTANCE NOT TO SCALE
- = FENCE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = WETLAND LINE
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- = GAS LINE
- = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = SIGN

NOTE: WETLANDS AS SHOWN ARE BASED ON DELINEATION BY ELISE TRIPP OF FISHBECK, THOMPSON, CARR & HUBER, INC. COMPLETED ON 11-20-17.

STATE OF MICHIGAN
DANE B. PASCOE
PROFESSIONAL SURVEYOR NO. 54494
LICENSED PROFESSIONAL SURVEYOR
7/16/18

CURVE TABLE					
CURVE	LENGTH	RADIUS	DELTA	CHORD	BEARING
1	23.56'	283.00'	4°46'11"	23.55'	N27°12'04"W
2	122.15'	317.00'	22°04'43"	121.40'	N18°32'48"W

REVISIONS	COMMENTS
2/1/18	ORIGINAL
2/27/18	REVISE OPEN SPACE HATCHING
7/16/18	REVISE LAYOUT

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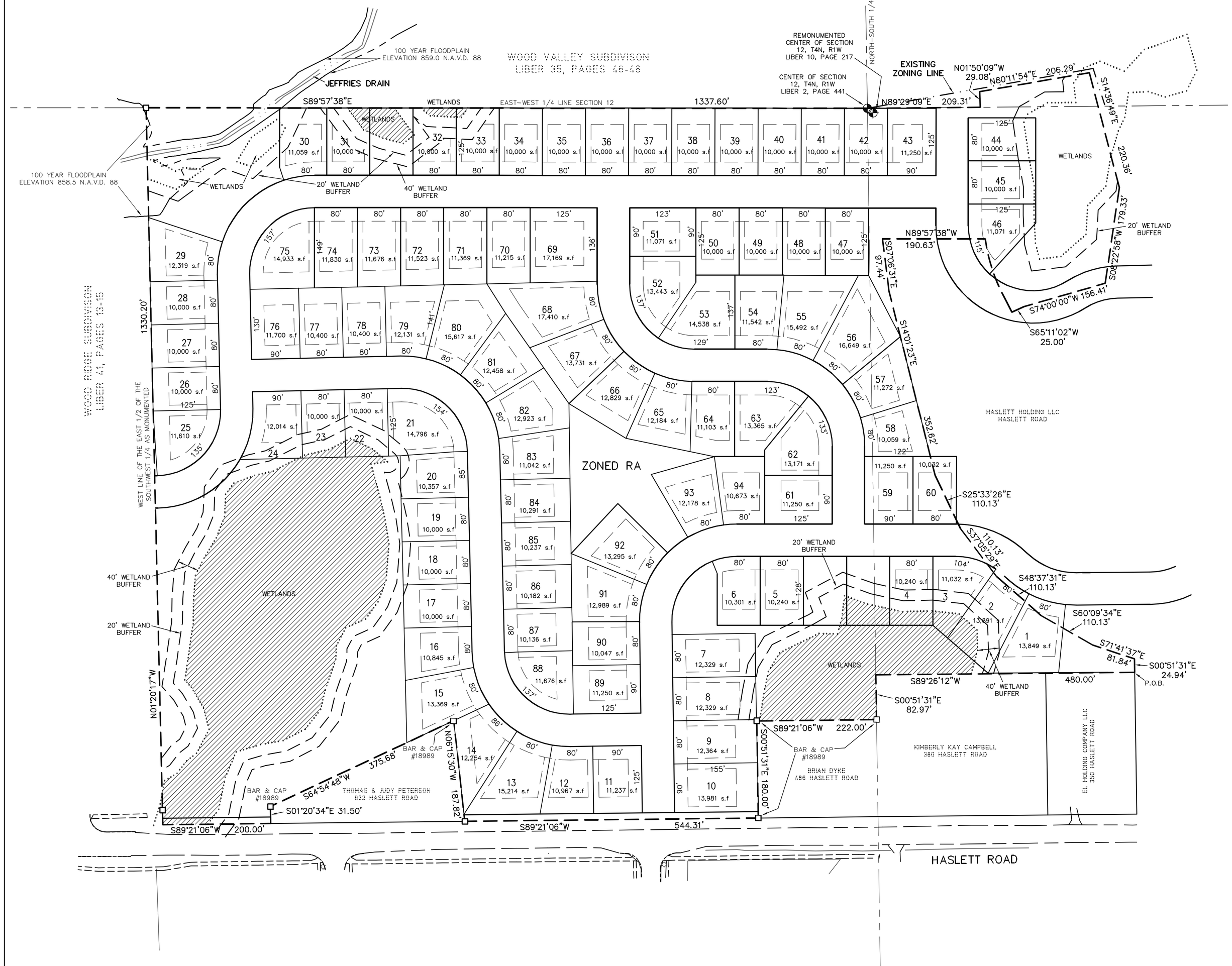
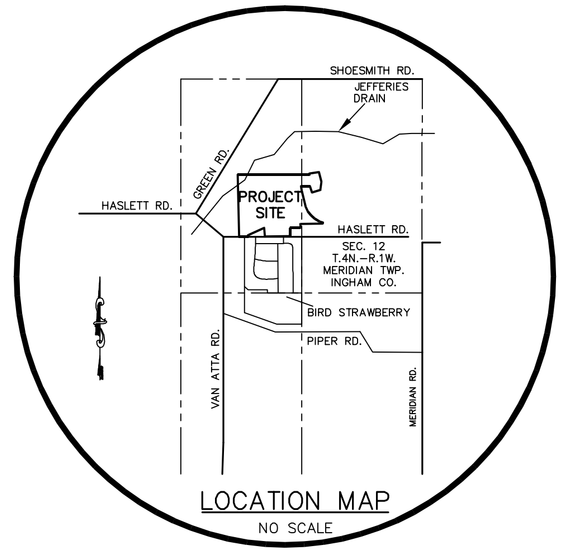
DRAWN BY KDB	SECTION 12, T4N, R1W
FIELD WORK BY ---	JOB NUMBER: 90535.SUB-PUD
SHEET 2 OF 2	

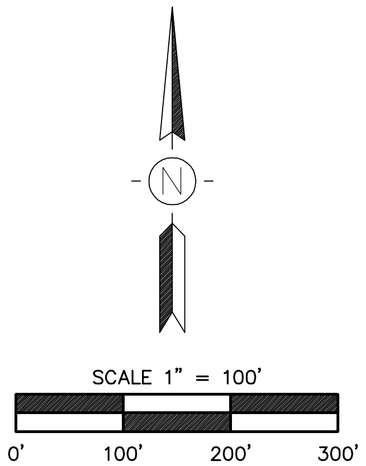
COPPER CREEK CONDOMINIUM

Yield Plan





LOCATION MAP
NO SCALE



LEGAL DESCRIPTION:

A parcel of land in the Northeast 1/4, Southeast 1/4, and the Southwest 1/4 of Section 12, T4N, R1W, Meridian Township, Ingham County, Michigan, the boundary of said parcel described as: Commencing at the East 1/4 corner of said Section 12; thence S00°28'42"E along the East line of said Section 12 a distance of 1312.81 feet to the South line of the North 1/2 of said Southeast 1/4 as surveyed and the North line of Haslett Road; thence S89°26'12"W along said North line 2141.72 feet; thence N00°51'31"W parallel with the property controlling North-South 1/4 line of said Section 12 a distance of 264.00 feet to the point of beginning of this description; thence S89°26'12"W parallel with said North line 480.00 feet to a point on said North-South 1/4 line; thence S00°51'31"E along said North-South 1/4 line 82.97 feet; thence S89°21'06"W parallel with the South line of the North 1/2 of the East 1/2 of the Southwest 1/4 as monumented and the North line of Haslett Road 222.00 feet; thence S00°51'31"E parallel with said North-South 1/4 line 180.00 feet to said North line; thence S89°21'06"W along said North line 544.31 feet; thence N06°15'30"W 187.82 feet; thence S64°54'48"W 375.68 feet; thence S01°20'34"E 31.50 feet to said North line; thence S89°21'06"W along said North line 200.00 feet to a point on the West line of the East 1/2 of the North 1/2 of said Southwest 1/4 as monumented, said line also being the East line and it's extension South of Wood Ridge Subdivision, as recorded in Liber 41 of Plats Pages 13-15, Ingham County Records, said point also being S01°20'17"E 27.00 feet from the Southeast corner of Lot 26 of said Subdivision; thence N01°20'17"W along said West line 1330.20 feet to the South line of Wood Valley No. 2 as recorded in Liber 38 of Plats, Pages 19-21, Ingham County Records, also being the property controlling East-West 1/4 line of said Section 12; thence S89°57'38"E along said East-West 1/4 line 1337.60 feet to the property controlling Center of Section 12 as recorded in Liber 2 of corners, Page 441; thence N89°29'09"E continuing along said East-West 1/4 line 209.31 feet; thence N01°50'09"W 29.08 feet; thence N80°11'54"E 206.29 feet; thence S14°36'49"E 220.36 feet; thence S08°22'58"W 179.33 feet; thence S74°00'00"W 156.41 feet; thence S65°11'02"W 25.00 feet; thence Northwesterly 23.56 feet on a curve to the left, said curve having a radius of 283.00 feet, a delta angle of 4°46'11" and a chord length of 23.55 feet bearing N27°12'04"W; thence Northwesterly 122.15 feet on a curve to the right, said curve having a radius of 317.00 feet, a delta angle of 22°04'43" and a chord length of 121.40 feet bearing N18°32'48"W; thence N89°57'38"W 190.63 feet; thence S07°06'31"E 97.44 feet; thence S14°01'23"E 352.62 feet; thence S25°33'26"E 110.13 feet; thence S37°05'29"E 110.13 feet; thence S48°37'31"E 110.13 feet; thence S60°09'34"E 110.13 feet; thence S71°41'37"E 81.84 feet; thence S00°51'31"E 24.94 feet to the point of beginning; said parcel containing 44.70 acres more or less; said parcel subject to all easements and restrictions if any.

DENOTES WETLANDS GREATER THAN 2 ACRES IN SIZE

RA ZONING
10,000 SQ. FT. MINIMUM LOT AREA (PLATTED)
80.00 FT. MINIMUM LOT WIDTH
90.00 FT. MINIMUM CORNER LOT

SETBACKS
25' FRONT
10' SIDE
30' REAR (LOTS UP TO 150' DEEP)
40' REAR (LOTS OVER 150' DEEP)

LOT SUMMARY:
94 - 80' WIDE LOTS OR LARGER
94 - TOTAL LOTS

60 FT. R.O.W. (TYPICAL)

NOTE: 1) WETLANDS AREAS DELINEATED BY ELISE TRIPP OF FISHBECK, THOMPSON, CARR & HUBER, INC.

90535 YIELD PLAN

REVISIONS
8-7-18 YIELD PLAN SUBMITTAL

KEBS, INC. KYES ENGINEERING BRYAN LAND SURVEYS
2116 HASLETT ROAD, HASLETT, MI 48840
PH. 517-339-1014 FAX 517-339-8047
WWW.KEBS.COM
Marshall Office - Ph. 269-781-9800

COPPER CREEK
YIELD PLAN

SCALE: 1"=100'	DRAWN BY: KDB	APPROVED BY: DP
DATE: 2-20-06	PROJ. MGR. J. KYES	SHEET 1 OF 1
AUTHORIZED BY: MAYBERRY HOMES		JOB #: 90535

TRAFFIC IMPACT STUDY

For The Proposed

Copper Creek PUD

Meridian Charter Township, Ingham County, MI

January, 2018

Prepared by:

Traffic Engineering Associates, Inc.
PO Box 100 • Saranac, Michigan 48881
517/627-6028 FAX: 517/627-6040

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EXECUTIVE SUMMARY

Traffic Engineering Associates, Inc. (TEA) conducted a traffic impact study for the proposed Copper Creek PUD development in Meridian Charter Township, Ingham County, Michigan. The purpose of this study is to determine the impact of traffic to be generated on the surrounding road system. The new development will consist of 102 single family homes on approximately 44 acres.

The new subdivision will be located on the north side of Haslett Road, just east of Van Atta Road, and across from Bird Strawberry Farm Subdivision. The proposed subdivision will have one (1) public road connection on Haslett Road opposite the existing Bird Farm Lane. The proposed development is expected to be completed and fully occupied by the end of 2022 (five years).

TEA, Inc. conducted vehicle turning movement counts during the midweek, of a non-holiday week in the month of September, 2017. The existing weekday AM and PM peak hour traffic volumes are 7:15 – 8:15 AM and 5:00 – 6:00 PM. All existing turning movements at the studied intersections operate at a good level of service (LOS C or better).

Background traffic represents future volumes without the traffic generated by the proposed Copper Creek PUD development. The target year for completion is the end of 2022; therefore, a five (5) year growth rate was applied to the existing traffic volumes. It is anticipated that all movements will operate at a good level of service (LOS C or better) under background conditions.

The ITE trip generation rates for Single-Family Detached Housing (Land Use Code 210) were selected to represent the proposed 102 units. It is projected that the proposed Copper Creek PUD development will generate 77 vehicle trips in the AM peak hour, 104 vehicle trips in the PM peak hour, and 1,059 weekday trips. Under future conditions, all studied intersections are projected to continue to operate at a good level of service (LOS C or better).

The findings of this study show that there are no recommendations to the existing road system.

INTRODUCTION

PROJECT DESCRIPTION

The purpose of this study is to determine the impact of traffic to be generated by the proposed Copper Creek PUD in Meridian Charter Township, Ingham County, Michigan. The new development will consist of 102 single family homes on approximately 44 acres.

The new subdivision will be located on the north side of Haslett Road, just east of Van Atta Road and across from Bird Strawberry Farm Subdivision. The proposed subdivision will have one (1) public road connection on Haslett Road opposite the existing Bird Farm Lane. The proposed development is expected to be completed and fully occupied by the end of 2022 (five years).

SCOPE OF WORK

The scope of work contained in this report is as follows:

- Analysis of existing traffic conditions on the adjoining street system, including the following intersections;

    - Haslett Road and Van Atta Road
    - Haslett Road and Creekwood Lane
    - Haslett Road and Bird Farm Lane
    - Haslett Road and Meridian Road

- Analysis of background traffic conditions on the adjoining street system, which includes the above listed intersections, for the future year 2022 volumes without the proposed Copper Creek PUD.

- Projection of future traffic volumes to be generated by the proposed Copper Creek PUD for the future year.

- Analysis of the impact of future traffic for the proposed Copper Creek PUD at the above listed intersections.

- Determination of what roadway and traffic control improvements, if any, will be needed to accommodate future traffic volumes for the proposed Copper Creek PUD.

Aerial Site Map

EXISTING CONDITIONS

ROADWAYS AND INTERSECTIONS

Roadways

Haslett Road is an east-west, two-lane roadway in the project area with gravel shoulders. The posted speed limit is 45 mph from Van Atta Road to Bird Farm Lane, then the speed limit changes to 55 mph east of Bird Farm Lane. The roadway is under the jurisdiction of the Ingham County Road Department. There are no bicycle lanes on this portion of Haslett Road. There are sidewalks on the south side of Haslett Road from Van Atta Road to Bird Farm Lane. There are no sidewalks on the north side of Haslett Road.

Intersections

Haslett Road and Van Atta Road

The intersection of Haslett Road and Van Atta Road is a stop sign controlled intersection with northbound Van Atta Road stopping for Haslett Road. The east approach on Haslett Road has three (3) lanes with one (1) two-way center left turn lane, one (1) thru lane, and one (1) outbound lane. The west approach on Haslett Road has three (3) lanes with one (1) two-way center left turn lane, one (1) thru-right turn lane and one (1) outbound lane. The south approach on Van Atta Road is two (2) lanes with one (1) left-right lane and one (1) outbound lane. There is a marked pedestrian crossing on Haslett Road, east of Van Atta Road.

Haslett Road and Creekwood Lane

The intersection of Haslett Road and Creekwood Lane is a stop sign controlled intersection with southbound Creekwood Lane stopping for Haslett Road. The west approach on Haslett Road has three (3) lanes with one (1) two-way center left turn lane, one (1) thru lane, and one (1) outbound lane. The east approach on Haslett Road has three (3) lanes with one (1) two-way center left turn lane, one (1) thru-right lane and one (1) outbound lane. The north approach on Creekwood Lane has two (2) lanes with one (1) left-right lane and one (1) outbound lane. The center two-way left turn lane on Haslett Road ends just east of Creekwood Lane. There are no marked pedestrian crossings at this intersection.

Haslett Road and Bird Farm Lane

The intersection of Haslett Road and Bird Farm Lane is a stop sign controlled intersection with northbound Bird Farm Lane stopping for Haslett Road. The east approach on Haslett Road has two (2) lanes with one (1) left-thru lane, and one (1) outbound lane. The west approach on Haslett Road has two (2) lanes with one (1) thru-right lane and one (1) outbound lane. The south approach on Bird Farm Lane has two (2) lanes with one (1) left-right lane and one (1) outbound lane. There are no marked pedestrian crossings at this intersection.

Haslett Road and Meridian Road

The intersection of Haslett Road and Meridian Road is a stop sign controlled intersection with northbound Meridian Road stopping for Haslett Road. The east approach on Haslett Road has two (2) lanes with one (1) left-thru lane and one (1) outbound lane. The west approach has two (2) lanes with one (1) thru-right lane and one (1) outbound lane. The south approach on Meridian Road has two (2) lanes with one (1) left-right lane and one (1) outbound lane. There are no marked pedestrian crossings at this intersection.

LAND USE

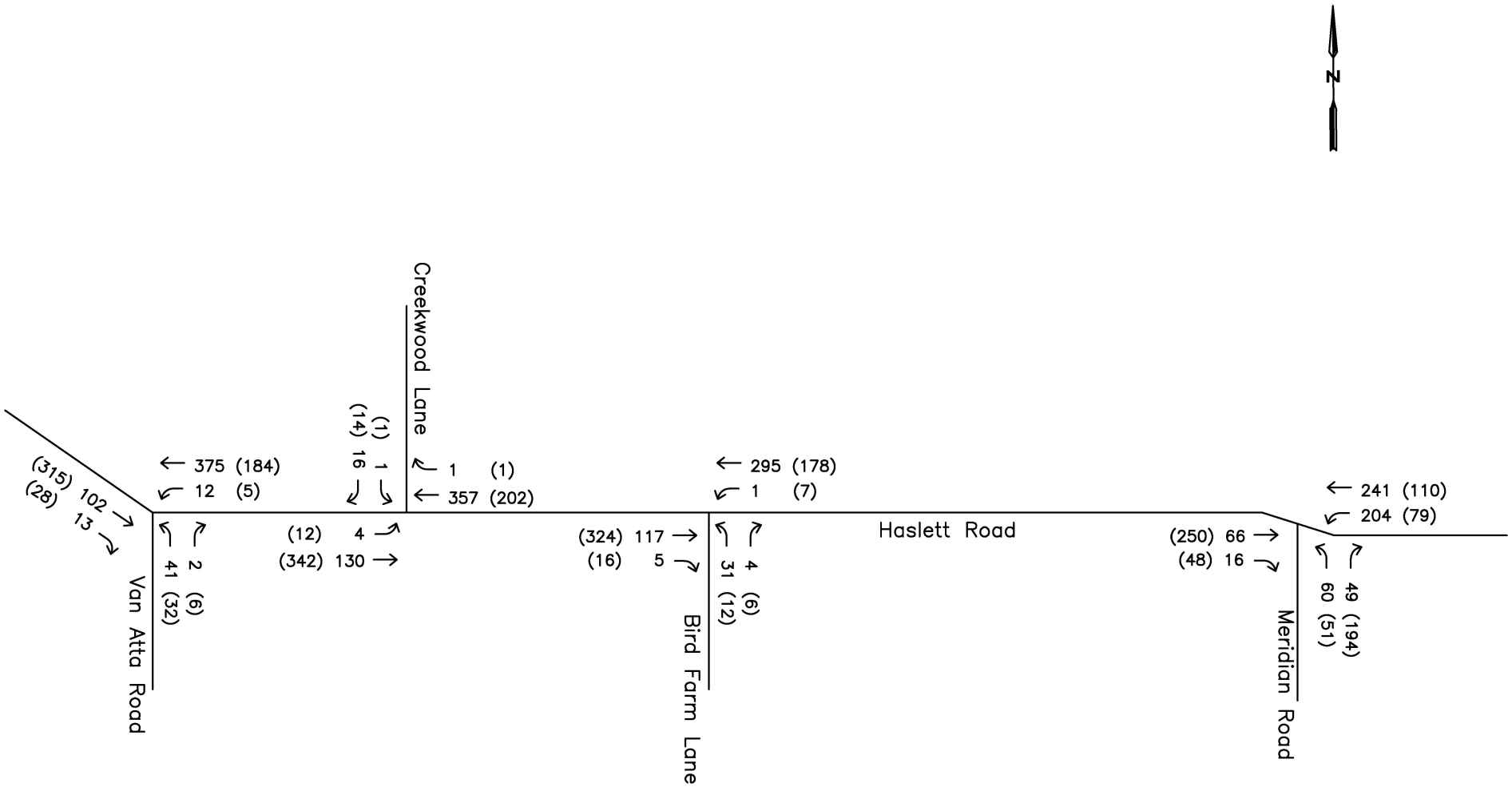
The proposed Copper Creek PUD will consist of single family residential units. The proposed site is currently vacant land. The surrounding land use is single family residential to the west, north and south, and vacant land to the east.

EXISTING TRAFFIC VOLUMES

TEA, Inc. conducted vehicle counts during the midweek, of a non-holiday week in the month of September, 2017 at the following locations:

- Haslett Road and Van Atta Road
- Haslett Road and Creekwood Lane
- Haslett Road and Bird Farm Lane
- Haslett Road and Meridian Road

The existing weekday AM and PM peak hour traffic volumes are 7:15 – 8:15 AM and 5:00 – 6:00 PM at the key locations, respectively. The existing volumes are illustrated in **Figure 1**.



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Saranac, MI 48881
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FAX: (517) 627-6040

LEGEND

XXX AM Pk Hr (7:15–8:15 AM) Volumes

(XXX) PM Pk Hr (5:00–6:00 PM) Volumes

FIGURE 1: Existing Traffic – Peak Hours

DATE: January, 2018 | SCALE: NTS | PAGE: 8

LEVEL OF SERVICE ANALYSIS FOR EXISTING TRAFFIC

The critical intersections defined for this study were analyzed according to the methodologies published in the most recent edition of the *Highway Capacity Manual*. The analysis determines the "Level of Service" of the intersections and is based on factors such as the number and types of lanes, signal timing, traffic volumes, pedestrian activity, etc. The level of service (LOS) is defined by average vehicle delay in seconds created by a traffic control device for a given traffic movement or intersection approach.

Level of Service	Delay per Vehicle (seconds)	
	Non-Signalized	Signalized
A	< 10	<10
B	10 to 15	10 to 20
C	15 to 25	20 to 35
D	25 to 35	35 to 55
E	35 to 50	55 to 80
F	> 50	> 80

Levels of Service are expressed in a range from "A" to "F," with "A" being the highest LOS and "F" representing the lowest LOS. Level of service "D" is considered the minimum acceptable LOS in an urban area.

The above table shows the thresholds for Levels of Service "A" through "F" for non-signalized and signalized intersections, respectively.

All Level of Service computations contained in this report were based upon the Synchro software package which is approved by the Michigan Department of Transportation (MDOT). Delay per vehicle includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

The Level of Service analysis for existing traffic at the subject intersections during the peak hours is summarized in **Table 1.** All existing turning movements at the studied intersections operate at a good level of service (LOS C or better).

Table 1
Level of Service (LOS) Summary
Existing Traffic

Location	Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
		Avg. Delay	LOS	Avg. Delay	LOS
Haslett Road and Van Atta Road	EB Thru-Right	0.0	A	0.0	A
	WB Left	7.5	A	8.0	A
	WB Thru	0.0	A	0.0	A
	NB Left-Right	12.3	B	11.8	B
	Intersection	1.1	A	1.1	A
Haslett Road and Creekwood Lane	EB Left	8.1	A	7.7	A
	EB Thru	0.0	A	0.0	A
	WB Thru-Right	0.0	A	0.0	A
	SB Left-Right	10.9	B	9.8	A
	Intersection	0.5	A	0.6	A
Haslett Road and Bird Farm Lane	EB Thru-Right	0.0	A	0.0	A
	WB Left-Thru	0.0	A	0.3	A
	NB Left-Right	11.9	B	12.1	B
	Intersection	1.0	A	0.6	A
Haslett Road and Meridian Road	EB Thru-Right	0.0	A	0.0	A
	WB Left-Thru	3.6	A	3.4	A
	NB Left-Right	18.6	C	16.3	C
	Intersection	5.8	A	6.8	A

Note: Delay = Average control delay per vehicle in seconds.
LOS = Level of Service

BACKGROUND CONDITIONS

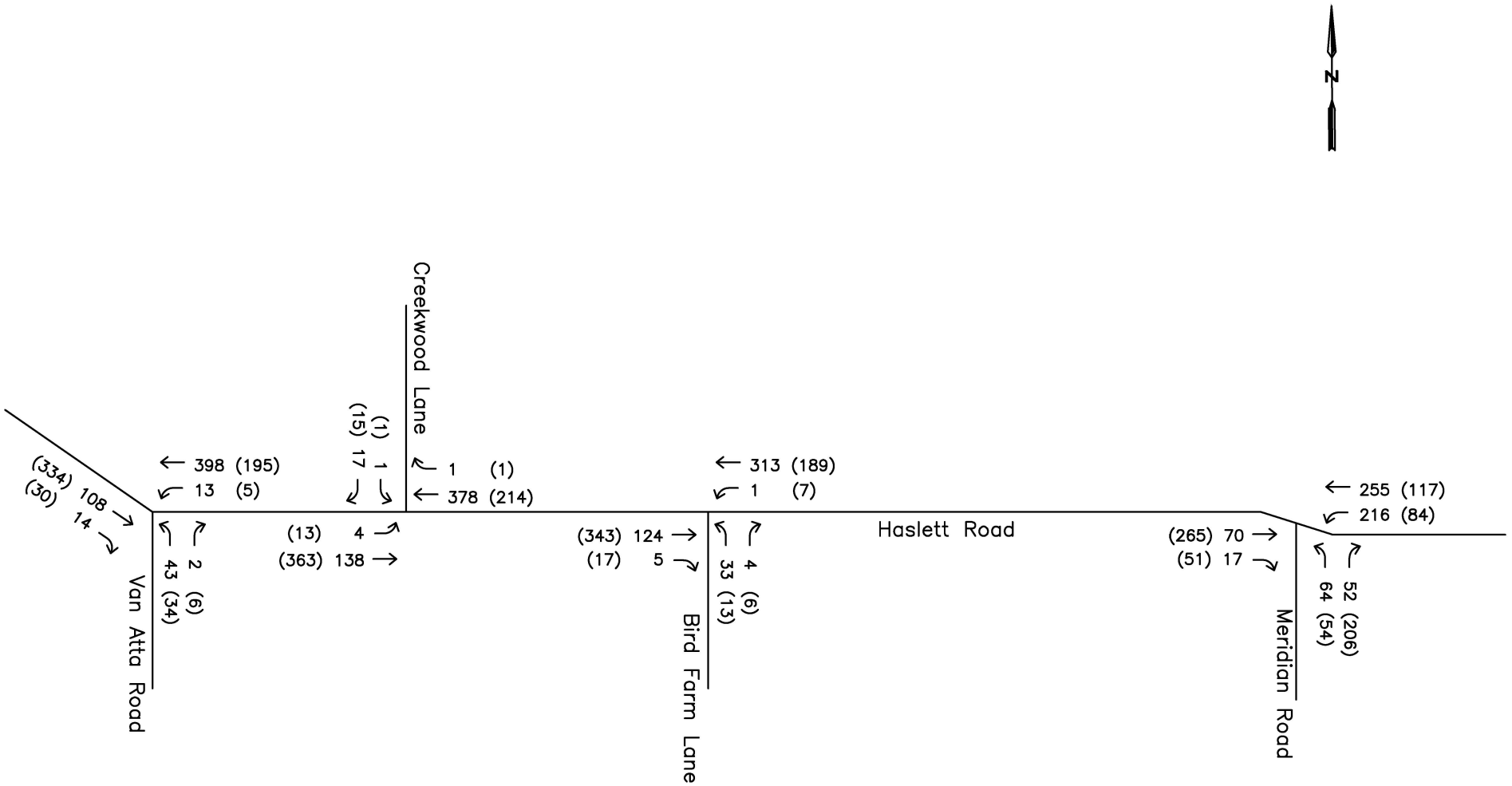
BACKGROUND TRAFFIC VOLUMES – GROWTH RELATED

Background traffic represents future volumes without the traffic generated by the proposed Copper Creek PUD. The target year for completion is the end of 2022; therefore, a five (5) year growth rate was applied to the existing traffic volumes.

According to the Meridian Charter Township Planning Department, the total population growth for Meridian Charter Township from 2010 to 2016 is six point nine percent (6.9%). An annual average growth rate of one point one percent (1.1%) was used for the background growth period to project background traffic to the build out date at the end of 2022 (five years). The proposed growth related background weekday AM and PM peak hour traffic volumes are illustrated in **Figure 2.**

BACKGROUND TRAFFIC VOLUMES – DEVELOPMENT RELATED

There were no new developments identified by the Meridian Charter Township Planning Department in the immediate area that would influence the background traffic for the proposed Copper Creek PUD; therefore, no background developments were included in the study.



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FAX: (517) 627-6040

LEGEND

XXX AM Pk Hr (7:15–8:15 AM) Volumes

(XXX) PM Pk Hr (5:00–6:00 PM) Volumes

FIGURE 2: Background Traffic – Peak Hours

DATE: January, 2018 | SCALE: NTS | PAGE: 13

LEVEL OF SERVICE ANALYSIS FOR BACKGROUND TRAFFIC

The level of service analysis for background 2022 traffic is summarized in **Table 2**. All existing roadway geometrics and traffic control devices were utilized for the background analysis. Under background conditions, it is anticipated that all movements will continue to operate at a good level of service (LOS C or better).

Table 2
Level of Service (LOS) Summary
Background Traffic

Location	Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
		Avg. Delay	LOS	Avg. Delay	LOS
Haslett Road and Van Atta Road	EB Thru-Right	0.0	A	0.0	A
	WB Left	7.5	A	8.1	A
	WB Thru	0.0	A	0.0	A
	NB Left-Right	12.7	B	12.1	B
	Intersection	1.2	A	1.1	A
Haslett Road and Creekwood Lane	EB Left	8.2	A	7.7	A
	EB Thru	0.0	A	0.0	A
	WB Thru-Right	0.0	A	0.0	A
	SB Left-Right	11.1	B	9.9	A
	Intersection	0.5	A	0.6	A
Haslett Road and Bird Farm Lane	EB Thru-Right	0.0	A	0.0	A
	WB Left-Thru	0.0	A	0.3	A
	NB Left-Right	12.3	B	12.5	B
	Intersection	1.0	A	0.6	A
Haslett Road and Meridian Road	EB Thru-Right	0.0	A	0.0	A
	WB Left-Thru	3.6	A	3.5	A
	NB Left-Right	20.7	C	17.8	C
	Intersection	6.1	A	7.3	A

Note: Delay = Average control delay per vehicle in seconds.
LOS = Level of Service

FUTURE CONDITIONS

SITE TRAFFIC GENERATION

The trip generation rates for the proposed Copper Creek PUD were derived from the ITE TRIP GENERATION MANUAL (10th edition). The ITE trip generation rates for Single-Family Detached Housing (Land Use Code 210) were selected to represent the proposed 102 units. The ITE description of Single-Family Detached Housing is as follows:

Single-family detached housing includes all single-family homes on individual lots. A typical site surveyed is a suburban subdivision.

It is projected that the proposed Copper Creek PUD will generate 77 vehicle trips in the AM peak hour, 104 vehicle trips in the PM peak hour, and 1,059 weekday trips. The projected traffic to be generated by the Copper Creek PUD is summarized in **Table 3**.

Table 3
Vehicle Trip Generation Summary
Copper Creek PUD Development

Land Use	Size	AM Peak Hour			PM Peak Hour			Weekday
		In	Out	Total	In	Out	Total	
Single-Family Detached Housing, Land Use Code 210	102 Units	19	58	77	66	38	104	1,059
Total Trips		**19**	**58**	**77**	**66**	**38**	**104**	**1,059**

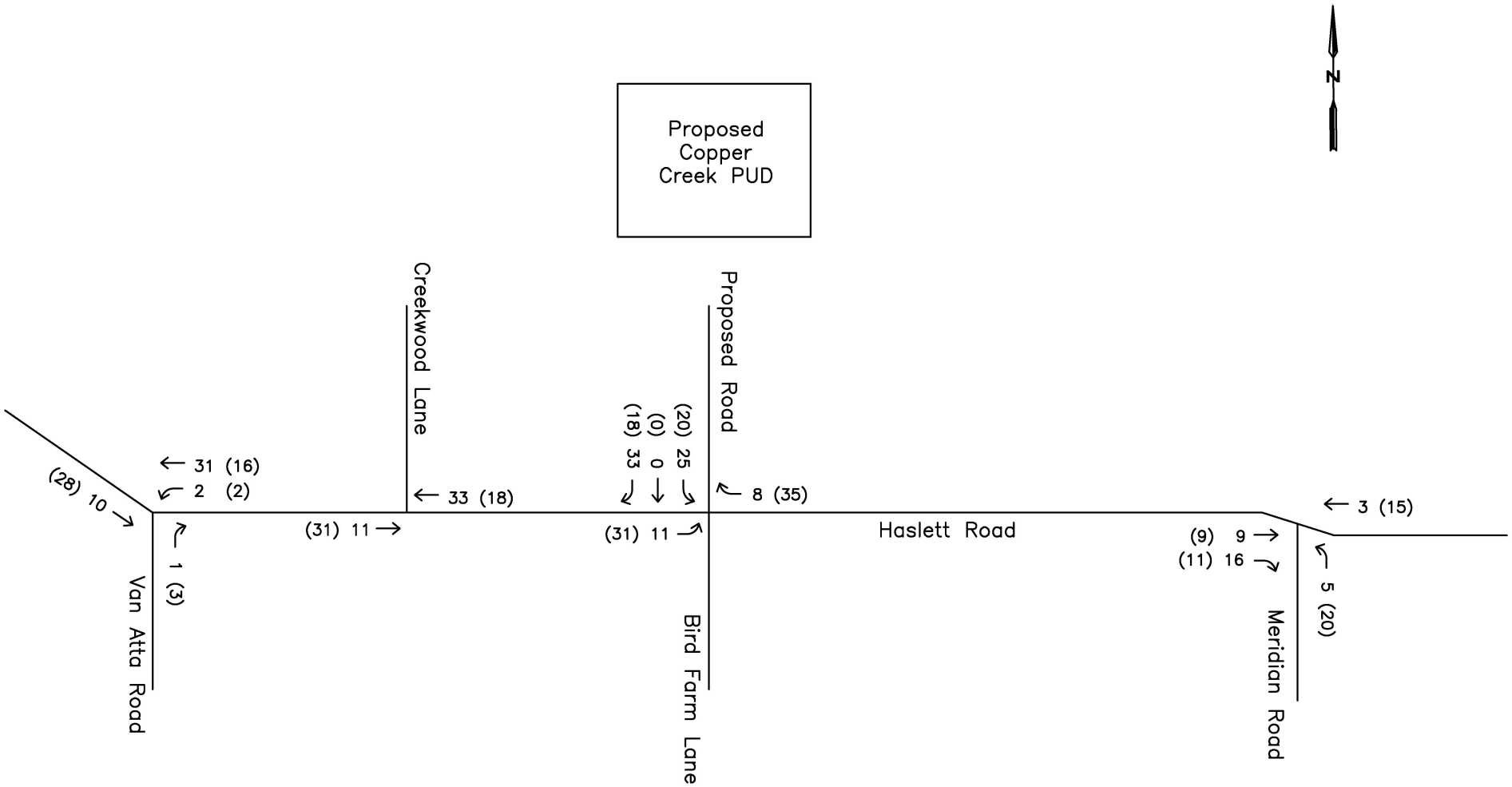
SITE TRAFFIC DISTRIBUTION

Traffic distribution for the proposed Copper Creek PUD development was distributed based on the surrounding roadway patterns. Typically, a residential development has a traffic pattern where vehicles are exiting in the morning and entering in the evening; therefore, the existing exiting traffic pattern on the roadway system during the morning, and the entering traffic pattern during the evening, dictated the generation of the distribution for this study. The distribution for the residential generated traffic is as follows.

Direction of Approach and Departure	**AM Peak Hour**	**PM Peak Hour**
To/From the WEST on Haslett Road	54%	42%
To/From the EAST on Haslett Road	15%	23%
To/From the SOUTH on Van Atta Road	3%	5%
To/From the SOUTH on Meridian Road	28%	30%

The total estimated site generated traffic for the proposed Copper Creek PUD development during the AM and PM peak hours is illustrated in **Figure 3**.

Adding the project site traffic (Figure 3) to the background traffic (Figure 2) generates the total anticipated future traffic which is displayed in **Figure 4**.



TRAFFIC ENGINEERING ASSOCIATES, INC.
PO Box 100
Saranac, MI 48881
PHONE: (517) 627-6028
FAX: (517) 627-6040

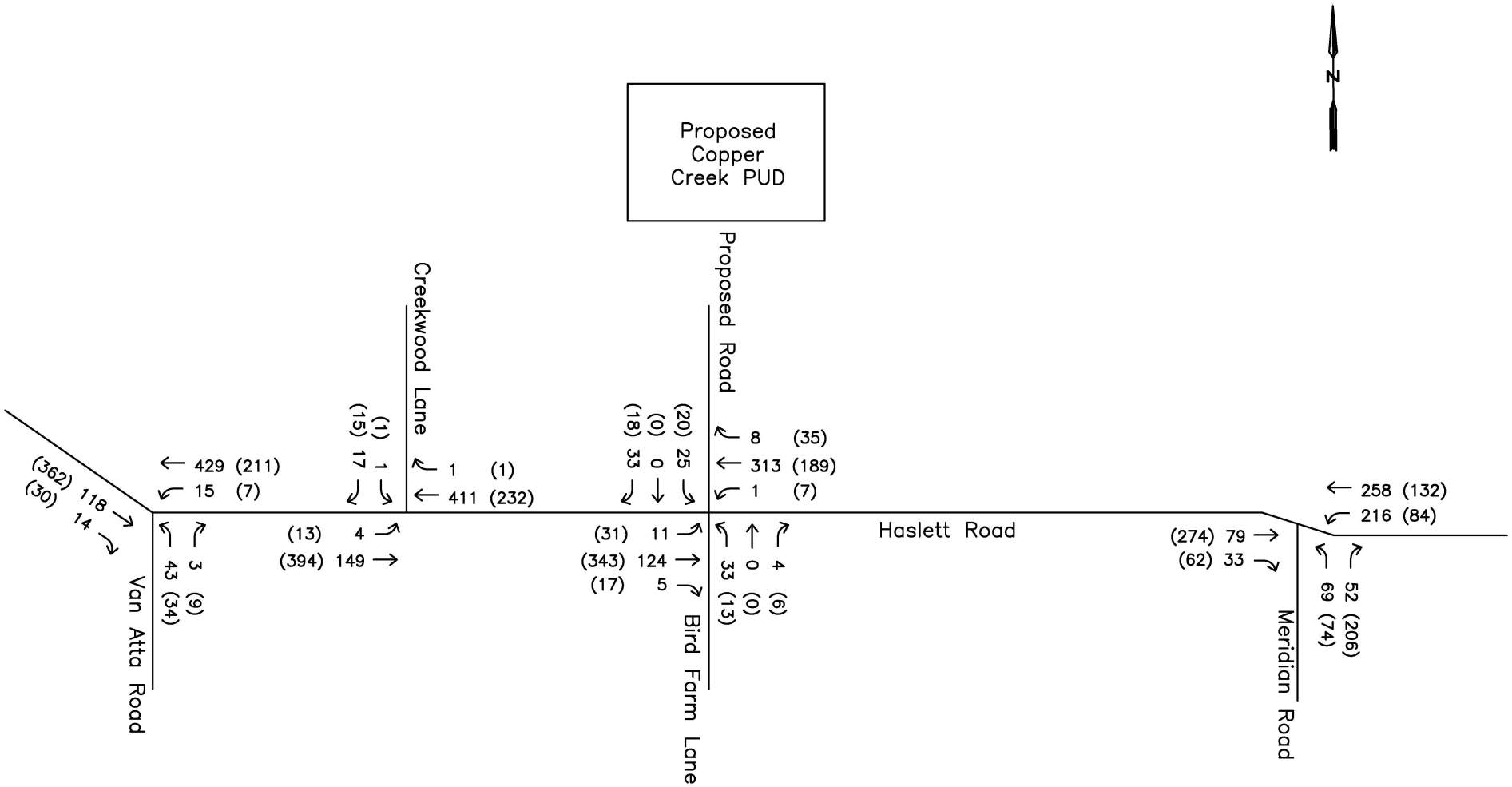
LEGEND

XXX AM Pk Hr (7:15–8:15 AM) Volumes

(XXX) PM Pk Hr (5:00–6:00 PM) Volumes

FIGURE 3: Site Traffic – Peak Hours

DATE: January, 2018 | SCALE: NTS | PAGE: 20



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LEGEND

XXX AM Pk Hr (7:15–8:15 AM) Volumes

(XXX) PM Pk Hr (5:00–6:00 PM) Volumes

FIGURE 4: Future Traffic – Peak Hours

DATE: January, 2018 | SCALE: NTS | PAGE: 21

LEVEL OF SERVICE ANALYSIS FOR FUTURE TRAFFIC

The level of service analysis for future traffic is summarized in **Table 4**. Comparing future level of service conditions to background level of service conditions determines the impact that can be expected from the addition of new traffic generated from the Copper Creek PUD.

All existing roadway geometrics and traffic control devices were utilized for the future analysis. The proposed new roadway to the Copper Creek PUD was analyzed with one (1) inbound lane and one (1) outbound lane. Under future conditions, it is projected that all movements will continue to operate at a good level of service (LOS C or better).

Table 4
Level of Service (LOS) Summary
Future Traffic

Location	Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
		Avg. Delay	LOS	Avg. Delay	LOS
Haslett Road and Van Atta Road	EB Thru-Right	0.0	A	0.0	A
	WB Left	7.6	A	8.1	A
	WB Thru	0.0	A	0.0	A
	NB Left-Right	13.0	B	12.4	B
	Intersection	1.2	A	1.2	A
Haslett Road and Creekwood Lane	EB Left	8.3	A	7.8	A
	EB Thru	0.0	A	0.0	A
	WB Thru-Right	0.0	A	0.0	A
	SB Left-Right	11.4	B	10.0	A
	Intersection	0.5	A	0.5	A
Haslett Road and Bird Farm Lane/ Proposed New Roadway	EB Left-Thru-Right	0.6	A	0.6	A
	WB Left-Thru-Right	0.0	A	0.2	A
	NB Left-Thru-Right	14.4	B	14.9	B
	SB Left-Thru-Right	12.6	B	13.7	B
	Intersection	2.5	A	1.9	A
Haslett Road and Meridian Road	EB Thru-Right	0.0	A	0.0	A
	WB Left-Thru	3.7	A	3.2	A
	NB Left-Right	22.8	C	21.7	C
	Intersection	6.4	A	8.7	A

Note: Delay = Average control delay per vehicle in seconds.
LOS = Level of Service

SIGNIFICANT FINDINGS

ROADWAY ANALYSIS FOR A RECOMMENDED RIGHT TURN LANE OR TAPER

The Ingham County Road Department (ICRD) has roadway standards to determine the necessity of right turn lanes/tapers at intersections. These standards are found in their "Rules, Standards and Procedures for Driveways, Banners and Parades Upon or Over Ingham County Road Commission Right of Way".

Using the ICRD guideline for right turn lanes or tapers, the results show that the projected right turn volumes, for both the AM and PM peak hours, do not meet the criteria for a right turn lane or taper at this intersection.

ROADWAY ANALYSIS FOR A RECOMMENDED LEFT-TURN TREATMENT

The proposed new Copper Creek PUD roadway on Haslett Road is across from Bird Farm Lane and will be a four-way intersection. The Ingham County Road Department standards do not have a guideline for a passing lane at a four-way intersection. Under that premise, the MDOT Traffic and Safety "Geometric Design Guidance Document," Traffic Volume Guidelines for Left-Turning Lanes at Unsignalized Intersections will be applied at this location. Using the MDOT Traffic and Safety Guideline, an analysis was conducted for a left turn lane at the Copper Creek PUD proposed roadway across from Bird Farm Lane.

Using the MDOT Traffic and Safety "Geometric Design Guidance Document", Traffic Volume Guidelines for Left-Turning Lanes at Unsignalized Intersections, the results show that the projected left turn volumes, during both the AM and PM peak hours, do not meet the criteria for a left turn lane at this intersection.

NON-MOTORIZED TRANSPORTATION

There are sidewalks on the south side of Haslett Road from Van Atta Road to Bird Farm Lane. There are no sidewalks on the north side of Haslett Road. There are no bicycle lanes on this portion of Haslett Road.

SIGHT DISTANCE

The proposed Copper Creek PUD new roadway on Haslett Road will be located across from Bird Farm Lane. A field review shows that there are no issues with sight distance from the east or west along Haslett Road.

RECOMMENDATIONS

The findings of this study show that there are no recommendations to the existing road system.

SUPPLEMENTAL INFORMATION

Supplemental Information

Site Plan
Vehicle Volume Counts
ICRD 24-Hour Volume Counts
ICRD Guidelines for Right-Turn Lanes and Tapers
MDOT Guidelines for Left-Turn Lanes
LOS Computations

December 19, 2017
Project No. G171993

Mr. Mark Kieselbach
Charter Township of Meridian
5151 Marsh Road
Okemos, MI 48864-1198

Re: Wetland Investigation – WDV 17-05
Western Portion of the Altman Property
Haslett Road, Haslett, Ingham County, Michigan

Dear Mr. Kieselbach:

On November 16 and 20, 2017 and December 1, 2017, Fishbeck, Thompson, Carr & Huber, Inc. (FTCH) staff conducted a field investigation to determine whether wetlands are present on the approximately 48.5-acre, western portion of a 191.5-acre parcel owned by the Alvin Altman Company (the Site). The parcel is located directly north of Haslett Road and east of Creekwood Lane. The results of the investigation are included in this report.

The area of investigation is located on Parcel Number 33-02-02-12-200-013 in the south ½ of Section 12, Town 4 North, Range 1 West, and contains undeveloped property and agricultural fields. The site is bound by agricultural fields and undeveloped property to the north and east, residential property to the west, and Haslett Road, emergent wetland, and residential property to the south.

Most of the Site was previously delineated by FTCH in November 2013. Reevaluation of site wetlands is necessary because the prior investigation was conducted more than 3 years ago. The current investigation utilized the wetland area designations used in the 2013 investigation (i.e. Wetlands A, B, etc.) to avoid confusion. Wetlands C and D were not evaluated because they are located to the east and outside of the current area of investigation. Wetland F was not evaluated because visual observation confirmed that it has not significantly increased in size since 2013. Also being approximately 0.04 acre, it is not regulated by the Charter Township of Meridian (Township). Four wetlands not previously evaluated by FTCH were delineated as part of this investigation: Wetlands H, I, J and K.

The investigation 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. 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

According to the U.S. Department of Agriculture Natural Resources Conservation Service *Web Soil Survey*, the area of investigation contains seven different soil series. Predominantly hydric (wetland) soil (i.e. Colwood-Brookston loams) and hydric soil (Houghton muck) are mapped in topographically low areas of the site (see Appendix 1).

The National Wetlands Inventory map indicates forested/shrub and emergent wetlands are present in generally the same areas as those with mapped hydric soil (see Appendix 2).

Site Investigation

The area of investigation and wetland sampling locations are noted in Figure 1 and photographs of wetland sampling locations are included in Appendix 3. The investigation was conducted after a killing frost which resulted in significant die-back of herbaceous vegetation. Most of the site contained agricultural fields, which appeared to be actively farmed and gently rolling topography. A private residence was located along Haslett Road and an abandoned farmstead was located near the center of the area of investigation. This area contained several building foundations and a silo.

Native vegetation was present in much of the southern third of the area of investigation. Mature upland forest was observed in topographically higher areas; dominant species included sugar maple (*Acer saccharum*, FACU), black cherry (*Prunus serotina*, FACU), red oak (*Quercus rubra*, FACU), white oak *(Quercus alba*, FACU), burr oak (*Quercus macrocarpa,* FACU), scarlet oak (*Quercus coccinea*, UPL), shag-bark hickory (*Carya ovata*, FACU), box-elder (*Acer negundo*, FAC), and invasive honeysuckle (*Lonicera* sp.).

A large wetland complex was present at the southwest corner of the area of investigation (Wetland A). This wetland primarily consisted of a cattail marsh and sedge meadow dominated by lakebed sedge (*Carex lacustris*, OBL). Scrub-shrub and forested wetlands were present along the wetland's perimeter. Woody vegetation primarily consisted of red-osier dogwood (*Cornus alba*, FACW), grey dogwood (*Cornus racemosa*, FAC), eastern cottonwood (*Populus deltoides*, FAC), box-elder, sandbar willow (*Salix interior*, FACW) and green ash (*Fraxinus pennsylvanica*, FACW). A culvert under Haslett Road connected this wetland to a similar wetland on the south side of Haslett Road. Aerial photographs suggest that a drainageway connects the southern wetland to a large, forested wetland to the south. Wetland A is approximately 3.75 acres in size. The size of the entire wetland complex (on both sides of Haslett Road) is approximately 4.47 acres, based upon aerial photography interpretation.

Wetland B consisted of a cattail marsh that extended to Haslett Road and to its south. Sampling Point SP-B was located at the western edge of this wetland complex. The outer edge of the wetland contained scrub shrub wetland and wet meadow dominated by reed canarygrass (*Phalaris arundinacea*, FACW). The approximate total size of this wetland north of Haslett Road is 2.78 acres, based upon aerial photography, and the corresponding wetland south of Haslett Road is approximately 2.39 acres. The total, approximate size of this wetland complex is 5.17 acres.

Wetland E was located in a depression in the agricultural field. Wetland E was dominated by reed canary grass in the interior and eastern cottonwood, black willow (*Salix nigra*, OBL), and silver maple (*Acer saccharinum*, FACW) trees near the wetland edge. This wetland has increased in size since 2013 from 0.85 acres to 1.23 acres. The wetland expansion was largely due to standing water in the adjacent field on the northeast side of the wetland (see photograph). The southeast side of Wetland E also extended into the agricultural field, as confirmed by the presence of shallow standing water.

A 0.23-acre wetland (Wetland G) was observed in a depression in a forested area. This wetland had an open understory, and large box-elder, eastern cottonwood, and green ash trees.

Wetland Areas H, I, and J were outside of FTCH's 2013 area of investigation, but were previously delineated, as noted on a site plan obtained from KEBS, Inc. All three areas are located within 500 feet of the Jeferes Drain. FTCH only evaluated one wetland sampling point in this general area (SP-H) because the three small wetland areas are within close proximity to each other, contain similar plant communities, and are located within the same landscape context. All three areas contained forested floodplain wetland dominated by swamp oak (*Quercus bicolor*, FACW), box-elder, and silver maple trees.

Wetland K is located at the extreme southeast end of the 2017 area of investigation, which is outside of the 2013 area of investigation. This area contained forested/scrub shrub wetland which extends to the east and appears to be part of a large wetland complex (the 27.54-acre Township Wetland No. 12-10D). After wetland

flags were surveyed, it was confirmed that Wetland K is outside of the Planned Unit Development currently proposed by KEBS, Inc.

A U.S. Army Corps of Engineers Wetland Determination Data Form was completed to describe site vegetation, soil, and hydrology at each sampling location (Points SB-A, SP-B, SP-E, SP-G, SP-H, and SP-K) (Appendix 4). The locations of these points are shown on Figure 1. Appendix 4 includes photographs of each sampling point location and its corresponding wetland.

FTCH flagged the wetland boundaries with pink ribbon labelled A1 through A46, B1 through B16, E1 through E26, G1 through G14, H1 through H9, I1 through I7, J1 through J6, and K1 through K17. The points were surveyed by Kebs, Inc. Wetland boundaries and associated wetland acreages are noted on the Wetland Sketch Plan in Appendix 5. Wetland size is limited to the wetland present on the Site. Wetlands B, H, and J extend onto adjacent parcels and are larger than is indicated.

Conclusions

The site survey indicates the location of the delineated wetland boundaries. Table 1 summarizes information pertaining to the delineated wetlands.

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.

Table 1 – Summary of Wetlands
Wetland Investigation – WDV 17-05
Meridian Township/Altman Property

Wetland	Wetland Type	Size (on Subject Property) (Acres)	Corresponding Meridian Wetland	Regulated by the State of Michigan?	Regulated by Meridian?
A	Forested/Scrub-Shrub/Emergent	3.75	12-20	Yes	Yes
B	Emergent with Scrub-Shrub Edge	1.27	12-12	Yes	Yes
E	Forested/Scrub-Shrub/Emergent	1.23	12-16	No	Possibly
G	Forested	0.22		No	No
H	Forested	0.13	12-10A	Yes	Yes
I	Forested	0.07	12-10A	Yes	Yes
J	Forested	0.06	12-10A	Yes	Yes
K	Forested/Scrub-Shrub		12-10D	Yes	Yes

Wetlands contiguous to a lake, stream, river, or pond include Wetlands A, H, I and J. These wetlands are regulated by both the State of Michigan and the Township. Wetlands with a total size greater than 5 acres include Wetlands B and K; these are also regulated by both the State and Township. Wetland G is not regulated by the State of Michigan and the Township, due to its small size and not being contiguous to a body of water.

Wetland E is not regulated by the State due to its size and not being contiguous with a body of water. Because this wetland is greater than 0.25 acre in size, a determination of essentiality is needed to determine whether it is regulated by the Township's wetland ordinance.

A permit would be required from the Township for the following activities for all 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.
- 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.

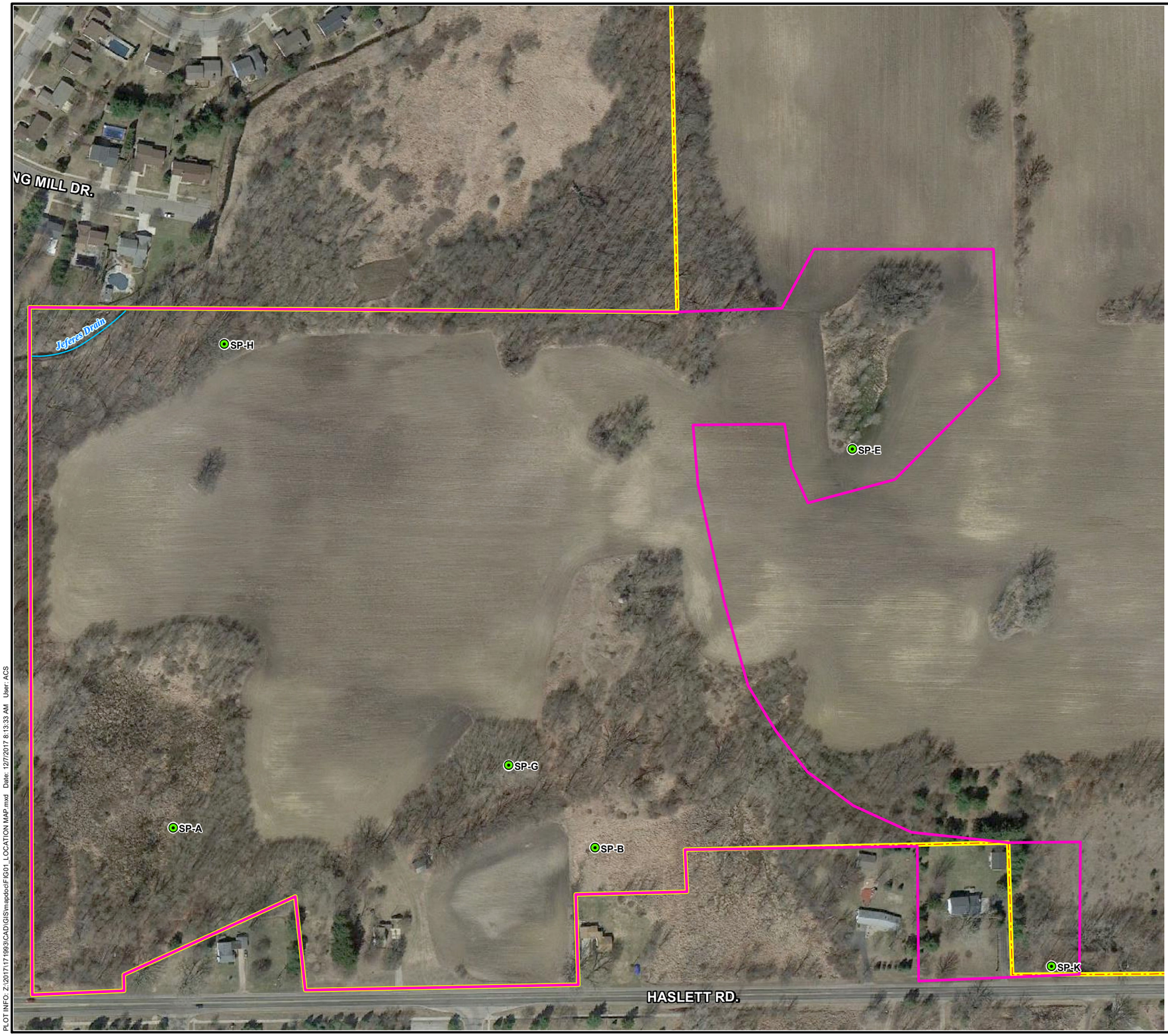
Sincerely,

FISHBECK, THOMPSON, CARR & HUBER, INC.

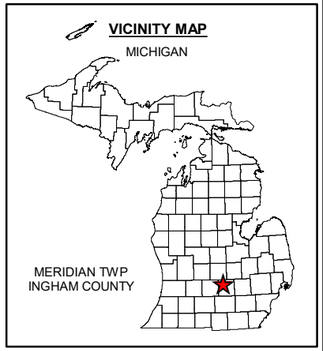
Elise Hansen Tripp, PWS

pmb
Attachments
By email
cc/att: Mr. Peter Menser – Township of Meridian

Figures



VICINITY MAP



LEGEND

- Wetland Sampling Point
- Approximate Limit of Wetland Investigation (48.5 Acres)
- Approximate Property Boundary

NORTH

LOCATION MAP

0 100 200 FEET

fishbeck

engineers
scientist
architects
constructors

fishbeck, thompson, carr & huber, inc.

Hard copy is intended to be 11"x17" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

Charter Township of Meridian

Altman Property, Haslett, Ingham County, Michigan

Wetland Investigation

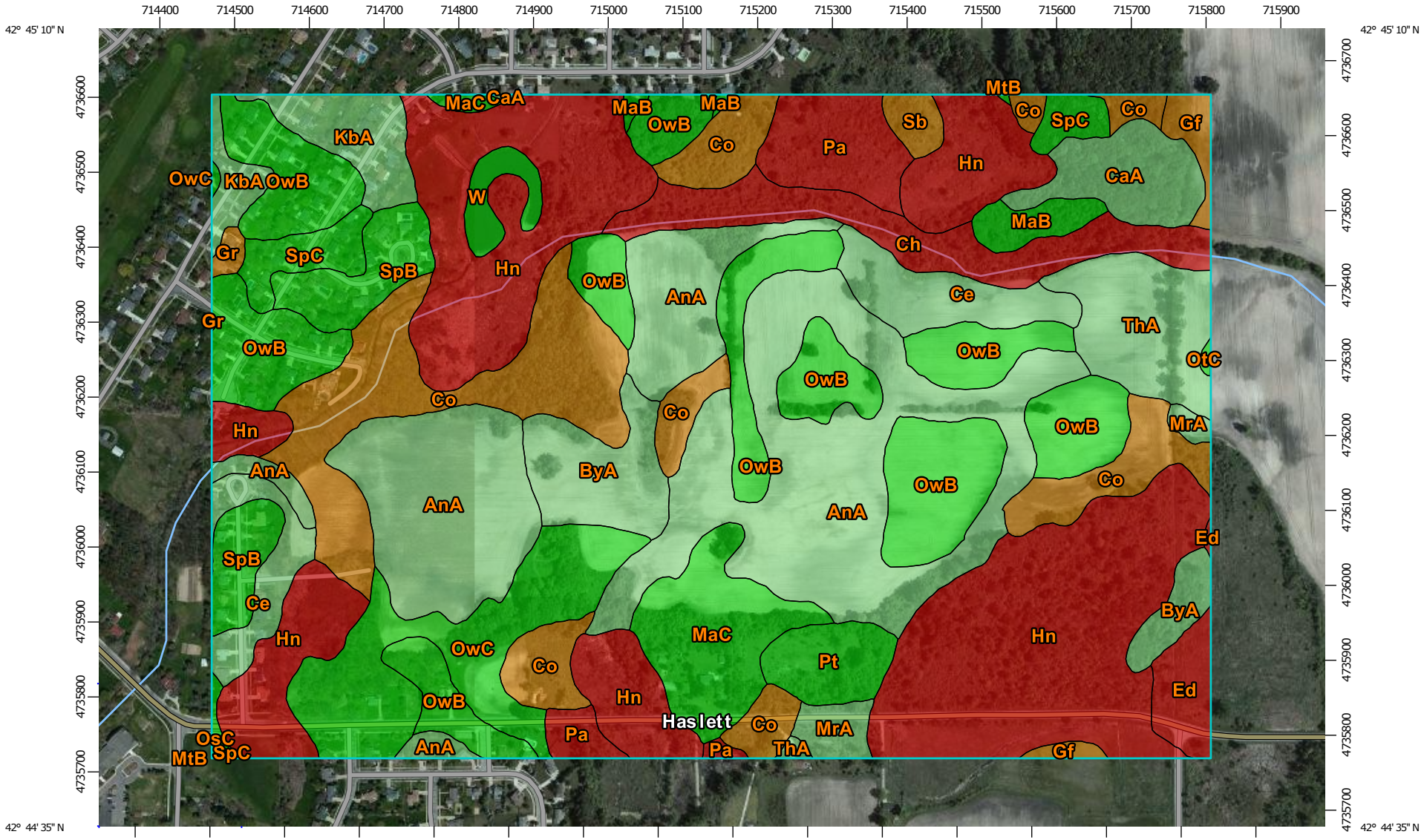
PROJECT NO.
171993

FIGURE NO.
1

PLOT INFO: Z:\2017\171993\CAD\GIS\mapdoc\FIG01_LOCATION MAP.mxd Date: 12/7/2017 8:13:33 AM User: ACS

Appendix 1

Hydric Rating by Map Unit—Ingham County, Michigan
(Altman Property)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Hydric (100%)
- Predominantly Hydric (66 to 99%)
- Partially hyrdic (33 to 65%)
- Predominatly nonhydric (1 to 32%)
- Nonhydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Predominantly Hydric (66 to 99%)
- Partially hyrdic (33 to 65%)
- Predominatly nonhydric (1 to 32%)
- Nonhydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Predominantly Hydric (66 to 99%)
- Partially hyrdic (33 to 65%)
- Predominatly nonhydric (1 to 32%)
- Nonhydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

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: http://websoilsurvey.nrcs.usda.gov
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 10, Dec 14, 2009

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 27, 2010—May 5, 2011

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

Hydric Rating by Map Unit— Summary by Map Unit — Ingham County, Michigan (MI065)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
AnA	Aubbeenaubbee-Capac sandy loams, 0 to 3 percent slopes	8	52.4	17.8%
ByA	Brady sandy loam, 0 to 3 percent slopes	5	8.5	2.9%
CaA	Capac loam, 0 to 3 percent slopes	5	5.7	1.9%
Ce	Ceresco fine sandy loam	5	9.1	3.1%
Ch	Cohoctah silt loam	100	10.3	3.5%
Co	Colwood-Brookston loams	80	30.8	10.5%
Ed	Edwards muck	100	3.0	1.0%
Gf	Gilford sandy loam	93	1.9	0.6%
Gr	Granby loamy fine sand	97	0.6	0.2%
Hn	Houghton muck	100	63.7	21.7%
KbA	Kibbie loam, 0 to 3 percent slopes	10	6.1	2.1%
MaB	Marlette fine sandy loam, 2 to 6 percent slopes	0	2.4	0.8%
MaC	Marlette fine sandy loam, 6 to 12 percent slopes	0	9.6	3.3%
MrA	Matherton sandy loam, 0 to 3 percent slopes	10	2.2	0.8%
MtB	Metea loamy sand, 2 to 6 percent slopes	0	0.0	0.0%
OsC	Oshtemo sandy loam, 6 to 12 percent slopes	0	0.3	0.1%
OtC	Oshtemo-Spinks loamy sands, 6 to 12 percent slopes	0	0.1	0.0%
OwB	Owosso-Marlette sandy loams, 2 to 6 percent slopes	0	38.2	13.0%
OwC	Owosso-Marlette sandy loams, 6 to 12 percent slopes	0	14.4	4.9%
Pa	Palms muck	100	7.3	2.5%
Pt	Pits	0	4.0	1.3%
Sb	Sebewa loam	95	1.3	0.4%
SpB	Spinks loamy sand, 0 to 6 percent slopes	0	7.4	2.5%

Hydric Rating by Map Unit— Summary by Map Unit — Ingham County, Michigan (MI065)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
SpC	Spinks loamy sand, 6 to 12 percent slopes	0	4.3	1.4%
ThA	Thetford loamy sand, 0 to 3 percent slopes	10	8.3	2.8%
W	Water	0	2.0	0.7%
Totals for Area of Interest			**293.8**	**100.0%**

Description

This rating indicates the proportion 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 designated as "hydric," "predominantly hydric," "partially hydric," "predominantly nonhydric," or "nonhydric" depending on the rating of its respective components and the percentage of each component within the map unit.

"Hydric" means that all components listed for a given map unit are rated as being hydric. "Predominantly hydric" means components that comprise 66 to 99 percent of the map unit are rated as hydric. "Partially hydric" means components that comprise 33 to 66 percent of the map unit are rated as hydric. "Predominantly nonhydric" means components that comprise up to 33 percent of the map unit are rated as hydric. "Nonhydric" means that none of the components are rated as hydric. The assumption here is that all components of the map unit are rated as hydric or nonhydric in the underlying database. A "Not rated or not available" map unit rating is displayed when none of the components within a map unit have been rated.

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 being 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

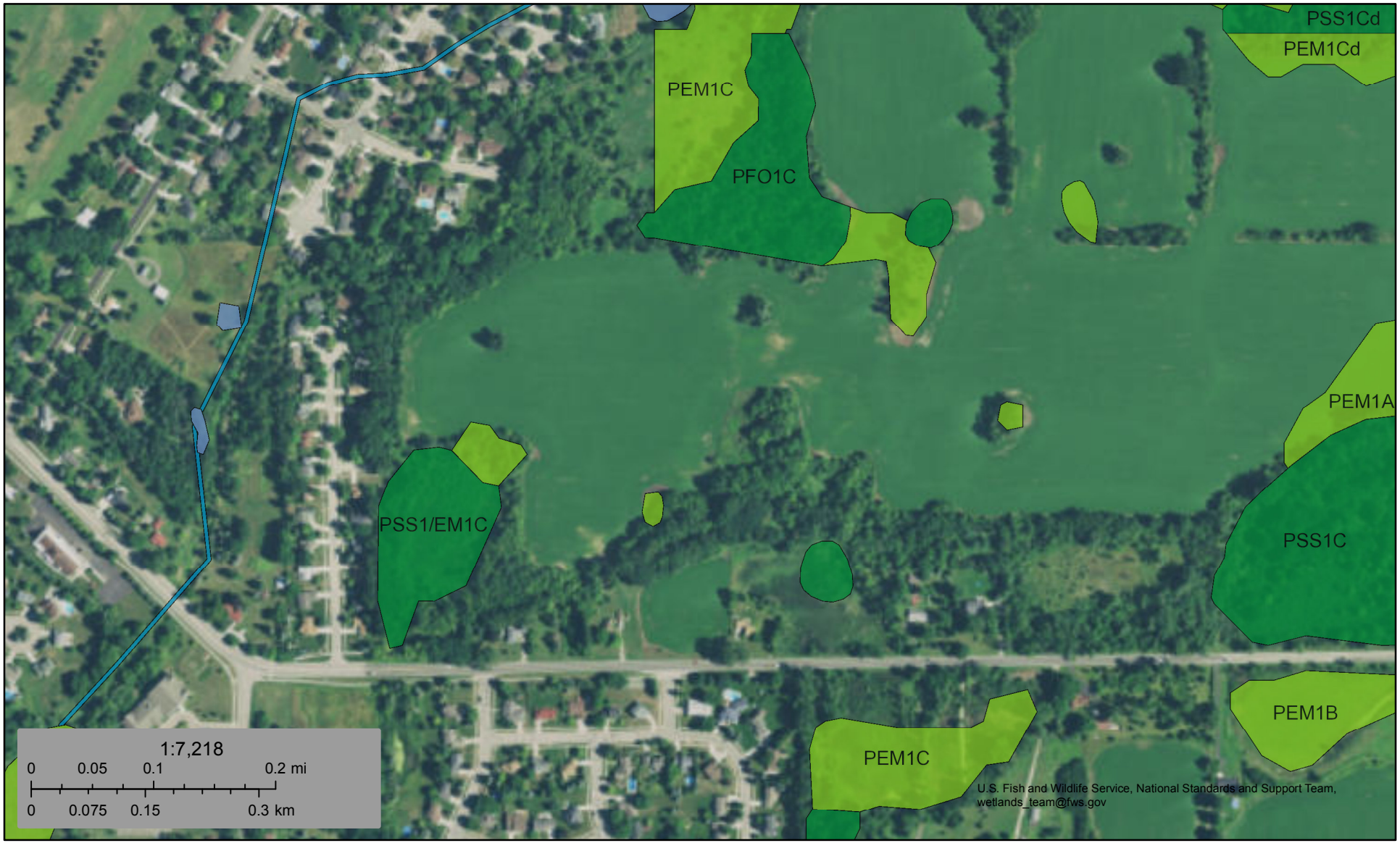
Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Appendix 2

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands



December 6, 2017

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 3

Fishbeck, Thompson, Carr & Huber, Inc.

Site Photographs

Altman Property

Haslett Road, Meridian Township, MI

Project No. 171993

Wetland Adjacent to SP-A

Wetland Sampling Point SP-A

Wetland Adjacent to SP-B

Wetland Sampling Point SP-B

Wetland Adjacent to SP-E

Wetland Sampling Point SP-E

Northeast End of Area E

Wetland Adjacent to SP-G

Wetland Sampling Point SP-G

Wetland Adjacent to SP-H

Wetland Sampling Point SP-H

Wetland J

Wetland Adjacent to SP-K

Wetland Sampling Point SP-K

Appendix 4

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Meridian Twp/WDV 17-05 **City/County:** Meridian Township/Ingham **Sampling Date:** 16-Nov-17

Applicant/Owner: Haslett Holdings LLC **State:** Michigan **Sampling Point:** SP-A

Investigator(s): Elise Tripp **Section, Township, Range:** S. 12 T. 4N R. 1W

Landform (hillslope, terrace, etc.): Kettle **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR L **Lat.:** 42.745423890 **Long.:** 84.377091382 **Datum:** WGS84

Soil Map Unit Name: Houghton muck **NWI classification:** PSS1C

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 ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present? Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○	

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

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	0
Water Table Present?	Yes ◉ No ○	Depth (inches):	3
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: SP-A

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix interior*	5	☑	FACW
2. *Acer saccharum*	5	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Cornus alba*	5	☑	FACW
2. *Viburnum opulus var. opulus*	5	☑	FACW
3. *Fraxinus pennsylvanica*	5	☑	FACW
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	15	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex lacustris*	60	☑	OBL
2. *Typha angustifolia*	5	☐	OBL
3. *Phalaris arundinacea*	30	☑	FACW
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 85.7% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	65	x 1 =	65
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	120 (A)		185 (B)

Prevalence Index = B/A = 1.542

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 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** ◉ **No** ○

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.

Soil

Sampling Point: SP-A

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc²	Texture	Remarks
0-19	10YR	2/1	100					Muck	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils : [3]

- [ ] 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- [ ] Coast Prairie Redox (A16) (LRR K, L, R)
- [ ] 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- [ ] Dark Surface (S7) (LRR K, L, M)
- [ ] Polyvalue Below Surface (S8) (LRR K, L)
- [ ] Thin Dark Surface (S9) (LRR K, L)
- [ ] Iron-Manganese Masses (F12) (LRR K, L, R)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149B)
- [ ] Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- [ ] Red Parent Material (F21)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Meridian Twp/WDV 17-05 **City/County:** Meridian Township/Ingham **Sampling Date:** 16-Nov-17

Applicant/Owner: Haslett Holdings LLC **State:** Michigan **Sampling Point:** SP-B

Investigator(s): Elise Tripp **Section, Township, Range:** S. 12 T. 4N R. 1W

Landform (hillslope, terrace, etc.): Kettle **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR L **Lat.:** 42.745317335 **Long.:** 84.373948380 **Datum:** WGS84

Soil Map Unit Name: Colwood-Brookston loams **NWI classification:** None

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 ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present? Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○	

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

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	0
Water Table Present?	Yes ◉ No ○	Depth (inches):	3
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: SP-B

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5)			
1. *Typha latifolia*	85	☑	OBL
2. *Phalaris arundinacea*	15	☐	FACW
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	100	**= Total Cover**	
Woody Vine Stratum (Plot size:)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	85	x 1 =	85
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		115 (B)

Prevalence Index = B/A = 1.150

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

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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** ◉ **No** ○

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.

Soil

Sampling Point: SP-B

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc²	Texture	Remarks
0-18	10YR	2/1	100					Muck	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils : [3]

- [ ] 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- [ ] Coast Prairie Redox (A16) (LRR K, L, R)
- [ ] 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- [ ] Dark Surface (S7) (LRR K, L, M)
- [ ] Polyvalue Below Surface (S8) (LRR K, L)
- [ ] Thin Dark Surface (S9) (LRR K, L)
- [ ] Iron-Manganese Masses (F12) (LRR K, L, R)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149B)
- [ ] Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- [ ] Red Parent Material (F21)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Meridian Twp/WDV 17-05 **City/County:** Meridian Township/Ingham **Sampling Date:** 20-Nov-17

Applicant/Owner: Haslett Holdings LLC **State:** Michigan **Sampling Point:** SP-E

Investigator(s): Elise Tripp **Section, Township, Range:** S. 12 T. 4N 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.:** 42.747496630 **Long.:** 84.372053393 **Datum:** WGS84

Soil Map Unit Name: Colwood-Brookston loams **NWI classification:** PEM1A

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 ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present? Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○	

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

Hydrology

Wetland Hydrology Indicators:

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

- ☑ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches):	3
Water Table Present?	Yes ○ No ◉	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: SP-E

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	20	☑	OBL
2. *Populus deltoides*	15	☑	FAC
3. *Acer saccharinum*	10	☑	FACW
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	45	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1. *Cornus alba*	5	☑	FACW
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	5	= Total Cover	

Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	100	☑	FACW
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	100	= Total Cover	

Woody Vine Stratum (Plot size: 30)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	20	x 1 =	20	
FACW species	115	x 2 =	230	
FAC species	15	x 3 =	45	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	150	(A)	295	(B)

Prevalence Index = B/A = 1.967

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 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** ◉ **No** ○

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.

Soil

Sampling Point: SP-E

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc²	Texture	Remarks
0-9	10YR	3/1	95	10YR	3/6	5	RM	PL	Clay Loam	
9-13	10YR	5/2	60	10YR	2/1	40	RM	M	Sandy Loam	Organic streaking

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soil data obtained from 2013 delineation because of high water levels in 2017.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Meridian Twp/WDV 17-05 **City/County:** Meridian Township/Ingham **Sampling Date:** 16-Nov-17

Applicant/Owner: Haslett Holdings LLC **State:** Michigan **Sampling Point:** SP-G

Investigator(s): Elise Tripp **Section, Township, Range:** S. 12 T. 4N 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.:** 42.745767645 **Long.:** 84.374589169 **Datum:** WGS84

Soil Map Unit Name: Owosso-Marlette sandy loams, 6-12% slopes **NWI classification:** PEM1A

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 ◉	No ○	
Hydric Soil Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Wetland Hydrology Present?	Yes ○	No ◉	

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

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	0	
Water Table Present?	Yes ○	No ◉	Depth (inches):	0	
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):	0	**Wetland Hydrology Present?** Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Dry to 17 inches

VEGETATION - Use scientific names of plants

Sampling Point: SP-G

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	40	☑	FAC
2. *Populus deltoides*	60	☑	FAC
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	100	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Acer negundo*	5	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	5	**= Total Cover**	
Herb Stratum (Plot size: 5)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	0	**= Total Cover**	
Woody Vine Stratum (Plot size: 30)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	105	x 3 =	315	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	105	(A)	315	(B)

Prevalence Index = B/A = 3.000

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 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** ◉ **No** ○

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.

Soil

Sampling Point: SP-G

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	2/1	100					Loam	Mucky
4-17	10YR	3/1	100					Clay Loam	High organic matter

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Meridian Twp/WDV 17-05 **City/County:** Meridian Township/Ingham **Sampling Date:** 20-Nov-17

Applicant/Owner: Haslett Holdings LLC **State:** Michigan **Sampling Point:** SP-H

Investigator(s): Elise Tripp **Section, Township, Range:** S. 12 T. 4N R. 1W

Landform (hillslope, terrace, etc.): Bench **Local relief (concave, convex, none):** flat **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR L **Lat.:** 42.748071582 **Long.:** 84.376700121 **Datum:** WGS84

Soil Map Unit Name: Colwood-Brookston loams **NWI classification:** None

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 ◉ No ○	**Is the Sampled Area within a Wetland?**	Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○		
Wetland Hydrology Present?	Yes ◉ No ○		

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

Hydrology

Wetland Hydrology Indicators:

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

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches):	2
Water Table Present?	Yes ◉ No ○	Depth (inches):	12
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	7

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water nearby.

VEGETATION - Use scientific names of plants

Sampling Point: SP-H

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus bicolor*	60	☑	FACW
2. *Acer saccharinum*	25	☑	FACW
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	
Herb Stratum (Plot size: 5)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	0	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	85	x 2 =	170	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	85	(A)	170	(B)

Prevalence Index = B/A = 2.000

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 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** ◉ **No** ○

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.

Soil

Sampling Point: SP-H

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-12	10YR	2/2	100						Clay Loam	High organic matter
12-20	10YR	6/2	85	7.5YR	5/8	15			Clay Loam	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Meridian Twp/WDV 17-05 **City/County:** Meridian Township/Ingham **Sampling Date:** 01-Dec-17

Applicant/Owner: Haslett Holdings LLC **State:** Michigan **Sampling Point:** SP-K

Investigator(s): Elise Tripp **Section, Township, Range:** S. 12 T. 4N 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.:** 42.744667321 **Long.:** 84.370557860 **Datum:** WGS84

Soil Map Unit Name: Colwood-Brookston loams **NWI classification:** None

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 ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present? Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○	

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

Hydrology

Wetland Hydrology Indicators:

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

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches):	3
Water Table Present?	Yes ◉ No ○	Depth (inches):	5
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: SP-K

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus bicolor*	80	☑	FACW
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Quercus bicolor*	10	☑	FACW
2. *Cornus racemosa*	30	☑	FAC
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	40	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Carex lacustris*	40	☑	OBL
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	40	= Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	40	x 1 =	40
FACW species	90	x 2 =	180
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	160 (A)		310 (B)

Prevalence Index = B/A = 1.938

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 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** ◉ **No** ○

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.

Soil

Sampling Point: SP-K

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)	%	Type [1]	Loc[2]	Texture	Remarks
0-19	10YR	2/1	100					Muck	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils : [3]

- [ ] 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- [ ] Coast Prairie Redox (A16) (LRR K, L, R)
- [ ] 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- [ ] Dark Surface (S7) (LRR K, L, M)
- [ ] Polyvalue Below Surface (S8) (LRR K, L)
- [ ] Thin Dark Surface (S9) (LRR K, L)
- [ ] Iron-Manganese Masses (F12) (LRR K, L, R)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149B)
- [ ] Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- [ ] Red Parent Material (F21)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Appendix 5

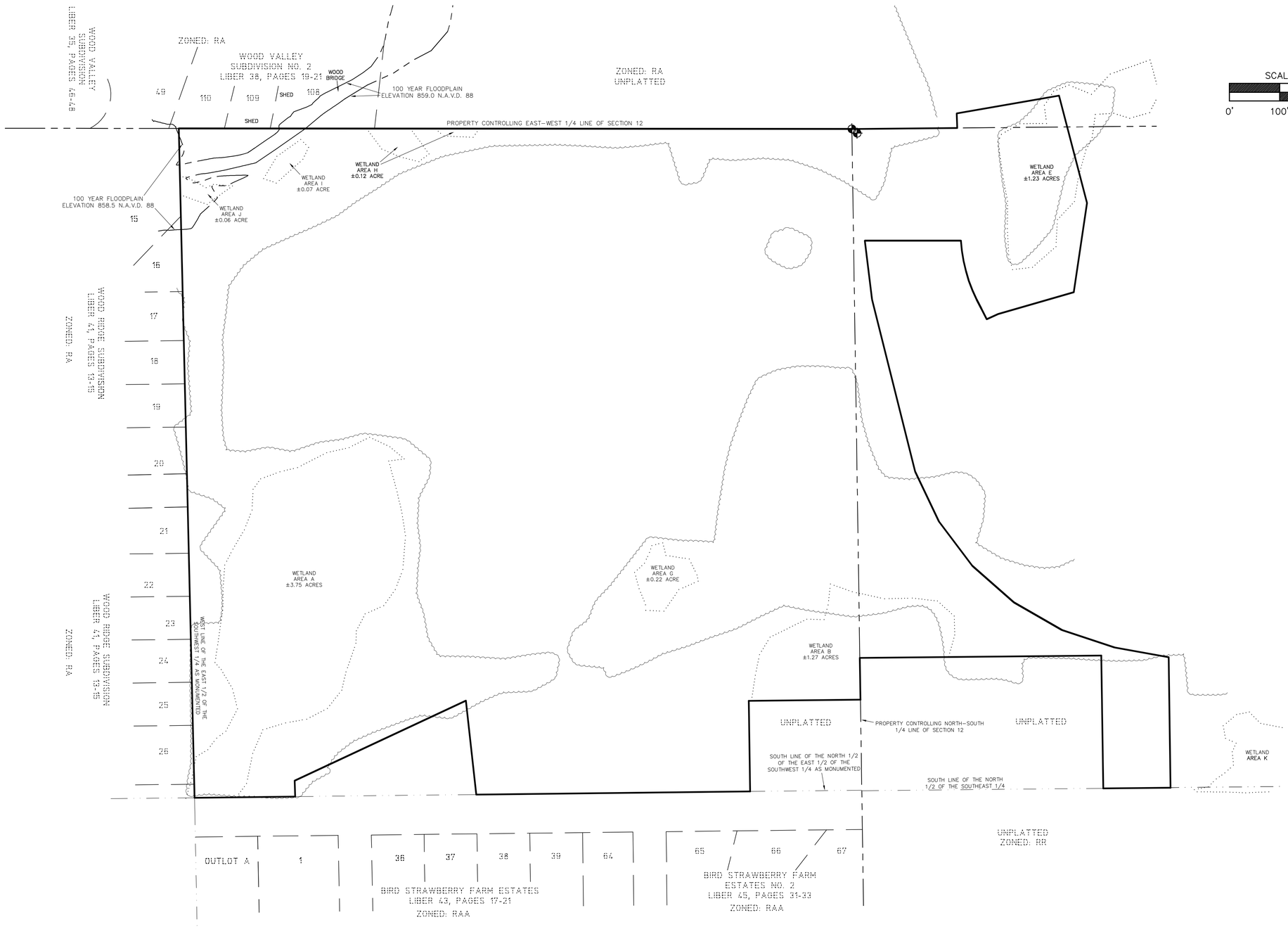
WETLAND SKETCH PLAN

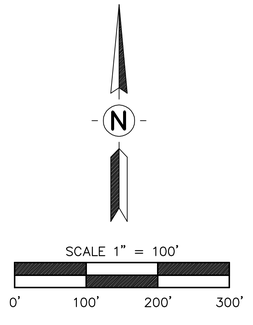
COPPER CREEK CONDOMINIUM

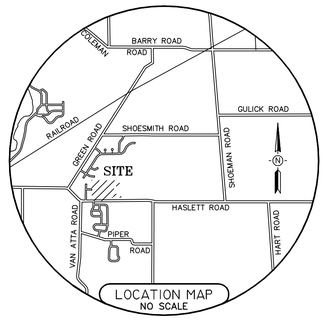
A SUBDIVISION OF PART OF THE NORTHEAST 1/4, SOUTHEAST 1/4 & SOUTHWEST 1/4 OF SECTION 12, T4N, R1W, MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

OWNER/DEVELOPER:
MAYBERRY HOMES
1650 KENDALE BOULEVARD
EAST LANSING, MI 48823
(517) 371-5000
CONTACT: BOB SCHROEDER

ENGINEER/SURVEYOR:
KEBS, INC.
2116 HASLETT RD.
HASLETT, MI. 48840
PH: (517) 339-1014
FAX: (517) 339-8047







REVISIONS	COMMENTS
11/29/17	ORIGINAL
12/11/17	ADD WETLAND AREA "K"

KEBS, INC. ENGINEERING AND LAND SURVEYING
2116 HASLETT ROAD, HASLETT, MI 48840
PH. 517-339-1014 FAX 517-339-8047
WWW.KEBS.COM
Marshall Office - Ph. 269-781-9800

DRAWN BY KDB	SECTION 12, T4N, R1W
FIELD WORK BY ---	JOB NUMBER: 90535.SUB-PUD
SHEET 1 OF 1	

To: **Planning Commission**

From: **Peter Menser, Principal Planner**

Keith Chapman, Assistant Planner

Date: **August 10, 2018**

Re: **Rezoning #18090 (M & J Management LLC), rezone approximately five acres located at 1999 East Saginaw Highway from I (Industrial) to C-2 (Commercial).**

The public hearing for Rezoning #18090 was held at the July 23, 2018 regular meeting. At the meeting the Planning Commission agreed to consider a resolution to recommend approval of the rezoning request at its next meeting.

Planning Commission Options

The Planning Commission may recommend approval or denial of the rezoning as requested by the applicant or recommend a different zoning category. A resolution to recommend approval to C-2 (Commercial) is attached.

- **Move to adopt the attached resolution to recommend approval of Rezoning #18090.**

Attachment

1. Resolution to recommend approval

G:\Community Planning & Development\Planning\REZONINGS (REZ)\2018\18090 (M & J Management LLC)\REZ 18090.pc2.doc

RESOLUTION TO APPROVE C-2 **Rezoning #18090**
M & J Management LLC
1999 Saginaw Highway

RESOLUTION

At a regular meeting of the Planning Commission of the Charter Township of Meridian, Ingham County, Michigan, held at the Meridian Municipal Building, in said Township on the 13th day of August, 2018, at 7:00 p.m., Local Time.

PRESENT: _____

_____

ABSENT: _____

The following resolution was offered by _____ and supported by _____.

WHEREAS, M & J Management LLC requested the rezoning of approximately five acres located at 1999 Saginaw Highway from I (Industrial) to C-2 (Commercial); and

WHEREAS, the Planning Commission held a public hearing and discussed the rezoning at its meeting on July 23, 2018; and

WHEREAS, the Planning Commission reviewed and discussed the staff material provided under cover memorandum dated July 20, 2018; and

WHEREAS, the subject site meets or exceeds the minimum standards for lot area and lot width of the proposed C-2 (Commercial) zoning district; and

WHEREAS, the proposed rezoning to C-2 (Commercial) is consistent with changes in land use along the Saginaw Highway corridor; and

WHEREAS, public water and sanitary sewer services are available to serve the subject site.

NOW THEREFORE, BE IT RESOLVED THE PLANNING COMMISSION OF THE CHARTER TOWNSHIP OF MERIDIAN hereby recommends approval of Rezoning #18090 to rezone approximately five acres from I (Industrial) to C-2 (Commercial).

ADOPTED: YEAS: _____

_____

NAYS: _____

STATE OF MICHIGAN)
) ss
COUNTY OF INGHAM)

I, the undersigned, the duly qualified and acting Chair of the Planning Commission of the Township of Meridian, Ingham County, Michigan, DO HEREBY CERTIFY that the foregoing is a true and a complete copy of a resolution adopted at a regular meeting of the Planning Commission on the 13th day of August, 2018.

_____
Dante Ianni
Planning Commission Chair

G:\Community Planning & Development\Planning\REZONINGS (REZ)\2018\REZ 18090 (M & J Management LLC)\REZ 18090 PC resolution to approve.pc2.docx

To: **Planning Commission**

From: **Peter Menser, Principal Planner**

Justin Quagliata, Assistant Planner

Date: **August 1, 2018**

Re: **Rezoning #18100 (HOS Management), rezone approximately 0.42 acres located at 7080 Saginaw Highway from I (Industrial) to C-2 (Commercial).**

The public hearing for Rezoning #18100 was held at the July 23, 2018 regular meeting. At the meeting the Planning Commission agreed to consider a resolution to recommend approval of the rezoning request at its next meeting.

Planning Commission Options

The Planning Commission may recommend approval or denial of the rezoning as requested by the applicant or recommend a different zoning category. A resolution to recommend approval to C-2 (Commercial) is attached.

- **Move to adopt the attached resolution to recommend approval of Rezoning #18100.**

Attachment

1. Resolution to recommend approval.

G:\Community Planning & Development\Planning\REZONINGS (REZ)\2018\18100 (HOS Management)\REZ 18100.pc2.doc

RESOLUTION TO APPROVE C-2

Rezoning #18100
HOS Management
7080 Saginaw Highway

RESOLUTION

At a regular meeting of the Planning Commission of the Charter Township of Meridian, Ingham County, Michigan, held at the Meridian Municipal Building, in said Township on the 13th day of August, 2018, at 7:00 p.m., Local Time.

PRESENT: _____

_____

ABSENT: _____

The following resolution was offered by _____ and supported by _____.

WHEREAS, HOS Management requested the rezoning of approximately 0.42 acres located at 7080 Saginaw Highway from I (Industrial) to C-2 (Commercial); and

WHEREAS, the Planning Commission held a public hearing and discussed the rezoning at its meeting on July 23, 2018; and

WHEREAS, the Planning Commission reviewed and discussed the staff material provided under a cover memorandum dated July 17, 2018; and

WHEREAS, the subject site meets or exceeds the minimum standards for lot area and lot width of the proposed C-2 (Commercial) zoning district; and

WHEREAS, the proposed rezoning to C-2 (Commercial) is consistent with changes in land use along the Saginaw Highway corridor; and

WHEREAS, public water and sanitary sewer services are available to serve the subject site.

NOW THEREFORE, BE IT RESOLVED THE PLANNING COMMISSION OF THE CHARTER TOWNSHIP OF MERIDIAN hereby recommends approval of Rezoning #18100 to rezone approximately 0.42 acres from I (Industrial) to C-2 (Commercial).

ADOPTED: YEAS: _____

_____

NAYS: _____

STATE OF MICHIGAN)
) ss
COUNTY OF INGHAM)

I, the undersigned, the duly qualified and acting Chair of the Planning Commission of the Township of Meridian, Ingham County, Michigan, DO HEREBY CERTIFY that the foregoing is a true and a complete copy of a resolution adopted at a regular meeting of the Planning Commission on the 13th day of August, 2018.

_____
Dante Ianni
Planning Commission Chair

G:\Community Planning & Development\Planning\REZONINGS (REZ)\2018\REZ 18100 (HOS Management)\REZ 18100 PC resolution to approve.pc2.docx