September 24, 2018

Ms. Elizabeth Madson
Chesterfield Township Library
50560 Patricia Avenue
Chesterfield, MI 48051

RE: Wetland Delineation and Jurisdictional Assessment
21 Mile Road and Sugarbush Road Property
Sidwell No. 09-32-127-033
Chesterfield Township, Macomb County, Michigan
ASTI File No. 2-10826

Dear Ms. Madson:

A site investigation was completed on September 20, 2018 by ASTI Environmental (ASTI) to delineate wetland boundaries on the above-referenced parcel located in the southeast quadrant of the intersection of 21 Mile Road and Sugarbush Road in Chesterfield Township, Macomb County, Michigan (Property). One wetland not believed to be regulated by the Michigan Department of Environmental Quality (DEQ) was found on the Property (see Figure 1 – GPS-Surveyed Wetland Boundaries). Wetland boundaries, as depicted on Figure 1, were located using a professional grade, hand-held Global Positioning System unit (GPS).

SUPPORTING DATA
The United States Geological Survey (USGS) New Haven, Michigan 7.5’ Quadrangle Map, the Soil Survey of Macomb County, the National Wetland Inventory Map (NWI), the DEQ Wetlands Map Viewer web site, and digital aerial photographs were all used to support the wetland delineation and subsequent regulatory status determination. No reviewed data indicated the presence of wetland on the Property.

The Soil Survey of Macomb County indicates the Property is comprised of the soil complexes of Brevort-Selfridge complex, Toledo silty clay loam, Oakville fine sand (0-6% slopes), and Pipestone sand (0-6% slopes). Brevort-Selfridge complex and Toledo silty clay loam are on the list Hydric Soils of Michigan.
FINDINGS
ASTI investigated the Property for the presence of lakes, ponds, wetlands, and watercourses. This work is based on MCL 324 Part 301, Inland Lakes and Streams and Part 303, Wetlands Protection.

The delineation protocol used by ASTI for this delineation is based on the US Army Corps of Engineers’ Wetland Delineation Manual, 1987, the Regional Supplement to the Corps of Engineer Wetland Delineation Manual: Northcentral/Northeast Region, and related guidance/documents, as appropriate. Wetland vegetation, soils, and hydrology indicators were used to determine wetland boundaries.

Wetland A
Wetland A is a forested, scrub/shrub, and emergent wetland 2.48 acres in size located in the southern portion of the Property (see Figure 1). Dominant vegetation found within the forested portion of Wetland A included silver maple (Acer saccharinum), green ash (Fraxinus pennsylvanica), cottonwood (Populus deltoides), American elm (Ulmus americana), and gray dogwood (Cornus racemosa). Dominant vegetation found within the scrub/shrub portion of Wetland A included gray dogwood, green ash saplings, glossy buckthorn (Frangula alnus), and Phragmites (Phragmites australis). Vegetation within the emergent portion of Wetland A was dominated by Phragmites. Soils within Wetland A were comprised of clay loams and are considered hydric because the criteria for a depleted matrix was met. Indicators of wetland hydrology observed within Wetland A included observations of sparsely vegetated concave surfaces and water-stained leaves.

Vegetation in the upland adjacent to Wetland A was dominated by teasel (Dipsacus fullonum), tall goldenrod (Solidago altissima), Phragmites, Canada thistle (Cirsium arvense), and annual grass (Poa annua). Soils in the upland adjacent to Wetland A were comprised of clay loams; no indicators of wetland hydrology were observed.

It is ASTI's opinion that Wetland A is not regulated by the DEQ under Part 303 because it is less than five acres in size and is not within 500 feet of a stream, pond, or inland lake regulated under Part 301.

Wetland Flagging
Wetland boundaries were marked in the field with day-glow and black striped flagging and numbered as follows:

Wetland A = A-1 through A-20

All wetland boundaries were located in the field by ASTI with a professional grade GPS.
SUMMARY

Based upon the data, criteria, and evidence noted above, it is ASTI’s professional opinion that the Property contains one wetland (Wetland A) not regulated by the DEQ. However, the DEQ has the final authority on the extent of regulated wetlands, lakes, and streams in the State of Michigan.

Attached are Figure 1, which shows the GPS-surveyed wetland boundaries on the Property, and completed US Army Corps of Engineers (ACOE) Wetland Data Forms.

Thank you for the opportunity to assist you with this project. Please let us know if we can be of any further assistance in moving your project forward.

Cordially,

ASTI ENVIRONMENTAL

Kyle Hottinger
Wetland Ecologist
Professional Wetland Scientist #2927

Dianne C. Martin
Vice President
Professional Wetland Scientist #1313

Attachments:  Figure 1 – GPS-Surveyed Wetland Boundaries
Completed ACOE Wetland Data Forms
Figure 1 - GPS-Surveyed Wetland Boundaries
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 21 Mile & Sugarbush (SE) property  City/County: Chesterfield Twp-Macomb  Sampling Date: 9-20-18
Applicant/Owner: Chesterfield Township Library  State: MI  Sampling Point: UPA5
Investigator(s): ASTI-KAH  Section, Township, Range: Sec 32 T3N R14E

Landform (hillside, terrace, etc.): slight slope  Local relief (concave, convex, none): slight slope  Slope %: 1-4
Soil Map Unit Name: Toledo silty clay loam  NWI classification: none
Subregion (LRR or MLRA): LRR L  Datum: ________

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Hydrophytic Vegetation Present? Yes No  X  Is the Sampled Area within a Wetland?  Yes No  X
Hydric Soil Present? Yes x  No  
Wetland Hydrology Present? Yes No  X

Remarks: (Explain alternative procedures here or in a separate report.)
Upland adjacent to Wetland A at flag A6

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)_______________________________________________________________ Secondary Indicators (minimum of two required)____________________________________________________________________
— Surface Water (A1)  — Water-Stained Leaves (B9)
— High Water Table (A2)  — Aquatic Fauna (B13)
— Saturation (A3)  — Marl Deposits (B15)
— Water Marks (B1)  — Hydrogen Sulfide Odor (C1)
— Sediment Deposits (B2)  — Oxidized Rhizospheres on Living Roots (C3)
— Drift Deposits (B3)  — Presence of Reduced Iron (C4)
— Algal Mat or Crust (B4)  — Recent Iron Reduction in Tilled Soils (C6)
— Iron Deposits (B5)  — Thin Muck Surface (C7)
— Inundation Visible on Aerial Imagery (B7)  — Other (Explain in Remarks)
— Sparsely Vegetated Concave Surface (B8)  — FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Yes  No  X  Depth (inches):______
Water Table Present? Yes  No  X  Depth (inches):______
Saturation Present? Yes  No  X  Depth (inches):______
(includes capillary fringe)

Wetland Hydrology Present?  Yes No  X

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

Remarks:
### Sampling Point: UPA5

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 30’)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Juglans nigra</strong></td>
<td>10</td>
<td>Yes</td>
<td>FACU</td>
</tr>
<tr>
<td>2.</td>
<td></td>
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<td>3.</td>
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<td>4.</td>
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<td>5.</td>
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<tr>
<td>6.</td>
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<tr>
<td>7.</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: 15’)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Cornus racemosa</strong></td>
<td>5</td>
<td>Yes</td>
<td>FAC</td>
</tr>
<tr>
<td>2. <strong>Elaeagnus umbellata</strong></td>
<td>5</td>
<td>Yes</td>
<td>UPL</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
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<tr>
<td>4.</td>
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<td>5.</td>
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<tr>
<td>6.</td>
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<td>7.</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5’)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Dipsacus fullonum</strong></td>
<td>30</td>
<td>Yes</td>
<td>FACU</td>
</tr>
<tr>
<td>2. <strong>Solidago gigantea</strong></td>
<td>5</td>
<td>No</td>
<td>FACW</td>
</tr>
<tr>
<td>3. <strong>Solidago altissima</strong></td>
<td>20</td>
<td>Yes</td>
<td>FACU</td>
</tr>
<tr>
<td>4. <strong>Lythrum salicaria</strong></td>
<td>5</td>
<td>No</td>
<td>OBL</td>
</tr>
<tr>
<td>5. <strong>Bromus inermis</strong></td>
<td>10</td>
<td>Yes</td>
<td>UPL</td>
</tr>
<tr>
<td>6. <strong>Poa annua</strong></td>
<td>10</td>
<td>Yes</td>
<td>FACU</td>
</tr>
<tr>
<td>7. <strong>Cirsium arvense</strong></td>
<td>10</td>
<td>Yes</td>
<td>FACU</td>
</tr>
<tr>
<td>8. <strong>Phragmites australis</strong></td>
<td>10</td>
<td>Yes</td>
<td>FACW</td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10.</td>
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<tr>
<td>11.</td>
<td></td>
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<tr>
<td>12.</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: 15’)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
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<td></td>
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<tr>
<td>3.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dominance Test worksheet:

- Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
- Total Number of Dominant Species Across All Strata: 9 (B)
- Percent of Dominant Species That Are OBL, FACW, or FAC: 22.2% (A/B)

### Prevalence Index worksheet:

<table>
<thead>
<tr>
<th>OBL species</th>
<th>% Cover</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>FACW species</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>FAC species</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>FACU species</td>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>UPL species</td>
<td>15</td>
<td>5</td>
</tr>
</tbody>
</table>

| Column Totals: | 120 (A) | 445 (B) |

| Prevalence Index = B/A = | 3.71 |

### Hydrophytic Vegetation Indicators:

- **Dipsacus fullonum**
- **Solidago gigantea**
- **Solidago altissima**
- **Lythrum salicaria**
- **Bromus inermis**
- **Poa annua**
- **Cirsium arvense**

### Definitions of Vegetation Strata:

- **Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
- **Sapling/shrub** – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
- **Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
- **Woody vines** – All woody vines greater than 3.28 ft in height.

### Remarks:

Include photo numbers here or on a separate sheet.
**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type¹</th>
<th>Loc²</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-18</td>
<td>10YR 5/2</td>
<td>70</td>
<td>10YR 6/8</td>
<td>30</td>
<td>C</td>
<td>PL/M</td>
<td>Loamy/Clayey</td>
<td>Prominent redox concentrations</td>
</tr>
</tbody>
</table>

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.
²Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**
- Histosol (A1)
- Histic Epipedon (A2) MLRA 149B
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12) X Depleted Matrix (F3)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)

**Indicators for Problematic Hydric Soils³:**
- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (F22)
- Other (Explain in Remarks)

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

**Restrictive Layer (if observed):**
- Type: none
- Depth (inches): ____________________________

**Hydric Soil Present?** Yes X No

**Remarks:**
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 21 Mile & Sugarbush (SE) property  City/County: Chesterfield Twp-Macomb Sampling Date: 9-20-18
Applicant/Owner: Chesterfield Township Library State: MI Sampling Point: WETA5
Investigator(s): ASTI-KAH  Section, Township, Range: Sec 32 T3N R14E

Landform (hillside, terrace, etc.): slight depression  Local relief (concave, convex, none): concave  Slope %: 1-2

Subregion (LRR or MLRA): LRR L  Lat:  Long:  Datum: ___________

Soil Map Unit Name: Toledo silty clay loam  NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x  No ___ (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x  No ___

Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes</th>
<th>X</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes</td>
<td>X</td>
<td>No</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes</td>
<td>X</td>
<td>No</td>
</tr>
</tbody>
</table>

Is the Sampled Area within a Wetland? Yes x  No ___
If yes, optional Wetland Site ID: Wetland A

Remarks: (Explain alternative procedures here or in a separate report.)
Wetland A at flag A6 (forested portion)

HYDROLOGY

Wetland Hydrology Indicators:

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

Surface Water (A1)  Water-Stained Leaves (B9)  Surface Soil Cracks (B6)
High Water Table (A2) Aquatic Fauna (B13)  Drainage Patterns (B10)
Saturation (A3) Marl Deposits (B15)  Oxidized Rhizospheres on Living Roots (C3)
Water Marks (B1)  Hydrogen Sulfide Odor (C1)  Presence of Reduced Iron (C4)
Sediment Deposits (B2)  Saturation Visible on Aerial Imagery (C9)
Drift Deposits (B3)  Dry-Season Water Table (C2)
Algal Mat or Crust (B4)  Crayfish Burrows (C8)
Iron Deposits (B5)  Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)  Geomorphic Position (D2)
  Other (Explain in Remarks)  Shallow Aquitard (D3)
  FAC-Neutral Test (D5)
  Sparsely Vegetated Concave Surface (B8)

Field Observations:

Surface Water Present? Yes ___  No  x  Depth (inches): ______
Water Table Present? Yes ___  No  x  Depth (inches): ______
Saturation Present? Yes ___  No  x  Depth (inches): ______
(includes capillary fringe)

Wetland Hydrology Present? Yes x  No ___

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

Remarks:
### VEGETATION

- **Tree Stratum** (Plot size: 30')
  - 1. *Acer saccharinum*
  - 2. *Fraxinus pennsylvanica*
  - 3. 
  - 4. 
  - 5. 
  - 6. 
  - 7. 80 = Total Cover

- **Sapling/Shrub Stratum** (Plot size: 15')
  - 1. *Fraxinus pennsylvanica*
  - 2. *Ulmus americana*
  - 3. *Cornus racemosa*
  - 4. 
  - 5. 
  - 6. 
  - 7. 35 = Total Cover

- **Herb Stratum** (Plot size: 5')
  - 1. *Carex stricta*
  - 2. *Phragmites australis*
  - 3. *Agrimonia parviflora*
  - 4. 
  - 5. 
  - 6. 
  - 7. 

- **Woody Vine Stratum** (Plot size: 15')
  - 1. 
  - 2. 
  - 3. 
  - 4. 45 = Total Cover

#### Absolute Cover

- **Dominance Test worksheet**
  - Number of Dominant Species: 6 (A)
  - Total Number of Dominant Species Across All Strata: 6 (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 5 x 1 = 5
    - FACW species 135 x 2 = 270
    - FAC species 20 x 3 = 60
    - FACU species 0 x 4 = 0
    - UPL species 0 x 5 = 0
  - Column Totals: 160 (A) 335 (B)
  - Prevalence Index = B/A = 2.09

#### Hydrophytic Vegetation Indicators

- _X_ 1 - Rapid Test for Hydrophytic Vegetation
- _X_ 2 - Dominance Test is >50%
- _X_ 3 - Prevalence Index is ≤3.0
- _X_ 4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

#### Definitions of Vegetation Strata

- **Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
- **Sapling/shrub** – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
- **Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
- **Woody vines** – All woody vines greater than 3.28 ft in height.

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**Remarks:** (Include photo numbers here or on a separate sheet.)
Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-18</td>
<td>10YR 5/1</td>
<td>10YR 6/8</td>
<td>Loamy/Clayey</td>
<td>Prominent redox concentrations</td>
</tr>
<tr>
<td></td>
<td>75 %</td>
<td>20 %</td>
<td>C PL/M</td>
<td>Faint redox concentrations</td>
</tr>
</tbody>
</table>

**Hydric Soil Indicators:**
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)

**Indicators for Problematic Hydric Soils:**
- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (F22)
- Other (Explain in Remarks)

**Restrictive Layer (if observed):**
- Type: none
- Depth (inches): none

**Hydric Soil Present?**  Yes  X  No

Remarks: