

**APPENDIX C. PART 303 WETLAND PERMIT APPLICATION,  
WETLAND IMPACT ASSESSMENT AND COMPENSATORY  
MITIGATION PROPOSAL**

On January 28, 2010, Compact Power, Inc. submitted a Part 303 Wetland Permit Application, which contains a compensatory mitigation proposal, to the Michigan Department of Natural Resources and Environment. The application and proposal are contained in this appendix.





January 28, 2010

Ms. Wendy Fitzner  
Michigan Department of Environmental Quality  
Land and Water Management Division  
525 West Allegan Street  
1<sup>st</sup> Floor South Tower  
Lansing, Michigan 48933

**Atwell, LLC Project No. 09001770**

**Re: Part 303 Wetland Permit Application  
LG Chem Holland  
Allegan County, Michigan**

Dear Ms. Fitzner

Please find enclosed an application for impacts to regulated wetlands for the project referenced above. LG Chem, the applicant, proposes activities including placing fill within regulated wetlands for the construction of a new industrial development. The total proposed impacts include permanent impact to approximately 2.21 acres of wetland with approximately 8,058 cubic yards of excavation and approximately 8,795 cubic yards of fill.

Please find enclosed a payment authorization for the Part 303 permit \$2,000.00 filing fee.

Should you have any questions or need additional information, please feel free to contact me at (248) 447-2000.

Sincerely,  
Atwell, LLC

Bobbi Roberson  
Project Manager  
Natural Resources Group

January 15, 2010

Michigan Department of Environmental Quality  
Land and Water Management Division  
525 W. Allegan Street  
Lansing, Michigan 48933

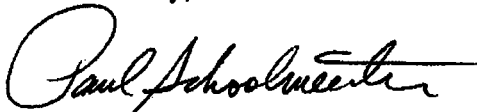
RE: Property Owner Authorization Letter  
City of Holland, MI  
Parcel(s) \_03-02-03-300-015  
\_03-02-03-300-017

To Whom It May Concern:

Please be advised that PHC, L.L.C., a Michigan limited liability company, owner of the above referenced property, has no objection to LG Chem/Compact Power Inc., or their authorized agent applying for or obtaining a Michigan Department of Environmental Quality (MDEQ) Impact Permit for the proposed LG Chem/Compact Power Inc., Lithium Ion Battery Manufacturing Facility.

PHC, L.L.C. has no objection to an MDEQ representative entering the property to evaluate site conditions for the purpose of receiving approval for the permit provided that the property is left in the same general physical condition as it was prior to entering.

Sincerely,



Paul Schoolmeester

Vice President

PHC, L.L.C.

190 S. River Ave., Ste 300

Holland, MI 49423

616-494-8100

Michigan Department of Environmental Quality  
Land and Water Management Division  
525 W. Allegan Street  
Lansing, Michigan 48933

RE: Property Owner Authorization Letter  
Fillmore Township  
Parcel(s) \_03-06-003-027-10

To Whom It May Concern:

Please be advised that James Rabbers, Jr., owner of the above referenced property, has no objection to LG Chem/Compact Power Inc., or their authorized agent applying for or obtaining a Michigan Department of Environmental Quality (MDEQ) Impact Permit for the proposed LG Chem/Compact Power Inc., Lithium Ion Battery Manufacturing Facility.

James Rabbers, Jr. has no objection to an MDEQ representative entering the property to evaluate site conditions for the purpose of receiving approval for the permit provided that the property is left in the same general physical condition as it was prior to entering.

Sincerely,

A handwritten signature in cursive script that reads "James Rabbers, Jr." followed by the date "1-15-10".

James Rabbers, Jr  
64 W. 35<sup>th</sup> St.  
Holland, MI 49423  
616-396-6672

Michigan Department of Environmental Quality  
Land and Water Management Division  
525 W. Allegan Street  
Lansing, Michigan 48933

RE: Property Owner Authorization Letter  
Fillmore Township  
Parcel(s) \_03-06-003-020-00

To Whom It May Concern:

Please be advised that Bernice J. Welscott, Trustee of the Raymond J. and Bernice J. Welscott Trust, owner of the above referenced property, has no objection to LG Chem/Compact Power Inc., or their authorized agent applying for or obtaining a Michigan Department of Environmental Quality (MDEQ) Impact Permit for the proposed LG Chem/Compact Power Inc., Lithium Ion Battery Manufacturing Facility.

Bernice J. Welscott, Trustee of the Raymond J. and Bernice J. Welscott Trust has no objection to an MDEQ representative entering the property to evaluate site conditions for the purpose of receiving approval for the permit provided that the property is left in the same general physical condition as it was prior to entering.

Sincerely,



Bernice J. Welscott, Trustee  
311 Harvest Lane  
Holland, MI 49423  
616-355-0982

Michigan Department of Environmental Quality  
Land and Water Management Division  
525 W. Allegan Street  
Lansing, Michigan 48933

RE: Agent Authorization Letter  
LG Chem/Compact Power Inc. Holland  
City of Holland, Allegan County, Michigan

To Whom It May Concern:

This is to inform you that Compact Power Inc. (Applicant), has contracted Atwell, LLC to act as an authorized agent in attempting to obtain a permit from the Michigan Department of Environmental Quality for the proposed LG Chem/Compact Power Inc., project referenced above.

If you have any questions or comments, please contact our agent at (248) 447-2000.

Sincerely,

Kee Eun (Name)  
Business Development Director (Title)  
Compact Power Inc (Company)



<b>AGENCY USE</b>	Previous USACE Permit or File Number	Date Received	Land and Water Management Division, MDEQ File Number	<b>AGENCY USE</b>
	USACE File Number		Pre-application Number or Marina Operating Permit Number	
	District Office		Fee received \$	

Read Instructions pages i - iii. All of the following boxes below must be checked and information provided for the application to be processed:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> All items in Sections 1 through 9 are completed   | <input checked="" type="checkbox"/> Date project was staked <b>9/5/2009</b>                  |
| <input checked="" type="checkbox"/> Items in Sections 10 through 21 that apply to the project are completed   | <input checked="" type="checkbox"/> Application fee is attached                              |
| <input checked="" type="checkbox"/> Dimensions, volumes and calculations are provided   | <input checked="" type="checkbox"/> All requested supplementary attachments (➔) are included |
| <input checked="" type="checkbox"/> Reproducible location map, site plan(s), cross sections and photographs are provided, one set must be black and white on 8 1/2 by 11 inch paper.  |  |
| <input checked="" type="checkbox"/> List any additional attachments, tables, etc.: <b>Summary Report, Plan Set, Adjacent Property Owners, Owner Authorization, Photographic Log, Wetland Data Forms, Site Location Map, Cover Letter, Payment Authorization Form, Alternative Analysis.</b> |  |

**1 PROJECT LOCATION INFORMATION**

• Refer to your property's legal description for the Township, Range, and Section information, and your property tax bill for your Property Tax Identification Number(s).						
Site location Address (road, if no street address) <b>northeast of the intersection of S. Waverly Road and 48th Avenue</b>		Zip Code	Township Name(s) <b>Fillmore Township</b>	Township(s) <b>4N</b>	Range(s) <b>15W</b>	Section(s) <b>03</b>
City/Village <b>Holland</b>		County(ies) <b>Allegan</b>		Property Tax Identification Number(s) <b>03-02-03-300-017, 03-02-03-300-015</b>		
Name of Waterbody <b>Wetlands.</b>		Project Name or Job Number <b>Atwell# 09001770</b>		Subdivision/Plat	Lot Number	Private Claim
Project types (check all that apply) <input checked="" type="checkbox"/> private <input type="checkbox"/> building addition <input type="checkbox"/> project is receiving federal transportation funds		<input type="checkbox"/> public/government <input checked="" type="checkbox"/> new building or structure		<input checked="" type="checkbox"/> industrial <input type="checkbox"/> building renovation or restoration <input type="checkbox"/> other (explain)		<input type="checkbox"/> commercial <input type="checkbox"/> river restoration <input type="checkbox"/> multi-family <input type="checkbox"/> single-family
The proposed project is on, within, or involves (check all that apply)						<input type="checkbox"/> a legally established County Drain (date established) (M/D/Y) / /
<input type="checkbox"/> a stream		<input type="checkbox"/> a pond (less than 5 acres)		<input type="checkbox"/> a Great Lake or Section 10 Waters		<input type="checkbox"/> a natural river
<input type="checkbox"/> a river		<input type="checkbox"/> a channel/canal		<input type="checkbox"/> a designated high risk erosion area		<input type="checkbox"/> a dam
<input type="checkbox"/> a ditch or drain		<input type="checkbox"/> an inland lake (5 acres or more)		<input type="checkbox"/> a designated critical dune area		<input checked="" type="checkbox"/> a wetland
<input type="checkbox"/> a floodway area		<input type="checkbox"/> a 100-year floodplain		<input type="checkbox"/> a designated environmental area		<input type="checkbox"/> 500 feet of an existing waterbody
<input type="checkbox"/> a structure removal		<input type="checkbox"/> a utility crossing				

**2 DESCRIBE PROPOSED PROJECT AND ASSOCIATED ACTIVITIES, AND THE CONSTRUCTION SEQUENCE AND METHODS (attached additional sheets)**

Written Summary of All Proposed Activities. **The proposed activities associated with this project include the construction an approximately 420,000 square foot building in phase I and an approximately 203,500 square foot building in phase II with all associated utilities, stormwater management system, parking lots, and access roads. The proposed development will impact approximately 2.21 acres of emergent wetland with approximately 8,058 cubic yards of excavation and approximately 8,795 square feet of fill.**

Construction Sequence and Methods. **Refer to the attached Summary of Proposed Work**

**3 APPLICANT, AGENT/CONTRACTOR, AND PROPERTY OWNER INFORMATION**

Owner/Applicant (individual or corporate name) <b>Compact Power, Inc.</b>		Agent/Contractor (firm name and contact person) <b>Atwell, LLC, Attn: Bobbi Roberson</b>	
Mailing Address <b>1857 Technology Drive</b>		Address <b>Two Towne Square, Suite 700</b>	
City <b>Troy</b> State <b>MI</b> Zip Code <b>48083</b>		City <b>Southfield</b> State <b>MI</b> Zip Code <b>48076</b>	
Daytime Phone Number with Area Code Cell Phone Number <b>248-307-1800 - -</b>		Daytime Phone Number with Area Code Cell Phone Number <b>248-447-2000 - -</b>	
Fax <b>248-597-0900</b> E-mail		Fax <b>248-447-2001</b> E-mail <b>broberson@atwell-group.com</b>	

No  Yes Is the applicant the sole owner of all property on which this project is to be constructed and all property involved or impacted by this project?  
 ➔ If no, attach letter(s) of authorization from all owners. A letter signed by each property owner authorizing the agent/contractor/other owner to act on his or her behalf or a copy of easements or right-of-ways must be provided. If multiple property owners, also attach a list of all owners along with their names, mailing addresses, and telephone numbers. If the applicant is a corporation, a corporate officer must provide written document authorizing any agent/contractor listed above to act on its behalf. A letter of authorization must be provided from an owner receiving dredge spoils on their property, or where access through their property is required..

Property Owner's Name (If different from applicant)	Mailing Address
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Daytime Phone Number with Area Code - - - - -	Cell Phone Number - - - - -	City	State	Zip Code
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No  Yes Is there a MDEQ conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property in the project area?  
 ➔ If yes, attach a copy.

**4 PROPOSED PROJECT PURPOSE, INTENDED USE, AND ALTERNATIVES CONSIDERED** (Attach additional sheets if necessary)  
**Purpose/Intended Use:** The purpose must include any new development or expansion of an existed land use. *This project proposes to construct an LG Chem Battery Plant.*

**Alternatives:** Include a description of alternatives considered to avoid or minimize resource impacts. Include factors such as, but not limited to, alternative construction technologies; alternative project layout and design; and alternative locations. For utility crossings, include both alternative routes and alternative construction methods. *Refer to the attached Alternative Analysis.*

**5 LOCATING YOUR PROJECT SITE**  
 ➔ Attach a black and white, legible copy of a map that clearly shows the site location and road from the nearest major intersection, and includes a north arrow.

Is there an access road to the project?  No  Yes (If Yes, type of road, check all that apply)  private  public  improved  unimproved

Name of roads at closest main intersection *S. Waverly Road* and *48<sup>th</sup> Avenue*

Directions from main intersection *Travel approximately 0.25 miles east on 48<sup>th</sup> Avenue and arrive at the site on the north side of 48<sup>th</sup> Ave.*

Style of house or other building on site  ranch  2-story  cape cod  bi-level  cottage/cabin  pole barn  none  other (describe)

Color \_\_\_\_\_ Color of adjacent property house and/or buildings \_\_\_\_\_ House number \_\_\_\_\_ Street name \_\_\_\_\_

Fire lane number \_\_\_\_\_ Lot number \_\_\_\_\_ Address is visible on  house  garage  mailbox  sign  other (describe)

How can your site be identified if there is no visible address? *Refer to the attached Site Location Map*

Provide directions to the project site, with distances from the best and nearest visible landmark and waterbody *Refer to the MDEQ Plan Set.*

Does the project cross the boundaries of two or more political jurisdictions? (City/Township, Township/Township, County/County, etc.)  
 No  Yes ➔ If Yes, list jurisdictions:

**6** List all other federal, interstate, state, or local agency authorizations required for the proposed activity, including all approvals or denials received.

Agency	Type approval	Identification number	Date applied	Date approved / denied	If denied, reason for denial
<i>Allegan County</i>	<i>SECS</i>				
<i>City of Holland</i>	<i>Site Plan</i>				
<i>State of Michigan</i>	<i>SWPPP</i>				

**7 COMPLIANCE**

If a permit is issued, date activity will commence (M/D/Y) *06/1/2010* Proposed completion date (M/D/Y) *06/1/2013*

Has any construction activity commenced or been completed in a regulated area?  No  Yes  
 ➔ If Yes, identify the portion(s) underway or completed on drawings or attach project specifications and give completion date(s) (M/D/Y) */ /*

Were the regulated activities conducted under a MDEQ permit?  No  Yes  
 If Yes, list the MDEQ permit number \_\_\_\_\_

Are you aware of any unresolved violations of environmental law or litigation involving the property?  No  Yes (If Yes, explain)

**8 ADJACENT/RIPARIAN AND IMPACTED OWNERS** (Attach additional sheets if necessary)

- Complete information for all adjacent and impacted property owners and the lake association or established lake board, including the contact person's name.
- If you own the adjacent lot, provide the requested information for the first adjacent parcel that is not owned by you.

Property Owner's Name	Mailing Address	City	State	Zip Code
<i>Refer to Adjacent Property Owners List</i>				

Name of  Established Lake Board  or Lake Association and the Contact Person's name, phone number, and mailing address

**9 APPLICANT'S CERTIFICATION** **READ CAREFULLY BEFORE SIGNING**

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

<input checked="" type="checkbox"/> Property Owner <input type="checkbox"/> Agent/Contractor <input type="checkbox"/> Corporation/Public Agency - Title	Printed Name	Signature	Date (M/D/Y)
	<i>DONGWOOK KIM</i>	<i>DW. Kim</i>	<i>1/29/10</i>



<b>10 PROJECTS IMPACTING WETLANDS OR FLOODPLAINS OR LOCATED ON AN INLAND LAKE OR STREAM OR A GREAT LAKE</b>			
<ul style="list-style-type: none"> <li>• Check boxes A through M that may be applicable to your project and provide all the requested information.</li> <li>• If your project may affect wetlands, also complete Section 12. If your project may impact regulated floodplains, also complete Section 13.</li> <li>• To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27.</li> <li>• Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness.</li> <li>➔ Provide a cross-section and overall site plan showing existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures, land change activities and soil erosion and sedimentation control measures. Review Appendix B and EZ Guides for completing site-specific drawings.</li> <li>➔ Provide tables for multiple impact areas or multiple activities and provide fill and excavation/dredge calculations.</li> </ul>			
<b>Water Level Elevation</b>			
On a Great Lake use IGLD 85 <input type="checkbox"/> surveyed <input type="checkbox"/> converted from observed still water elevation. On inland waters, <input type="checkbox"/> NGVD 29 <input checked="" type="checkbox"/> NAVD 88 <input type="checkbox"/> other			
Observed water elevation (ft) _____ date of observation (M/D/Y) _____			
<input checked="" type="checkbox"/> <b>A. PROJECTS REQUIRING FILL</b> (See All Sample Drawings)			
<ul style="list-style-type: none"> <li>• Attach both overall site plan and cross-section views to scale showing maximum and average fill dimensions.</li> </ul>			
(Check all that apply) <input type="checkbox"/> floodplain fill <input checked="" type="checkbox"/> wetland fill <input type="checkbox"/> riprap <input type="checkbox"/> seawall, bulkhead, or revetment <input type="checkbox"/> bridge or culvert			
<input type="checkbox"/> boat launch <input type="checkbox"/> off-shore swim area <input type="checkbox"/> beach sanding <input type="checkbox"/> boatwell <input type="checkbox"/> crib dock <input type="checkbox"/> other			
Fill dimensions (ft)		Total fill volume (cu yd)	Maximum water depth in fill area (ft)
length <i>Varies</i> width <i>See</i> maximum depth <i>Plans</i>		<i>8,795</i>	<i>0.2</i>
Type of clean fill <input type="checkbox"/> pea stone <input type="checkbox"/> sand <input type="checkbox"/> gravel <input type="checkbox"/> wood chips		Will filter fabric be used under proposed fill?	
<input checked="" type="checkbox"/> other <i>clean upland fill material</i>		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, type)	
Source of clean fill <input type="checkbox"/> on-site, ➔ If on-site, show location on site plan. <input checked="" type="checkbox"/> commercial <input type="checkbox"/> other, ➔ If other, attach description of location.			
Fill will extend _____ feet into the water from the shoreline and upland _____ feet out of the water.		Fill volume below OHWM (cu yd)	
<input checked="" type="checkbox"/> <b>B. PROJECTS REQUIRING DREDGING OR EXCAVATION</b> (For dredging projects see Sample Drawing 7, for excavation see other applicable Sample Drawings)			
<ul style="list-style-type: none"> <li>• Attach both overall site plan and cross-section views to scale showing maximum and average dredge or excavation dimensions and dredge disposal location.</li> <li>• Refer to <a href="http://www.michigan.gov/joinpermit">www.michigan.gov/joinpermit</a> for disposal requirements and authorization.</li> </ul>			
(Check all that apply) <input type="checkbox"/> floodplain excavation <input checked="" type="checkbox"/> wetland dredge or draining <input type="checkbox"/> seawall, bulkhead, or revetment			
<input type="checkbox"/> navigation <input type="checkbox"/> boat well <input type="checkbox"/> boat launch <input type="checkbox"/> other			
Total dredge/excavation volume (cu yd)	Dimensions length	Dredge/excavation volume below OHWM (cu yd)	Method and equipment for dredging
<i>8,058</i>	length <i>Varies</i> width <i>See</i> depth <i>Plan</i>		<i>Mechanical</i>
Has proposed dredge material been tested for contaminants?		Dredged or excavated spoils will be placed <input checked="" type="checkbox"/> on-site <input type="checkbox"/> off-site.	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		➔ Provide detailed disposal area site plan and location map.	
➔ If Yes, provide test results with a map of sampling locations.		➔ Provide letter of authorization from owner, if disposing of spoils off site.	
Has this same area been previously dredged? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, date and permit number: / / /			
If Yes, are you proposing to enlarge the previously dredged area? <input type="checkbox"/> No <input type="checkbox"/> Yes			
Is long-term maintenance dredging planned? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, when and how much?			
<input type="checkbox"/> <b>C. PROJECTS REQUIRING RIPRAP</b> (See Sample Drawings 2, 3, 8, 12, 14, 17, 22, and 23. Others may apply)			
Riprap waterward of the <input type="checkbox"/> shoreline OR <input type="checkbox"/> ordinary high water mark	Dimensions (ft) length	width	depth
			Volume (cu yd)
Riprap landward of the <input type="checkbox"/> shoreline OR <input type="checkbox"/> ordinary high water mark	Dimensions (ft) length	width	depth
			Volume (cu yd)
Type of riprap <input type="checkbox"/> field stone <input type="checkbox"/> angular rock <input type="checkbox"/> other		Will filter fabric be used under proposed riprap? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, type)	
<input type="checkbox"/> <b>D. SHORE PROTECTION PROJECTS</b> (See Sample Drawings 2, 3, and 17) Complete Sections 10A, B, and/or C above, as applicable.			
(check all that apply) <input type="checkbox"/> riprap – length (ft) <input type="checkbox"/> seawall/bulkhead – length (ft) <input type="checkbox"/> revetment – length (ft)			Distances of project from both property lines (ft)
<input type="checkbox"/> <b>E. DOCK - PIER – MOORING PILINGS – ROOFS</b> (See Sample Drawing 10)			
Dock Type <input type="checkbox"/> open pile <input type="checkbox"/> filled <input type="checkbox"/> crib		Permanent Roof? <input type="checkbox"/> No <input type="checkbox"/> Yes Mounted on	
Seasonal support structure? <input type="checkbox"/> No <input type="checkbox"/> Yes		Maximum Dimensions: length width height	
Proposed structure dimensions (ft) length width		Dimensions of nearest adjacent structures (ft) length width	
<input type="checkbox"/> <b>F. BOAT WELL</b> (See EZ Guides)			
Type of sidewall stabilization <input type="checkbox"/> wood <input type="checkbox"/> steel <input type="checkbox"/> concrete <input type="checkbox"/> vinyl <input type="checkbox"/> riprap <input type="checkbox"/> other			
Boat well dimensions (ft) length width depth		Number of boats	
Volume of backfill behind sidewall stabilization (cu yd)		Distances of boat well from adjacent property lines (ft)	
<input type="checkbox"/> <b>G. BOAT LAUNCH</b> (See EZ Guide) (check all that apply) <input type="checkbox"/> new <input type="checkbox"/> existing <input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> commercial <input type="checkbox"/> replacement			
Proposed overall boat launch dimensions (ft) length width depth		Type of material <input type="checkbox"/> concrete <input type="checkbox"/> wood <input type="checkbox"/> stone <input type="checkbox"/> other	
Existing overall boat launch dimensions (ft) length width depth		Boat launch dimensions (ft) below ordinary high water mark length width depth	
Distances of launch from both property lines (ft)		Number of adjacent Skid piers	Skid pier dimensions (ft) length width
<input type="checkbox"/> <b>H. BOAT HOIST</b> (See EZ Guide)			
(Check all that apply) <input type="checkbox"/> seasonal <input type="checkbox"/> permanent <input type="checkbox"/> cradle <input type="checkbox"/> side lifter <input type="checkbox"/> other		located on <input type="checkbox"/> seawall <input type="checkbox"/> dock <input type="checkbox"/> bottomlands	





<b>10 Continued - PROJECTS IMPACTING WETLANDS OR FLOODPLAINS OR LOCATED ON AN INLAND LAKE OR STREAM OR A GREAT LAKE</b>					
<input type="checkbox"/> <b>I. BOARDWALKS AND DECKS IN</b> <input type="checkbox"/> <b>WETLANDS - OR -</b> <input type="checkbox"/> <b>FLOODPLAINS</b> (See Sample Drawings 5 and 6. Provide table if necessary)					
Boardwalk <input type="checkbox"/> on pilings <input type="checkbox"/> on fill		Dimensions (ft) length      width		Deck <input type="checkbox"/> on pilings <input type="checkbox"/> on fill	
				Dimensions (ft) length      width	
<input type="checkbox"/> <b>J. INTAKE PIPES</b> (See Sample Drawing 16) <input type="checkbox"/> <b>OUTLET PIPES</b> (See Sample Drawing 22)					
Type <input type="checkbox"/> headwall <input type="checkbox"/> end section <input type="checkbox"/> pipe <input type="checkbox"/> other			If outlet pipe, discharge is to <input type="checkbox"/> wetland <input type="checkbox"/> inland lake <input type="checkbox"/> stream, drain, or river <input type="checkbox"/> Great Lake <input type="checkbox"/> other		
Dimensions of headwall OR end section (ft) length      width      depth			Number of pipes		Pipe diameters and invert elevations
<input type="checkbox"/> <b>K. MOORING AND NAVIGATION BUOYS</b> (See EZ Guide for Sample Drawing)					
➔ Provide an overall site plan showing the distances between each buoy, distances from the shore to each buoy, and depth of water at each buoy in feet.					
➔ Provide cross-section drawing(s) showing anchoring system(s) and dimensions.					
Number of buoys		Boat Lengths		Type of anchor system	
Dimensions of buoys (ft) width      height      swing radius      chain length		Purpose of buoy <input type="checkbox"/> mooring <input type="checkbox"/> navigation <input type="checkbox"/> swimming		Do you own the property along the shoreline? <input type="checkbox"/> No <input type="checkbox"/> Yes ➔ Attach Authorization Letter from the property owner(s), if No above.	
<input type="checkbox"/> <b>L. FENCES IN WETLANDS, STREAMS, OR FLOODPLAINS</b> (No Sample Drawing available)					
• Provide an overall site plan showing the proposed fencing through wetlands, streams, or floodplains.					
• Provide drawing of fence profile showing the design, dimension, post spacing, board spacing, and distance from ground to bottom of fence.					
(check all that apply) <input type="checkbox"/> wetlands <input type="checkbox"/> streams <input type="checkbox"/> floodplains		Total length (ft) of fence through wetlands      streams      floodplains		Fence height (ft)      Fence type and material	
<input type="checkbox"/> <b>M. OTHER</b> - e.g., structure removal or construction, breakwater, aerator, fish shelter, and structural foundations in wetlands or floodplains					
<b>11 EXPANSION OF AN EXISTING OR CONSTRUCTION OF A NEW LAKE OR POND</b> (See Sample Drawings 4 and 15)					
Which best describes your proposed waterbody use (check all that apply)					
<input type="checkbox"/> wildlife <input checked="" type="checkbox"/> stormwater retention basin <input type="checkbox"/> recreation <input type="checkbox"/> wastewater basin <input type="checkbox"/> other					
Water source for lake/pond					
<input type="checkbox"/> groundwater <input type="checkbox"/> natural springs <input type="checkbox"/> Inland Lake or Stream <input checked="" type="checkbox"/> stormwater runoff <input type="checkbox"/> pump <input type="checkbox"/> sewage <input type="checkbox"/> other					
Location of the lake/basin/pond <input type="checkbox"/> floodplain <input type="checkbox"/> wetland <input checked="" type="checkbox"/> upland					
Maximum dimensions (ft) length <b>1200</b> width <b>370</b> depth <b>18</b>		Spoils will be placed <input checked="" type="checkbox"/> onsite <input type="checkbox"/> offsite outside of wetland and floodplain <input type="checkbox"/> other			
Maximum Area: <input checked="" type="checkbox"/> acres <input type="checkbox"/> sq ft <b>4.5</b>		➔ Provide a Detailed Disposal Area Site Plan with location map, address and disposal dimensions ➔ Provide a Letter of Authorization from off site disposal site owner ➔ Provide elevations and cross sections for outlets and/or emergency. Complete Section 10J,			
Will project involve construction of a dam, dike, outlet control structure, or spillway? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, complete Section 17)					
<b>12 ACTIVITIES THAT MAY IMPACT WETLANDS</b> (See Sample Drawings 8 & 9, and complete sections 10 A and 10 B for dredge or excavation as applicable)					
• For information on the MDEQ's Wetland Identification Program (WIP) visit <a href="http://www.michigan.gov/deqwetlands">www.michigan.gov/deqwetlands</a> or call 517-373-1170.					
• Complete the wetland dredge and wetland fill dimension information below for each impacted wetland area. ➔ Attach tables for multiple impact areas or activities					
• Label the impacted wetland areas on a site plan, drawn to scale or with dimensions. ➔ Attach at least one cross-section for each wetland dredge and/or fill area.					
• If dredge/excavation material will be disposed of on site, show the location on site plan and include soil erosion and sedimentation control measures.					
(check all that apply) <input checked="" type="checkbox"/> fill (Section 10A) <input type="checkbox"/> dredge or excavation (Section 10B) <input type="checkbox"/> boardwalk or deck (Section 10I) <input type="checkbox"/> dewatering <input type="checkbox"/> fences (Section 10L) <input type="checkbox"/> bridges and culverts (Section 14) <input type="checkbox"/> draining surface water <input type="checkbox"/> stormwater discharge <input type="checkbox"/> restoration <input type="checkbox"/> other					
wetland dredge/excavation dimensions <b>Varies</b>	maximum length (ft) <b>See</b>	maximum width (ft) <b>Plans</b>	dredge/excavation area <input checked="" type="checkbox"/> acres <input type="checkbox"/> sq ft <b>1.03</b>	average depth (ft) <b>5</b>	dredge volume (cu yd) <b>8,058</b>
wetland fill dimensions <b>Varies</b>	maximum length (ft) <b>See</b>	maximum width (ft) <b>Plans</b>	fill area <input checked="" type="checkbox"/> acres <input type="checkbox"/> sq ft <b>1.18</b>	average depth (ft) <b>6</b>	fill volume (cu yd) <b>8,795</b>
Total wetland dredge/excavation area <input checked="" type="checkbox"/> acres <input type="checkbox"/> sq ft <b>1.03</b>		Total wetland dredge/excavation volume (cu yd) <b>8,058</b>		Total wetland fill area <input checked="" type="checkbox"/> acres <input type="checkbox"/> sq ft <b>1.18</b>	
Total wetland fill volume (cu yd) <b>8,795</b>					
The proposed project will be serviced by: <input checked="" type="checkbox"/> public sewer <input type="checkbox"/> private septic system ➔ Show system on plans			If septic system, has an application for a permit been made to the County Health Department? <input type="checkbox"/> No <input type="checkbox"/> Yes		
Has a professional wetland delineation been conducted for this parcel? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes ➔ Provide a copy of the delineation.			If Yes, has a permit been issued? <input type="checkbox"/> No <input type="checkbox"/> Yes ➔ Provide a copy.		
Has a professional wetland delineation been conducted for this parcel? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes ➔ Provide a copy of the delineation.			Applicant purchased property <input type="checkbox"/> before OR <input checked="" type="checkbox"/> after October 1, 1980.		
Is there a recorded MDEQ easement on the property? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, provide the easement number)					
Has the MDEQ conducted a wetland assessment for this parcel? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes ➔ If Yes, provide a copy of assessment or WIP number:					
Describe the wetland impacts, the proposed use or development, and any alternatives considered: <b>Refer to Summary of Proposed Work</b>					
Does the project impact more than 1/3 acre of wetland? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes ➔ If Yes, submit a Mitigation Plan that includes the type and amount of mitigation proposed. For more information go to <a href="http://www.michigan.gov/deqwetlands">www.michigan.gov/deqwetlands</a>					
Describe how impacts to waters of the United States will be avoided and minimized: <b>Refer to Summary of Proposed Work</b>					
Describe how impact to waters of the United States will be compensated. OR Explain why compensatory mitigation should not be required for the proposed impacts. <b>Refer to Summary of Proposed Work</b>					
Is any grading or mechanized land clearing proposed? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes ➔ Show locations on submitted site plan.			Has any of the proposed grading or mechanized land clearing been completed? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes ➔ Show labeled locations on site plan.		



## **SUMMARY OF PROPOSED WORK**

### 1.0 INTRODUCTION

Atwell, LLC (Atwell) was contracted to prepare a Michigan Department of Environmental Quality (MDEQ) permit application for wetland impacts associated with the proposed development. The approximately 79.85 acre site is located northeast of the intersection of S. Waverly Road and 48<sup>th</sup> Avenue in Section 03 of Fillmore Township (T4N – R15W), Allegan County, Michigan.

### 2.0 EXISTING SITE CONDITIONS

Atwell conducted a site inspection and wetland determination and delineation on September 5, 2009. The site consists mainly of an irregularly shaped agricultural (planted in corn at time of inspection) property totaling approximately 79.85 acres. A large industrial complex and a transmission line right-of-way that parallels a railroad occupy the western boundary of the project. An old abandoned farmstead, demarcated by an unimproved dirt lane and a long-established grove of trees, is located towards the southwestern corner of the property. A treed hedgerow (west to east) is located in the northern portion of the property.

The information gathered from the delineation and the review of historical and current documents indicates that four (4) wetland systems are located on the subject property. These wetlands have been labeled Wetlands A-D.

### 3.0 PROPOSED ACTIVITIES

The proposed activities associated with this project include the construction an approximately 420,000 square foot building in phase I and an approximately 203,500 square foot building in phase II with all associated utilities, stormwater management system, parking lots, and access roads. The proposed development will impact approximately 2.21 acres of emergent wetland with approximately 8,058 cubic yards of excavation and approximately 8,795 square feet of fill. To compensate for these unavoidable wetland impacts, the project proposes to create approximately 3.32 acres of off-site emergent wetland mitigation. A detailed description of each proposed impact is provided below.

- Impact 1: Excavate approximately 8,058 cubic yards of material wetland material and place approximately 7,459 cubic yards of clean upland fill material within approximately 2.06 acres of Wetland A.
- Impact 2: Place approximately 717 cubic yards of clean upland fill material within approximately 0.05 acres of Wetland C.
- Impact 3: Place approximately 619 cubic yards of clean upland fill material within approximately 0.10 acres of Wetland D.

### 4.0 THREATENED AND ENDANGERED SPECIES

A review of the Michigan Department of Natural Resources (MDNR) online viewer indicated that no listed features are known to occur within the subject property. A review of the U.S. Fish and Wildlife Service (USFWS) threatened and endangered species Allegan County list revealed that the following federal listed species are known to occur in the county: the endangered Indiana bat (*Myotis sodalis*) and Karner blue butterfly (*Lyceides Melissa samuelis*), the threatened Pitcher's thistle (*Cirsium pitcher*), and the candidate eastern massasauga (*Sistrurus catenatus catenatus*).

The subject property is actively farmed and does not contain lakes, streams, other significant sources of water, sedge meadow, marsh edge and bog, pine barrens, oak savanna, stabilized dune and blowout areas, preferred and/or required habitat does not exist on-site for the Indiana bat, Karner blue butterfly, Pitcher's thistle, or eastern massasauga. These species were not observed on-site and are likely not present on the subject property.



**ADJACENT PROPERTY OWNERS**

03-02-03-303-009  
KCI Properties, LLC  
782 Waverly Court  
Holland, MI 49423

03-02-03-303-008  
Global Concepts Enterprise, Inc.  
785 Waverly Court  
Holland, MI 49423

03-02-03-300-012  
USF of Holland, Inc.  
750 Waverly Court  
Holland, MI 49423

06-003-020-00  
Welscott, Ray J. & B.  
5390 147<sup>th</sup> Avenue  
Holland, MI 49423

**WETLAND IMPACT ASSESSMENT  
AND  
COMPENSTORY  
MITIGATION PROPOSAL**

*for:*

*the ±69 Acre property located  
Northeast of the Intersection of  
S. Waverly Road & 48<sup>th</sup> Avenue  
Fillmore Township & the City of Holland  
Allegan County, Michigan*

*Prepared for:*

**ROSSETTI  
ARCHITECTURE | INTERIORS | GRAPHICS  
PLANNING  
TWO TOWNE SQUARE; SUITE 200  
SOUTHFIELD, MI 48076**

**Atwell, LLC  
Project No. 09001770**

**January 28, 2010**

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## **1.0-INTRODUCTION**

Atwell, LLC (Atwell) was retained by Rosetti to prepare a Wetland Assessment and Compensatory Mitigation Proposal for wetland impacts involving the proposed development of the LG Chem industrial facility. The subject property consists of approximately 79.85 acres and is located northeast of the intersection of 48<sup>th</sup> Avenue and Waverly Road in Section 03 of Fillmore Township (T4N – R15W), Allegan County, Michigan. The proposed site plan includes the development of the an approximately 420,000 square foot building in phase I and an approximately 203,500 square foot building in phase II with all associated utilities, stormwater management system, parking lots, and access roads. A *Site Location Map* along with an overall site plan is provided in **Appendix I** for review.

The site consists of an undeveloped, irregular-shaped property, which contains a mix of agricultural fields, hedgerows, and shrubs. An old abandoned farmstead is located near the southwestern corner of the site (accessed from 48<sup>th</sup> Avenue). The information gathered from site reconnaissance and the review of historical and current documents indicates that four (4) wetland systems (Wetlands A, B, C, & D) are located on the subject property. Wetlands A, C, and D appear to meet the requirements of Part 303, Wetlands Protection of the Natural Resources and Environmental Protection Act, 1994 PA 451 (NREPA) and would be considered regulated by the Michigan Department of Natural Resources & Environment (DNRE). A *Wetland Location Map* is presented in **Appendix II** for review. These wetland areas are also presented within the *MDEQ Permit Application* plan set.

The purpose of this Wetland Assessment and Compensatory Mitigation Proposal is to provide a discussion of current site conditions, characteristics of the proposed impact areas, and a mitigation plan for compensation for the wetland impacts. This proposal will provide a plan for the functional replacement of each regulated wetland. The newly created wetland system will contain attributes similar to the function and value lost due to proposed construction activities. Additionally, an effective monitoring plan is proposed, which will insure the success of the mitigation area in terms that are set forth in the final success criteria and performance standards.

The Mitigation Proposal was written in accordance with the guidance of *Appendix I Mitigation Plan* (The Michigan Department of Environmental Quality), *A Technical Manual for Identifying Wetlands in Michigan* (Michigan Department of Environmental Quality, March 2001), *Field Guide for Wetland Delineation* (Army Corps of Engineers, January 1987), *Wetland Engineering Handbook* (Army Corps of Engineers, March 2000), and *Chapter 13 Wetland Restoration, Enhancement or Creation* (U.S. Department of Engineering Field Handbook, Revised May 1997).

## **2.0-EXISTING SITE CONDITIONS**

Atwell conducted a site inspection and wetland determination and delineation on September 5, 2009. The subject property, consisting of approximately 79.85-acres, is located northeast of the intersection of S. Waverly Road and 48<sup>th</sup> Avenue in Fillmore Township, Allegan County, Michigan. Specifically, the property is located in the southern half of Section 03 (T4N – R15W).



The property is currently an actively farmed agricultural landscape surrounded by a mix of industrial and residential areas. The site is bordered by 147<sup>th</sup> Avenue to the north along with a mix of industrial/corporate complexes and rural residential areas. To the east, the site is bound by agricultural fields. Isolated rural residences and agricultural fields along 48<sup>th</sup> Avenue occupy the southern site boundary. A large industrial complex and a railroad right-of-way (intersecting both S. Waverly Road and 48<sup>th</sup> Avenue in a northwest to southeast direction) border the site to the west. Refer to the *Property Features Map* included in **Appendix III**.

The topography of the site is relatively flat but tends to slope to the southeast towards the North Branch of the Macatawa River, which is located to the east of the property. Topography, in addition to the sandy soils of the site, help contribute to a substantial drainage pattern that follows this southward slope and connects with a drainage ditch running parallel to and along the north side of 48<sup>th</sup> Avenue. This drainage ditch empties into the Macatawa River. A portion of the drainage system consists of a well-vegetated swale that lies just to the northeast of the abandoned farmstead (detectable on aerial images; **Appendix III**), which consists of a shrub-scrub wetland dominated by willows (*Salix sp.*), cattails (*Typha sp.*), and other wetland plant species. The northeastern portion of the farmstead consists of a low depression with associated wetland vegetation but is likely not connected with the site's drainage pattern.

With the exception of wetland vegetation growing within the onsite wetlands, the site mainly consists of agricultural row crops. Upland vegetation is confined to the fencerows and the abandoned farmstead and is typical of that found in these types of locations. Vegetation in the upland portions include species such as tall goldenrod (*Solidago altissima*), silver maple (*Acer saccharinum*), Austrian pine (*Pinus nigra*), green ash (*Fraxinus pennsylvanica*), red maple (*Acer rubrum*), northern catalpa (*Catalpa speciosa*), osage orange (*Maclura pomifera*), American basswood (*Tilia americana*), boxelder (*Acer negundo*), black cherry (*Prunus serotina*), American elm (*Ulmus americana*), red mulberry (*Morus rubra*), hawthorn (*Crataegus spp.*), apple (*Malus pumila*), red oak (*Quercus rubra*), and bitternut hickory (*Carya cordiformis*).

The information gathered from the delineation and the review of historical and current documents indicates that four (4) wetland systems are located on the subject property. These wetlands have been labeled Wetlands A-D. The wetland delineation conducted indicated that the onsite wetlands comprise a total of 2.21 acres. See the *Overall Existing Conditions Plan* in **Appendix IV**. A discussion of each wetland system follows.

### **2.1 Wetland A**

Wetland A consists of a 2.06 acre emergent wetland. The wetland extends through the subject property diagonally commencing from the southern portion of the property and extending to the north into the agricultural field. Refer to the *Overall Existing Conditions Plan* in **Appendix IV**. The wetland would be considered very low quality due to highly intensive agricultural activities including plowing, fertilization/nutrient loading, and drainage practices. The continuous farming of the site has limited the establishment of wetland vegetation within portions of Wetland A. Long areas of this linear wetland

system lack a dominance of wetland vegetation. However, these areas that lacked wetland vegetation contained evidence of hydric soils and wetland hydrology and therefore were delineated as part of the larger Wetland A system. Species found within this wetland area consisted of field nut sedge (*Cyperus esculentus*), bigseed smartweed (*Polygonum pensylvanicum*), cattail (*Typha latifolia*), reed canary grass (*Phalaris arundinacea*), barnyard grass (*Echinochloa crusgalli*), New England aster (*Aster novae-angliae*), blue vervain (*Verbena hastata*), and sandbar willow (*Salix exigua*). The majority of these species are considered plants that are typically found in highly disturbed wetland areas. These species range in wetland indicator status from FACW to OBL. Refer to the *Photographic Log and Wetland Data Forms* in **Appendix V** for photographs of the wetland area and specific data on the wetland characteristics.

Due to the sandy nature of the soils within Wetland A, the flowing water has created small drainage swales through the wetland. These multiple drainage swales connect and appear to outlet water into the road site ditch along the north side of 48<sup>th</sup> Avenue. The wetland area is linear in nature and transports agricultural runoff from the field. The wetland is typical of an agricultural drainage and water conveyance. At the time of the site visit, the majority of Wetland A contained saturated soils with small areas of inundation. The wetland appears to receive hydrology from precipitation and runoff from adjacent upland. This wetland connects to the road side ditch which connects and outlets into the Macatawa River (North Branch).

Wetland A would be considered regulated by the DNRE under Part 303, Wetlands Protection, because it is connected with a regulated watercourse (*i.e.*, the Macatawa River).

### **2.2 Wetland B**

Wetland B consists of a small 0.13 acre isolated scrub-shrub wetland located in the northeast corner of the old farmstead. Refer to the *Overall Existing Conditions Plan* in **Appendix IV**. The dominant species include field nut sedge, bigseed smartweed, barnyard grass, sandbar willow, and cottonwood (*Populus deltoides*) saplings. These species range in wetland indicator status from FAC+ to OBL. Refer to the *Photographic Log and Wetland Data Forms* in **Appendix V** for photographs of the wetland and specific data on the wetland characteristics.

At the time of the site visit, the majority of Wetland B contained saturated soils. The wetland appears to receive hydrology from precipitation and runoff from adjacent uplands.

Wetland B is an isolated wetland and would not be regulated by the DNRE.

### **2.3 Wetland C**

Wetland C consists of a small emergent approximately 0.05 acre wetland. Refer to the *Overall Existing Conditions Plan* in **Appendix IV**. The wetland would be considered very low quality due to highly intensive agricultural activities including plowing, fertilization/nutrient loading, and drainage practices. The dominant vegetation includes barnyard grass, bigseed smartweed, and common cocklebur. These species range in

wetland indicator status from FAC to FACW+. Refer to the *Photographic Log and Wetland Data Forms in Appendix V* for photographs of the wetland area and specific data on the wetland characteristics.

At the time of the site visit, the wetland contained saturated soils. The wetland appears to receive hydrology from precipitation and runoff from adjacent uplands.

Wetland C would be considered regulated by the DNRE under Part 303, Wetlands Protection, because it is connected to a regulated watercourse (*i.e.*, the Macatawa River).

#### **2.4 Wetland D**

Wetland D consists of a 0.10 acre emergent wetland. The wetland extends across the northeastern corner of the subject property. Refer to the *Overall Existing Conditions Plan in Appendix IV*. The wetland would be considered very low quality due to highly intensive agricultural activities including plowing, fertilization/nutrient loading, and drainage practices. The continuous farming of the site has limited the establishment of wetland vegetation within portions of Wetland D. Long areas of this linear wetland system lack a dominance of wetland vegetation. However, the areas that lacked wetland vegetation contained evidence of hydric soils and wetland hydrology and therefore were delineated as part of the larger Wetland D located offsite. Species found within this wetland area consisted of field nut sedge, bigseed smartweed, and barnyard grass. The majority of these species are considered plants that are typically found in highly disturbed wetland areas. These species range in wetland indicator status from FACW to OBL. Refer to the *Photographic Log and Wetland Data Forms in Appendix V* for photographs of the wetland area and specific data on the wetland characteristics.

Due to the sandy nature of the soils within Wetland D, the flowing water has created small drainage swales through the wetland. These multiple drainage swales connect and appear to outlet water into the Macatawa River. The wetland is linear in nature and transports agricultural runoff from the field and is typical of an agricultural drainage and water conveyance. At the time of the site visit, the majority of Wetland D contained saturated soils with small areas of inundation. The wetland appears to receive hydrology from precipitation and runoff from adjacent upland.

Wetland D would be considered regulated by the DNRE under Part 303, Wetlands Protection, because it is connected with a regulated watercourse (*i.e.*, the Macatawa River).

### **3.0-DESCRIPTION OF IMPACTS TO REGULATED WETLANDS**

All of the wetland systems (Wetlands A, B, C, & D) found onsite will be impacted during the development of the industrial facility. A *Proposed Wetland Impact Table*, a *Wetland Impact Plan*, and corresponding impact cross-sections are shown on sheets 3 and 4 of the and presented in **Appendix VI** for review. The proposed impacts to these wetland systems consist of approximately 2.21 acres, requiring approximately 8,058 cubic yards of excavation and approximately 8,795 cubic yards of fill. These areas will be impacted for the placement of the building, various parking lots, and access roads. All regulated wetland impacts will be compensated for through mitigation at an offsite location located

within the same watershed as the proposed development. Refer to the *Site Location Map* provided in **Appendix VII**.

### **3.1 Wetland A**

The proposed impacts to Wetland A consist of excavating approximately 8,058 cubic yards of wetland material and placing approximately 7,459 cubic yards of clean upland fill material within 2.06 acres of wetland. This area will be impacted for grading purposes and placement of parking lots and a building.

### **3.2 Wetland C**

The proposed impacts to Wetland C consist of filling approximately 0.05 acres with approximately 717 cubic yards of clean upland fill material. This area will be impacted for grading purposes and a building.

### **3.3 Wetland D**

The proposed impacts to Wetland D consist of filling 0.10 acres with approximately 619 cubic yards of clean upland fill material. The wetland will be filled for the construction of an access road and site grading.

## **4.0-ALTERNATIVE ANALYSIS**

An alternative analysis is required under Rule 2a(2) of the Wetland Protection Act Part 303 and is necessary for the DNRE to review a permit application. Rule 2a(2) states: "As required by subsection 30311(4) of the act: a permit applicant shall bear the burden of demonstration that an unacceptable disruption to aquatic resources will not occur as a result of the proposed activity and demonstrating either of the following:

- (a) The proposed activity is primarily dependent upon being located in the wetland.
- (b) There are no feasible and prudent alternatives to the proposed activity."(R281.922a)

The proposed activity is not primarily dependent upon being located in a wetland. The following alternative analysis describes the site selection and site layout processes in order to demonstrate that there are no feasible or prudent alternatives to the proposed activity.

As with the majority of other large industrial development complexes throughout the United States, corporations execute an extensive analysis of all aspects of development and then subsequently implement careful due diligence before any prospective site development is considered. LG Chem, with the assistance of Atwell, has performed extensive due diligence planning including a comprehensive site selection process throughout Michigan to determine their base headquarters in the United States. Upon completion of the initial review of potential sites within the State of Michigan, five (5) specific locations were determined to be potential development sites. Refer to the *Site Locations Map* in **Appendix VIII**. Upon completion of the review performed throughout the State. The City of Holland assisted LG Chem in locating a specific site in Holland for their facility. All selected properties underwent a detailed evaluation on a site-by-site basis to determine the preferred option for development of the proposed facility.

#### ***4.1 Site Selection Process***

Site selection is one of the most critical aspects of any development endeavor especially that of large industrial complexes like the proposed lithium battery manufacturing plant. LG Chem's planning and development of other industrial facilities along with Atwell's experience in Michigan provides a unique understanding as to what constitutes a feasible and viable site. If a potential site for a new development does not possess certain characteristics, then it is considered not viable for development.

The site selection process takes into account many factors when analyzing prospective locations. During the site selection process the following attributes were reviewed: site acreage, ability to expand, socio-economic factors, available infrastructure, access, zoning, the presence of a railroad spur, vicinity to an airport, environmental factors, and additional factors that might preclude or encourage development. Of these attributes reviewed, ability to expand, socio-economic, access to a railroad spur, and an airport were extremely important for the development of the site. In addition, environmental constraints were an important factor when determining the viability and cost of the overall development of the facility.

Upon determining the specific attributes that must be reviewed, LG Chem and Atwell determine the base or minimum requirements necessary for development. Specifically, the preferred site must meet these basic requirements:

- Contain 80 acres or more of developable land
- Posses the potential for expansion
- Possess acceptable infrastructure
- Located adjacent to a railroad
- Located near an airport

The remaining factors reviewed were also a significant factor in determining the preferred site. Socio-economic factors, such as the presence of union, available work force and a willingness to allow development of this type of facility were ranked high on LG Chem's list of requirements. In addition, environmental factors, such as wetland, threatened and endangered species, and potential contamination were taken into consideration and prohibited the selection of two of the five sites in Michigan. Other factors such as zoning, access and proximity to residential developments also were reviewed. A chart providing the requirements in relation to each alternative site is provided in **Appendix IX** for review and use.

As previously mentioned, a total of five (5) individual locations were selected as prospective development sites throughout Michigan and warranted further review. The five sites are located within Allegan, Oakland, St. Clair, and Wayne (location of both Van Buren North & Van Buren South) counties. More specifically, these sites are located in:

- Township 4N, Range 15W, Section 3 (Allegan County)
- Township 3N, Range 10E, Section 19 & 30 (Oakland County)
- Township 5N, Range 17E, Section 19 (St. Clair County)



- Township 3S, Range 8E, Section 4 (Wayne County; Van Buren North & South)

These specific site locations are illustrated on *Site Locations Map* presented in **Appendix VIII**.

A few of the above listed attributes were fulfilled by all five prospective sites. For example, all of the sites are located adjacent to existing access roads and located within approximately 1.0 miles of a major highway. Taking into consideration the zoning ordinance, set back requirements, storm water management regulations, configuration of the property and access drive locations, all five sites met the minimum required acreage necessary to construct the proposed facility. After careful analysis and consideration, one of the five sites was identified as the preferred site for development. A discussion of the preferred site as well as the four alternative sites is provided below.

#### **4.2 Preferred Development Site**

LG Chem with the assistances of the City of Holland and Atwell has determined that the Holland Site (Allegan County) is, indeed, the most viable location for the construction of the proposed industrial facility. Refer to the *Site Location Map* and the *MDEQ Permit Application* plan set presented in **Appendix I**. The site was offered as the best alternative in the vicinity of Holland by LG Chem, Atwell, and the City. It also meets the majority of the site-selection criteria. A discussion on the onsite alternatives as well as the determination of the preferred site in Holland is provided in *Section 4.4 City of Holland and Onsite Alternatives*. The following paragraphs discuss the fulfillment of the requirements in detail.

The preferred site within the City of Holland and Fillmore Township (Allegan County) totals approximately 80 acres. The review of the City of Holland zoning, required set backs from roads, property lines, stormwater, and parking requirements for the property revealed that the acreage will accommodate the development of the facility during the initial phases of development. As stated in the previous section, the ability to expand the facility was one minimum requirement for site selection. Additional property is available adjacent to the preferred site for expansion purposes if necessary in the future.

The preferred site possesses sufficient road frontage to meet access criteria. The southern boundary of the Holland site parallels 48<sup>th</sup> Avenue/146<sup>th</sup> Avenue, which connects directly to State Route 40 to the west. This roadway may not accommodate subsequent increases in traffic volume that may occur in response to the new development. As a result, road widening in the form of accessory turning lanes may need to commence in order to accommodate traffic flow associated with an influx of personnel during shift changes. The City of Holland will facilitate a three lane roadway extension with curb and gutters once the development plan is approved. Two access drives are currently proposed for the property, one of which mirrors an existing access point associated with an abandoned homestead at the southwestern portion of the site. State Route 40 connects directly to Interstate-196, which is directly to the south of the proposed site.

The western most boundary of the preferred site is the Chesapeake & Ohio Railroad, which will accommodate any subsequent need for railroad spurs. The 598 yards (i.e.,

1,794 feet) of road frontage on the preferred site is provided in a continuous fashion along 48<sup>th</sup> Avenue/146<sup>th</sup> Avenue, which greatly enhances the future accessibility of the proposed facility. Approximately 320 yards (i.e., 960 feet) of railway frontage is located along the western most boundary of the proposed site. The site is also within vicinity of an airport.

Development of this preferred site is less challenging and costly because of pre-existing conditions. An existing 48 acre established industrial park (e.g., USF Holland, Inc.; LS Molds, Inc.) is located northwest of the development site. This existing infrastructure should ensure readily available access to various utilities within an industrial development context. Furthermore, stormwater management concerns are able to be more easily addressed on this preferred site than the alternative sites due to the location of a qualifying waterway/drain. The South Branch Macatawa River is conveniently situated to the east of the subject property and is proposed to receive overflow waters from the detention pond, provided that DNRE and Drain Commission grant approval. A roadside ditch on the north side of 48<sup>th</sup> Avenue also appears to connect with the North Branch Macatawa River. No modifications to this watercourse are required for clean water discharge.

In addition to the factors discussed above, ecological concerns were given significant attention and taken into consideration during the layout planning phase. The preferred site does contain wetland systems which are considered regulated by the DNRE. These wetlands are discussed in detail in *Section 2.0 Existing Site Conditions*. Although wetlands do exist, the continued agricultural nature of the site has left these wetland severely impacted. The wetlands are typical of water conveyance systems used to drain water from agricultural fields. The amount of sedimentation and erosion occurring on the subject site should be considered a concern due to their direct connection to the North Branch Macatawa River. The wetlands barely contain wetland attributes as heavy sedimentation and agricultural impacts have inhibited the growth of wetland vegetation and any possibility of these wetlands providing significant ecological function, such as wildlife habitat, water quality improvements, floodwater storage or aesthetic attributes.

Compare to the other four alternative sites, this site ranked third with regard to wetland and stream impacts, behind Alternative Sites A and C. The development plan proposes to fill the entire wetland area comprising of approximately 2.21 acres. These impacts are unavoidable due to the configuration and size of the wetlands onsite. Although wetland impacts totaling 2.2 acres are typically considered extensive, the quality, positioning and potential adverse impact to the North Branch of the Macatawa River supports the assertion that the development requirements onsite outweigh the adverse impacts that may occur with the filling of these wetlands.

The potential for the presence of threatened and endangered species was also considered during the site selection process. In August of 2009, Atwell contacted the United States Fish and Wildlife Service (USFWS) and DNRE during the due diligence phase of the proposed project, requesting comments on potential impacts to endangered, threatened, and proposed species, and their critical habitat, within the proposed project area. The DNRE response to the request stated that the federal and state endangered, threatened,

special concern species, exemplary natural plant communities, or unique natural features are not known to occur at or near the development site. The USFWS county list of federally listed species revealed the possible presences of the federally-endangered Indiana bat (*Myotis sodalis*), candidate eastern massasauga (*Sistrurus catenatus catenatus*), endangered Karner blue butterfly (*Lycaeide melissa samuelis*), and threatened Pitcher's thistle (*Cirsium pitcheri*). However, after the review of the subject property Atwell determine that due to the site characteristics it is very unlikely that the these species would be located on the subject property. Please see *Section 5.0 Threatened and Endangered Species Review* for further discussion.

The preferred development site was chosen after careful review because the base conditions provide prudent reasoning for the site's selection and ensure the feasibility of development. Environmental concerns were at the forefront of the factors taken into consideration when selecting the preferred site. Development of the preferred site would result in relatively small amounts of wetland impact, no drain/water course alteration and no impact to the habitat or presence of threatened or endangered species. Due to all of the considerations addressed above, the preferred site has been selected as the favored site for development. A discussion of the site selection process for the four alternative sites follows.

#### **4.3 Alternative Sites**

When researching a location for their new battery facility, LG Chem looked at various options throughout the State of Michigan. Four alternative sites were considered prior to the selection of the preferred site, and extensive due diligence was completed on each of the sites. The four alternative sites consist of the following: A-Pontiac, B-St. Clair, C-Van Buren North, and D-Van Buren South.

Alternative Site A (Pontiac) consists of approximately 84 acres and is located on US-24/Telegraph Road near Elizabeth Lake Road in Sections 19 and 30 of the City of Pontiac, Oakland County (T3N, R10E), Michigan. This site has been cleared, mass graded, and contains minimal natural resources. A proposed site layout plan is presented in **Appendix X**. Although this site did satisfy some basic requirements, it did not meet essential factors in site planning. Alternative Site A is similar in size to the preferred site; however, the odd shape of the parcel does not provide adequate space to accommodate the buildings and associated parking needs, and additional property would be necessary to allow for future expansion of the facility. Additionally, adequate infrastructure is not available to service the proposed facility and significant upgrades may be necessary, including the construction of an onsite electrical sub-station, improvements to increase the capacity of the current water system, and improvements to the road system to improve access.

A preliminary wetland determination was performed for the alternative site. Information gathered from the determination and the review of historical and current documents indicates that one emergent wetland is located on the site. This wetland does not appear to have been formed naturally and is located at the end of a stormwater outlet swale. The wetland is not likely regulated by the DNRE. As with the preferred site, wetland impacts

would be inevitable due to the configuration of the wetlands and the use of the majority of the site for grading and development activities.

Alternative Site B (St. Clair) consists of approximately 81 acres and is located on Range Road near Yankee Road in Section 19 of the City of St. Clair, St. Clair County (T5N, R17E), Michigan. A proposed site layout plan is presented in **Appendix XI**. This site is currently undeveloped and consists of a semi-mature forest and an old field in various stages of succession. Although this site did satisfy some basic requirements, it did not meet essential factors in site planning. Alternative Site B is similar in size to the preferred site; however, the portions of this site are opposite those of the preferred site. The narrow shape of the parcel will require the building to be modified from its standard footprint and additional property to allow for future expansion of the facility may not be available. Additionally, the site involves two recently platted lots which would need to be assembled/combined prior to use. Furthermore, the construction of an onsite electrical sub-station and transformers would be required to provide adequate electrical service to the proposed facility. A variance may be required from the City to allow an increase in the maximum building height to approximately 85 feet.

A preliminary wetland determination was performed for Alternative Site B. Information gathered from the determination and the review of historical and current documents indicates that two large wetland systems, multiple isolated wetland pockets, and one watercourse (Bowman Drain) are located on the site. One approximately 3.5 acre scrub-shrub wetland is located in the southern portion of the site, one approximately 4 acre forested wetland is located within the central portion of the site, and small isolated wetland pockets are scattered throughout the site. Additionally, the Bowman Drain bisects the central portion of the site and would require relocation prior to development. As with the preferred site, wetland impacts would be inevitable due to the configuration of the wetlands and the use of the majority of the site for grading and development activities. The onsite scrub-shrub wetland does not appear to be regulated by the DNRE; however, the onsite forested wetland would likely be regulated by the DNRE. The total acreage of the wetland impacts is estimated at approximately 4-acres (more impact than on the preferred site). In addition to the wetland impacts, the Bowman Drain would require enclosure and/or relocation if development took place. The relocation or enclosure would inevitably have an irreversible impact on vegetation and wildlife associated with the water course.

Furthermore, potential habitat for the Indiana bat may exist onsite. Before any development could take place, a Threatened and Endangered Species (TES) survey would need to be conducted by a trained environmental specialist in order to determine the presence or absence of this species.

Alternative Sites C and D (Van Buren North, and Van Buren South) are located on the northern and southern halves respectively of the same parcel of land and were evaluated simultaneously. Alternative Site C consists of approximately 88.5 acres and is located on Belleville Road near Van Born Road in Section 4 of Van Buren Township, Wayne County, (T3S, R8E), Michigan. Alternative Site D consists of approximately 87 acres and is located at the intersection of Belleville Road and Ecorse Road in Section 4 of Van

Buren Township, Wayne County (T3S, R8E), Michigan. A proposed site layout plan for each of these sites is presented in **Appendix XII**. Both of these sites are currently undeveloped and consist of semi-mature forests and old fields in varying stages of succession. Although these sites did satisfy some basic requirements, they did not meet essential factors in site planning. Both sites are similar in size to the preferred site and additional property is readily available for future expansion of the facility. However, both sites may require the vacation of existing road rights-of-way. A portion of the Van Born Road right-of-way bisects the northern area of Alternative Site C and would require vacation to accommodate development. Alternative Site D contains the entirety of the right-of-way for Gaines Road, which was included as part of a previously platted subdivision and would also require vacation prior to development. Additionally, Belleville Road is within the Downtown Development Authority district and may require additional landscaping and pedestrian infrastructure in addition to the road improvements required for site access and circulation. Based on a review of the soil borings, groundwater may present a concern in the development of these sites. The construction of an onsite electrical sub-station and transformers would be required to provide adequate electrical service to the proposed facility. Furthermore, variances may be required from the Township to reduce the number of required parking spaces and to allow an increase in the maximum building height to approximately 85 feet.

A preliminary wetland determination was performed for Alternative Site C. Information gathered from the determination and the review of historical and current documents indicates that seventeen wetland systems and one watercourse (McKinstry Drain) are located within the assessment area. Sixteen wetlands appear to be forested and one appears to be emergent/wet meadow. As with the preferred site, wetland impacts would be inevitable due to the configuration of the wetlands and the use of the majority of the site for grading and development activity. Two of the forested wetlands would likely be regulated by the DNRE. The total acreage of the wetland impacts is estimated at approximately 0.8 acres. In addition to the wetland impacts, the McKinstry Drain would require enclosure and/or relocation if development took place. The relocation or enclosure would inevitably have an irreversible impact on vegetation and wildlife associated with the water course.

A preliminary wetland determination was performed for Alternative Site D. Information gathered from the determination and the review of historical and current documents indicates that twelve forested wetland systems and one watercourse (Apple Run Drain) are located within the assessment area. As with the preferred site, wetland impacts would be inevitable due to the configuration of the wetlands and the use of the majority of the site for grading and development activity. Five of the forested wetlands would likely be regulated by the DNRE, and the total acreage of the wetland impacts is estimated at approximately 6.4 acres (more impact than on the preferred site). In addition to the wetland impacts, the Apple Run Drain would require enclosure and/or relocation if development took place. The relocation or enclosure would inevitably have an irreversible impact on vegetation and wildlife associated with the water course.

Based on these findings, Atwell believes that these four alternative sites do not possess the base requirements that are considered necessary for the development of the LG Chem



battery facility. While development on some of the sites may have fewer impacts to the natural features, the constraints with regard to site layout, availability of infrastructure, access, and other criteria generally make these sites less suitable for the proposed development. A feasible and prudent alternative exists for the alternative sites as described in *Section 4.2*.

#### ***4.4 City of Holland and Onsite Alternatives***

The City of Holland offered and helped chose the preferred site for the development of the lithium battery manufacturing facility with the City of Holland. The site was chosen due to meeting the basic requirements needed by LG Chem as well as the City's requirements for a facility of this type. The City chose the site due to its proximity to exiting manufactory, distance from residential developments, zoning, acreage, and proximity to the railroad. The City did review additional sites in Holland and efforts were made to locate an alternative site; however, no alternative sites were available which would accommodate the proposed development and meet the site selection criteria for parcel size, socio-economic factors, available infrastructure, access, and zoning.

There are no alternatives with the exception of a "No Build" options to the impact of wetlands onsite. As discussed previously, this site is the best option for development. The climate of Michigan at the present time requires the encouragement and facilitation of the development and establishment of new business within the state. The state and community will benefit from the development of this facility. The "No Build" alternative is not an option for this development.

Based on the size of the proposed development, alternative options for the onsite layout are also unfeasible. Phases I-III of the proposed facility include approximately 931,500 square feet of building area, nearly 1,000 parking spaces, a proposed railroad spur, and loading area. Due to the nature of the proposed business activity, it is important that the functions be consolidated on one contiguous parcel and that the layout and building footprints be prototypical to maximize efficiency and production. The preferred layout provides high visibility from the adjacent road, allows for optimal onsite circulation for passenger vehicles, delivery trucks, and railroad spur access, and makes greatest use of the site while also providing minimal impact to the surrounding properties and uses.

The wetlands located on the site traverse diagonally from the northwestern property line to the southeastern portions of the site. In addition these wetlands connect into a significant roadside ditch which runs the entire length of the southern boundary of the site. The linear nature of the wetlands along with their location onsite make in all but impossible to avoid impacts with the development of the site. Small portions of the wetland, such as the areas located within the 30-foot set back along the property line could be preserved, however the continuous nature of the wetland would severely impact the areas preserved and therefore long-term success of these wetlands could not be guaranteed and would most likely remain a non-functional system. Atwell's professional opinion is that wetland mitigation to compensate for the impacts proposed with development is the best option for a no net loss of wetlands within this watershed.

## **5.0-THREATENED AND ENDANGERED SPECIES REVIEW**

As previously mentioned, Atwell contacted the United States Fish and USFWS and DNRE during the due diligence phase of the proposed project, requesting comments on potential impacts to endangered, threatened, and proposed species, and their critical habitat, within the proposed project area. The DNRE utilizes a statewide database, which contains records of known localities of rare species and unique natural features to determine the likely presence of certain species and features of concern. This database provides information which aids in compliance with the Endangered Species Act. The DNRE's statewide database does not list any known or potential TES within the project section, therefore potential impact to TES is highly unlikely.

The review of the USFWS Allegan County list revealed that the following federal listed species are known or were historically known to occur in the county: the endangered Indiana bat (*Myotis sodalis*) and Karner blue butterfly (*Lyceides Melissa samuelis*), the threatened Pitcher's thistle (*Cirsium pitcher*), and the candidate eastern massasauga (*Sistrurus catenatus catenatus*).

The subject property is actively farmed and does not contain lakes, streams, other significant sources of water, sedge meadow, marsh edge and bog, pine barrens, oak savanna, stabilized dune or blowout areas. Therefore, preferred and/or required habitat does not exist onsite for the Indiana bat, Karner blue butterfly, Pitcher's thistle, or eastern massasauga. The State of Michigan TES letter and the county list for the USFWS are available in **Appendix XIII**.

## **6.0-WETLAND MITIGATION GOALS**

Due to the amount of impact proposed to naturally occurring wetlands on the subject property, LG Chem's development plans include compensatory wetland mitigation. An assessment of potential areas for mitigation was performed both on and offsite to determine the best possible location in terms of adequate compensation for the impact to existing wetlands, possible improvements to existing natural resources, and benefit to the surrounding community. After careful consideration, an offsite location was chosen. See the *Off-site Mitigation Plan* in **Appendix XIV** and *Sheet 05* in the plan set.

The State of Michigan (Part 303, Wetlands Protection) requires mitigation ratios of 2.0 acres of mitigation for 1.0 acre of permitted impact to forested and coastal wetlands, and 1.5 acres of mitigation for 1.0 acre of permitted impact to all other wetlands, with the exception of wetland types that are rare or imperiled. The wetland fill proposed for the development includes filling 2.21 acres of emergent wetlands. Mitigating the impacted wetlands at the appropriate ratio requires no less than 3.32 acres of mitigation.

The wetland mitigation plan for LG Chem proposes to compensate for the irreversible impacts to the existing wetlands as a result of the development by creating one wetland mitigation area. The continuous, emergent wetland will be created as a multi-functioning system, which will be offsite and in-kind. The wetland will be located within a City of Holland park where an existing wetland mitigation area already exists. The wetland will then be placed under a conservation easement for the protection of the created wetland.

This newly created wetland area is designed to be functionally diverse. The wetland will provide significant wildlife habitat containing adequate cover, a consistent water source and a diverse food source. It will provide storm water storage and will allow water to stand for long periods of time, therefore allowing infiltration into the soil and eventually into the surrounding groundwater aquifer aiding in groundwater recharge. In addition, the placement of the wetland mitigation on city park land will allow for educational opportunities for both LG Chem and the City of Holland.

The proposed wetlands will contain attributes typical of emergent wetlands. Overall approximately 3.5 acres of wetland mitigation will be created on the offsite property. A development plan for the mitigation area is currently being prepared and additional site investigation such as topographic survey and water budget are being completed to insure the correct grades and water elevation are achieved to insure establishment of the wetland area. Atwell anticipates that the wetland mitigation plans will be completed and provided to the DNRE prior to April of 2010.

Construction recommendations will accompany the wetland mitigation plan. The development of the wetland will be implemented under the specific construction recommendations. These recommendations will assist in creating functioning emergent wetland areas that will be viable and diverse. The recommendations will also include grading notes, wetland soils, vegetation, and hydrology requirements

#### **7.0- WETLAND MITIGATION ALTERNATIVES**

During the analysis of potential wetland mitigation areas, two offsite locations, both owned and operated as city parks were identified and reviewed. Additionally, an analysis of potential onsite mitigation areas was performed. After careful consideration, an offsite area was chosen, which is located within VanRaate Farm Park. See the *Site Location Map* in **Appendix XV** for the location of each area.

Several important factors must be considered during mitigation site selection. Hydrology is the most important factor in a successful mitigation. Hydrologic sources must be identified at the outset to ensure flooding and/or saturation for at least part of the growing season. The soil characteristics, such as permeability and chemical composition, should complement the hydrology in order to provide the appropriate hydrologic regime and to support the desired vegetation. Proximity to existing wetlands greatly improve the probability of a successful mitigation. Areas near existing wetlands are more likely to possess favorable hydrologic conditions and substrate characteristics, which are crucial to wetland establishment. The position of the mitigation in the overall landscape is also important. Moreover, the probability of successful wetland establishment and persistence is increased if human impacts can be avoided or minimized. Preference should be given to mitigation locations farther from sources of pollution, trash, and other potential impacts.

#### ***7.1 Onsite Wetland Mitigation***

Due to the layout of the development and the requirements necessary to comply with all pertinent regulations there is no option with regard to constructing the wetland mitigation on the subject site. As stated in *Section 4.4 City of Holland and Onsite Alternatives* the

development of the site will use virtually the entire site with the exception of setbacks from roadways and property lines. Placing wetland mitigation within these elongated areas is not an acceptable form of mitigation and rarely results in successful establishment of wetlands.

### ***7.2 Alternative Mitigation Site 1***

Alternative Mitigation Site 1 is located within Paw Paw Park (southwest of the intersection of Chicago Drive and 112<sup>th</sup> Ave). This location is within a city park and is directly adjacent to the Macatawa River. The site consists of a mix of emergent wetlands, scrub-shrub wetlands, forested wetland/upland complexes, and floodplain forests. The majority of the park is dominated by a matrix of mature forested wetlands and uplands.

In reviewing the suitability of this site for potential wetland mitigation, staff from Atwell used the State of Michigan's "Potential Wetland Restoration" spatial data and identified multiple areas within the park which the state has deemed suitable for wetland restoration. However, a field visit revealed that these areas largely occur in existing forested areas and are relatively small. Therefore, in order to create the amount of wetland mitigation required for the proposed impacts, numerous areas of mature forest would have to be cut down for the creation of emergent wetland.

### ***7.3 Preferred Mitigation Site***

The preferred mitigation site is also located with a city park (VanRaate Farm Park). This site consists of multiple ecological landscapes including fallow fields, young shrub areas, a mature American beech (*Fagus grandifolia*) forest, emergent wetlands, scrub-shrub wetlands, forested wetlands, and an emergent wetland mitigation area.

The preferred location consists of an existing fallow field and young shrub area with relatively flat topography. Additionally, multiple isolated wetlands were identified adjacent to this proposed mitigation location. The placement of newly created wetlands near existing wetland systems will provide the mitigation area with an excellent seed source for the further establishment wetland vegetation. By creating an emergent wetland mitigation within this park, an additional ecological type will be provided as a natural and public resource that will be protected in perpetuity.

A conceptual wetland mitigation plan is provided in **Appendix I**. A detailed wetland mitigation plan is currently being designed. This plan will incorporate a topographic survey, wetland delineation of existing wetlands adjacent to the chosen site, a water budget, detailed grading plan and planting plan, and a specific sequence of construction. A wetland mitigation monitoring plan and performance standards will also be included in the final wetland mitigation plan set. Once the final site plan is complete, a copy will be forwarded to the DNRE for approval.

## **8.0-FINANCIAL ASSURANCE & CONSERVATION EASMENTS**

The applicant will provide the DNRE with financial assurances to guarantee that the replacement wetland will be constructed, monitored, corrective actions performed as

required, and protected in perpetuity. The applicant will provide financial assurance in the form of a performance bond, letter of credit, and/or certificate of deposit.

If you have any questions regarding this or any other matter, please feel free to contact our office at (248) 447-2000.

**ATWELL, LLC**



**Prepared by:**

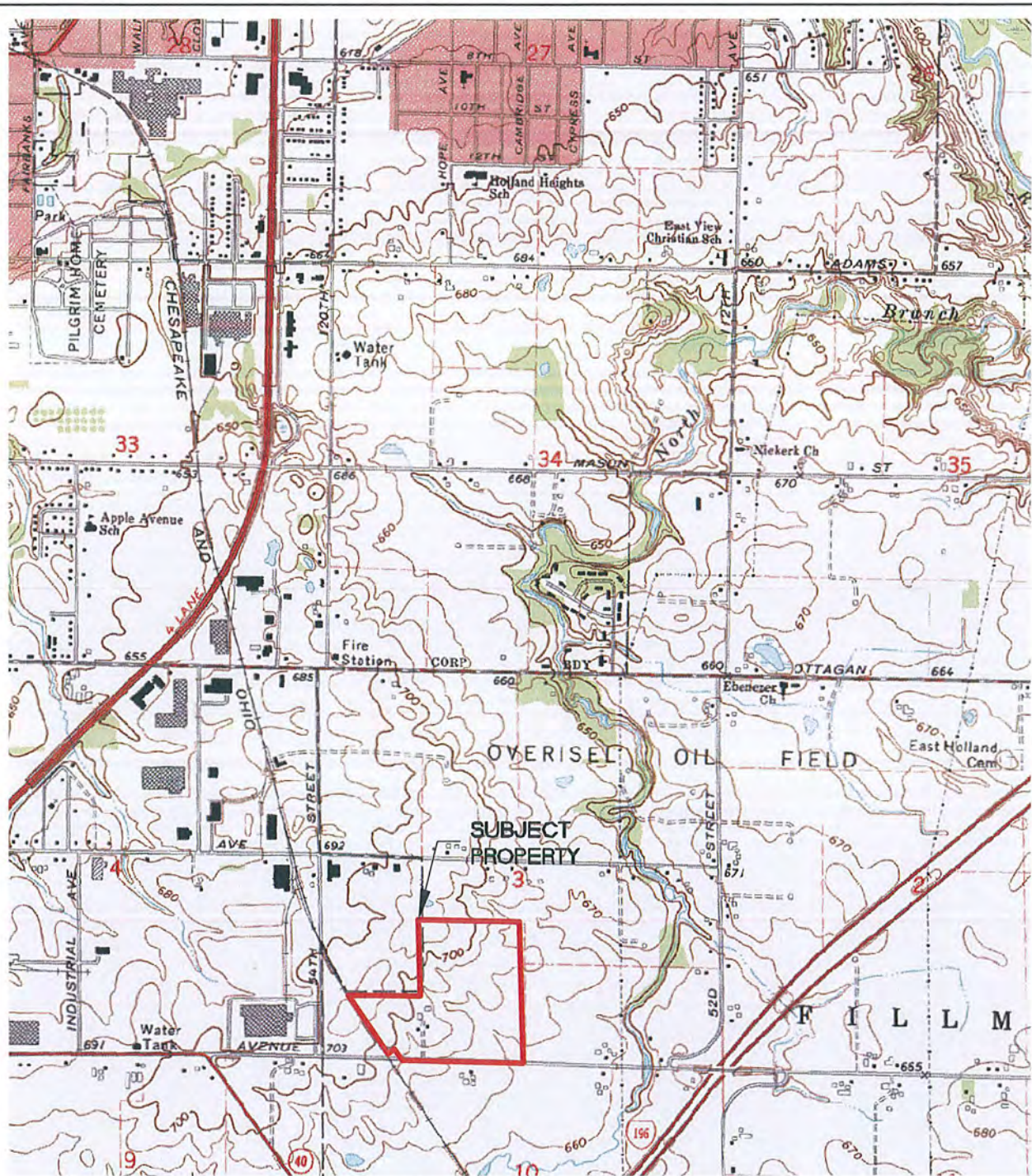
Bobbi Roberson  
Project Manager  
Natural Resources Group

**APPENDIX I**


**Site Location Map  
and  
MDEQ Permit Application Site Plan**



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SITE LOCATION MAP  
 FILLMORE TOWNSHIP  
 ALLEGAN COUNTY, MICHIGAN

SCALE 0 1000 2000  
  
 1" = 2000 FEET

REFERENCE  
 USGS 7.5 MIN TOPOGRAPHIC QUADRANGLE  
 HOLLAND EAST, MICHIGAN QUADRANGLE  
 DATED: 1972, PHOTOREVISED: 1980  
 SECTION 3

PROJECT: 09001770
DATE: OCTOBER 6, 2009
DRAWN: FOD
CHECKED: BR
CAD FILE: 09001770EC-01



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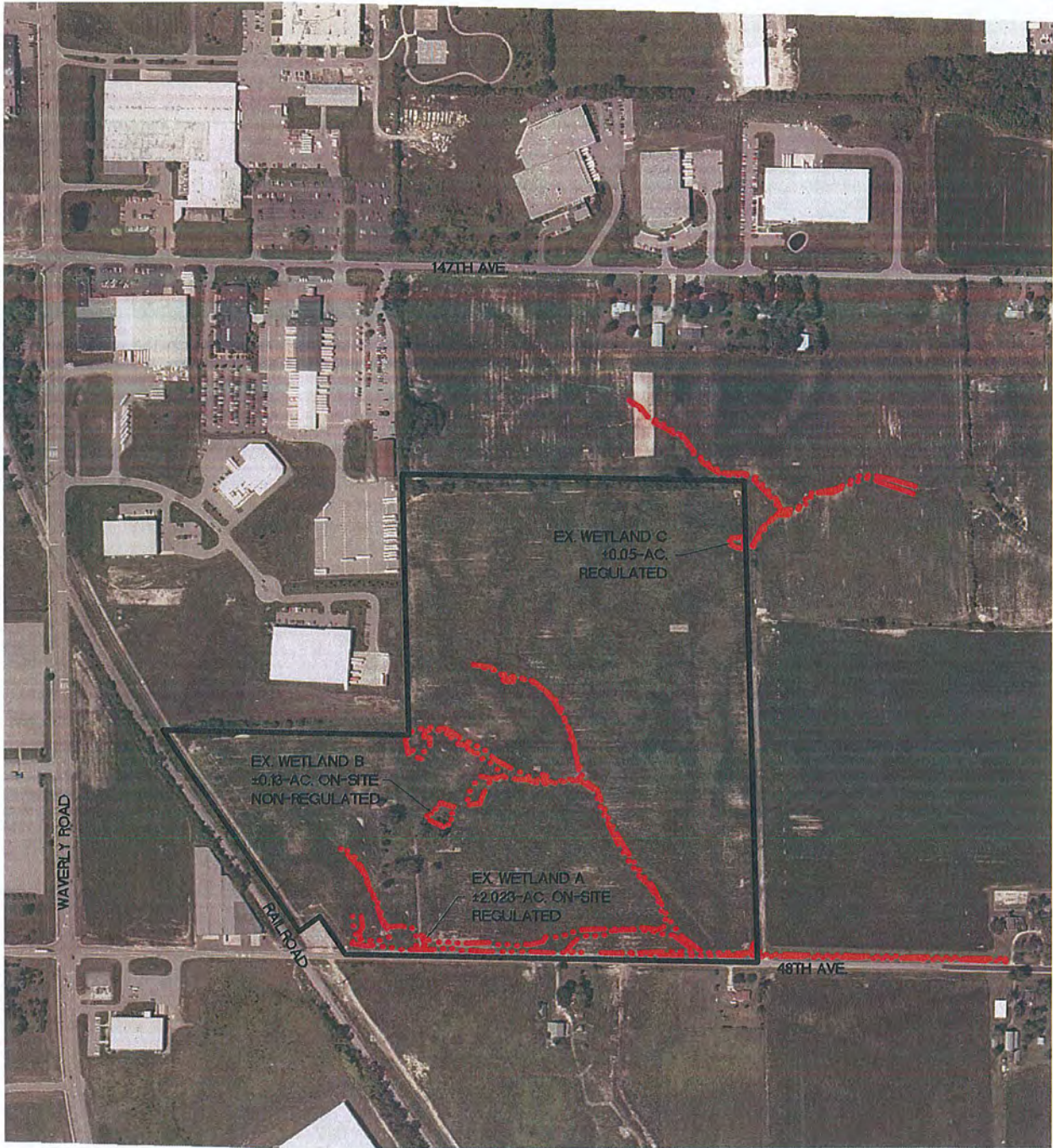




**APPENDIX II**


**Wetland Location Map**





WETLAND LOCATION MAP  
 FILLMORE TOWNSHIP  
 ALLEGAN COUNTY, MICHIGAN

LEGEND:  
 — SUBJECT PROPERTY  
 - - - SURVEYED WETLAND BOUNDARY

SCALE 0 300 600  
  
 1" = 600 FEET

NOTE: ATWELL-HICKS PERFORMED A WETLAND DELINEATION  
 ON OCTOBER 5, 2009.

REFERENCE

MICHIGAN GEOGRAPHIC DATA LIBRARY  
 CENTER FOR GEOGRAPHIC INFORMATION  
 DIGITAL ORTHOGRAPHIC QUAD-2005 SERIES  
 ALLEGAN COUNTY

PROJECT: 09001770
DATE: OCTOBER 6, 2009
DRAWN: FOD
CHECKED: BR
CAD FILE: 09001770EC-01



**ATWELL**

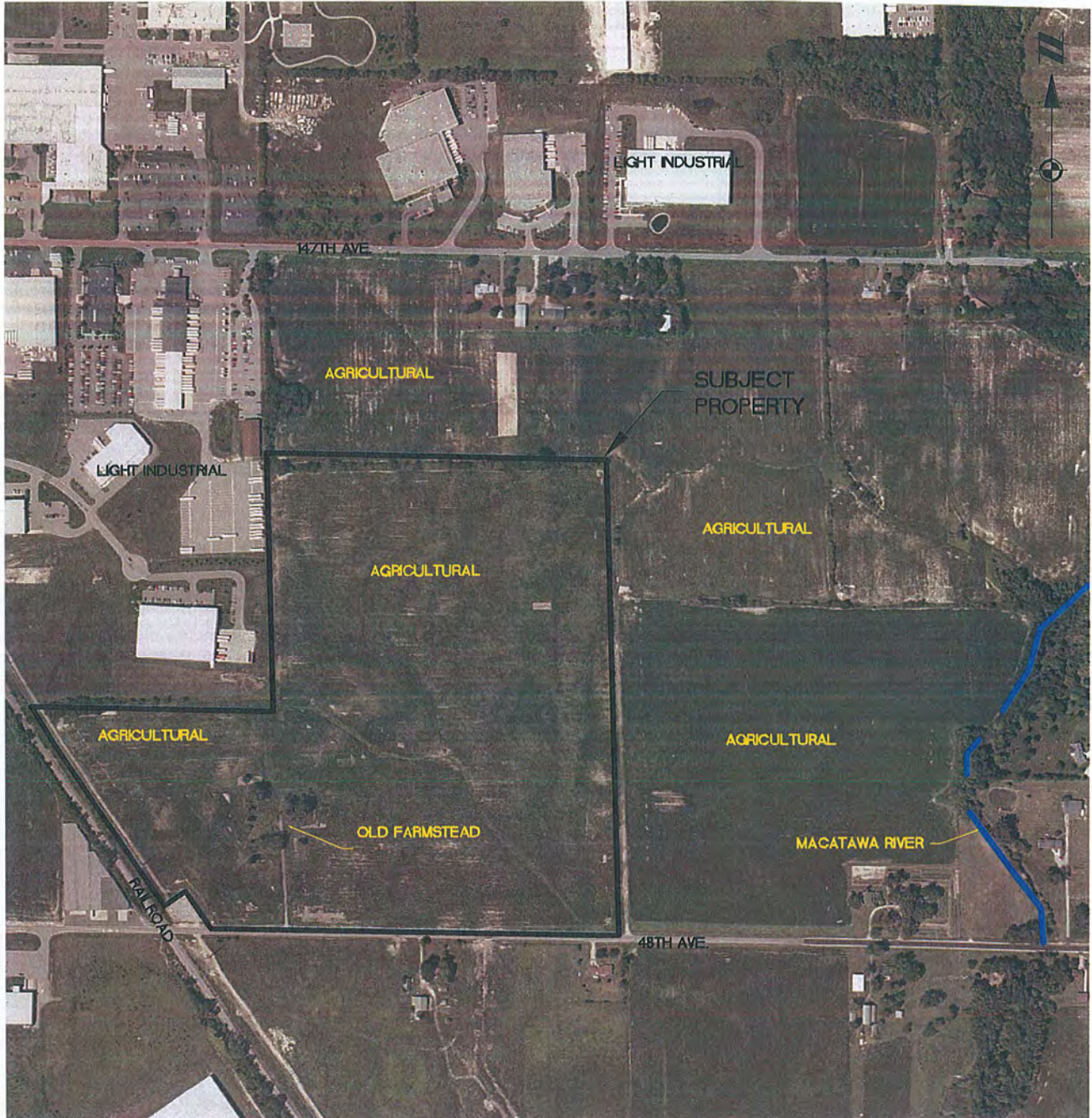
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**APPENDIX III**

**Property Features Map**



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PROPERTY FEATURES MAP  
 FILLMORE TOWNSHIP  
 ALLEGAN COUNTY, MICHIGAN

SCALE 0 300 600  
 1" = 600 FEET

LEGEND:  
 — SUBJECT PROPERTY  
 - - - OPEN WATER OR STREAM

REFERENCE  
 AERIALS EXPRESS, LLC  
 2005 AERIAL PHOTOGRAPH  
 AERIAL IMAGERY AND GIS VIEWER, GRAND RAPIDS  
 ALLEGAN COUNTY, MICHIGAN

PROJECT: 09001770
DATE: OCTOBER 6, 2009
DRAWN: FOD
CHECKED: BR
CAD FILE: 09001770EC-01



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**APPENDIX IV**

**Overall Existing Conditions Plan**



**APPENDIX V**

**Photographic Log  
and  
Wetland Data Sheets**



**PHOTOGRAPHIC LOG**



A view looking north across the location of the old farmstead.



A view looking east across Wetland A.



## PHOTOGRAPHIC LOG



A view looking north at a drainage swale portion of Wetland A.



A view looking north at the small scrub-shrub portion of Wetland A.



**PHOTOGRAPHIC LOG**



A view looking north at Wetland B.



A view looking northwest across a drain swale portion of Wetland C.



**PHOTOGRAPHIC LOG**



A view looking east across a drain swale portion of Wetland C.



A view looking west across Wetland D.



**PHOTOGRAPHIC LOG**



Photograph of the proposed offsite wetland mitigation area.



Photograph of the proposed offsite wetland mitigation area.



**PART 303 – WETLAND DATA FORM**

This information is collected pursuant to Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Applicant <u>LG Chem</u>	For DEQ Use: File: ____ - ____ - ____ - ____
County: <u>Allegan</u> T <u>4N</u> R <u>15W</u> S <u>3</u>	Date: <u>10 / 05 / 2009</u>
Form Completed By: <u>Bourke Thomas</u>	Wetland Area: <u>A</u>

**Instructions:**

Fill out all pertinent information on the following worksheets to substantiate your review. All methods should be in accordance with the MDEQ Wetland Identification Manual: A Technical Manual for Identifying Wetlands in Michigan and Part 303. Nomenclature shall follow Voss (1972, 1985, and 1996) or Gleason and Cronquist (2004).

**SITE REVIEW:**

N (Y/N) Is the site significantly disturbed? If yes, describe: \_\_\_\_\_

N (Y/N) Is there a potential Problem Area as described in the MDEQ Wetland Identification Manual?  
If yes, describe: \_\_\_\_\_

**VEGETATION AND AQUATIC LIFE:**

<b>Dominant Vegetation on Wetland Side of the Boundary</b> (use additional sheets if necessary)			
<u>Genus/Species</u>	<u>Common Name</u>	<u>Stratum*</u>	<u>Indicator Status</u>
<i>Cyperus esculentus</i>	Field nut sedge	H	FACW
<i>ECHINOCHLOA CRUSGALLI</i>	Barnyard grass	H	FACW
<i>Polygonum pensylvanicum</i>	Bigseed smartweed	H	FACW+
<i>Typha latifolia</i>	Cattail	H	OBL
<i>Aster novae-angliae</i>	New England Aster	H	FACW
<i>Phalaris arundinacea</i>	Reed canary grass	H	FACW+
<i>Verbena hastata</i>	Blue vervain	H	FACW+
<i>Penthorum sedoides</i>	Ditch stonecrop	H	OBL
<i>Salix exigua</i>	Sandbar willow	S	OBL
<b>Aquatic Life Observed</b> _____			
_____			
<b>Dominant Vegetation on Upland Side of the Boundary:</b> (use additional sheets if necessary)			
<u>Genus/Species</u>	<u>Common Name</u>	<u>Stratum*</u>	<u>Indicator Status</u>
<i>ZEA MAYS</i>	Corn	H	UPL

\* Stratum: H = Herbaceous (woody and herbaceous plants <3.2 ft. tall); S = Sapling/Shrub (≥3.2 ft. tall AND <3" DBH); O = Overstory (≥3" DBH)

**HYDROLOGY (Requires One Primary or Two Secondary Indicators):**

<p><b>Primary Indicators:</b></p> <input checked="" type="checkbox"/> (✓) Visible observation of inundation (Depth <u>3</u> in.) <input checked="" type="checkbox"/> (✓) Visible observation of soil saturation (Depth <u>Surface</u> in.) <input type="checkbox"/> (✓) Hydraulic soils (✓ below) <input type="checkbox"/> (✓) Watermarks <input type="checkbox"/> (✓) Drift lines <input type="checkbox"/> (✓) Sediment deposits <input type="checkbox"/> (✓) Drainage patterns within wetlands <p><b>Other:</b> _____</p>	<p><b>Secondary Indicators:</b></p> <input type="checkbox"/> (✓) Oxidized rhizospheres in upper 12" <input type="checkbox"/> (✓) Water stained leaves <input type="checkbox"/> (✓) Confirm soil profile matches hydric soil list <input type="checkbox"/> (✓) FAC-Neutral test <input checked="" type="checkbox"/> (✓) Bare soil areas <input type="checkbox"/> (✓) Morphological plant adaptations (✓ below)
<p><b>Hydric Indicators for <u>Non-Sandy Soils</u></b></p> <input type="checkbox"/> (✓) Organic soils (Histosols) <input type="checkbox"/> (✓) Histic epipedon <input type="checkbox"/> (✓) Sulfidic material (H <sub>2</sub> S odor) <input type="checkbox"/> (✓) Soil color (immediately below A-horizon or within 10 inches of the surface, whichever is shallower) <input type="checkbox"/> (✓) Gleyed (gray) soil (i.e. matches Gley page) <input type="checkbox"/> (✓) Matrix chroma of 2 or less in mottled soils <input type="checkbox"/> (✓) Matrix chroma of 1 or less in unmottled soils <input type="checkbox"/> (✓) Black mineral soil with gray mottles at ≤ 10 inches <input type="checkbox"/> (✓) Confirm soil profile matches local hydric soil test <input type="checkbox"/> (✓) Iron and manganese concretions <input type="checkbox"/> (✓) Reducing soil conditions (ferrous iron test) <input type="checkbox"/> (✓) Aquic or peraquic moisture regime	<p><b>Additional Hydric Indicators for <u>Sandy Soils</u></b></p> <input type="checkbox"/> (✓) High organic matter in the surface horizon <input checked="" type="checkbox"/> (✓) Streaking of subsurface horizons by organic matter <input type="checkbox"/> (✓) Organic pans: at depth of _____ inches <p><b>Supplement Indicators of Hydric Soils:</b>          (e.g., NRCS Field Indicators of Hydric Soils):          _____          _____          _____</p>
<p><b>Morphological Plant Adaptations Observed(✓):</b> <input checked="" type="checkbox"/> Adventitious roots    <input type="checkbox"/> Shall root system    <input type="checkbox"/> Floating leaves  <input checked="" type="checkbox"/> Inflated leaves, stems, or root    <input type="checkbox"/> Polymorphic leaves    <input type="checkbox"/> Oxygen pathway to roots    <input type="checkbox"/> Floating stem  <input type="checkbox"/> Hypertrophied lenticels    <input type="checkbox"/> Multiple trunks or stooling    <input type="checkbox"/> Buttressed tree trunks    <input type="checkbox"/> Pneumatophores</p>	

**SOIL PROFILE NOTES:**

Soil Profile on <i>Wetland Side</i> of the Boundary				
Map Unit from Soil Survey: <b>Blount Silt Loam (41B)</b>				
Depth (inches)	Matrix color (hue/value/chroma)	Motte Color (if present)	Texture (e.g., sandy loam, etc.)	Notes
0-3	10YR 3/2		Loam	
3-8	10YR 6/3		Loam	
Soil Profile on <i>Upland Side</i> of the Boundary				
Map Unit from Soil Survey: <b>Blount Silt Loam (41B)</b>				
Depth (inches)	Depth (inches)	Depth (inches)	Depth (inches)	Notes
0-3	0-3	0-3	0-3	
3-8	3-8	3-8	3-8	

**WETLAND DETERMINATION**

(✓) Predominance of wetland vegetation (Fac, Fac+, FacW-, FacW, FacW+, OBL) or aquatic life  
 (✓) Wetland hydrology and/or hydric soil present  
 (Y/N) Is the area wetland (both wetland hydrology/soils and a predominance of wetland vegetation present)?  
 (Y/N) Is the area REGULATED wetland (refer to *Part 303 – Wetland Jurisdictional Determination Form*)?

**Wetland Types (✓ all that are present):**

<input checked="" type="checkbox"/> (✓) Emergent Marsh	<input checked="" type="checkbox"/> (✓) Deciduous Swamp	<input type="checkbox"/> (✓) Fen	<input type="checkbox"/> (✓) Shrub Swamp
<input type="checkbox"/> (✓) Wet Meadow	<input type="checkbox"/> (✓) Coniferous Swamp	<input type="checkbox"/> (✓) Bog/Muskeg	<input type="checkbox"/> (✓) Floodplain Forest
<input type="checkbox"/> (✓) Wet Prairie	<input type="checkbox"/> (✓) Deciduous Forest	<input type="checkbox"/> (✓) Great Lakes Marsh	<input type="checkbox"/> (✓) Submergent Marsh

Other (e.g. rare and imperiled community, reed canary grass dominated, highly disturbed): \_\_\_\_\_

**Comments:** \_\_\_\_\_



**PART 303 – WETLAND DATA FORM**

This information is collected pursuant to Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Applicant <u>LG Chem</u>	For DEQ Use: File: ____ - ____ - ____ - ____
County: <u>Allegan</u> T <u>4N</u> R <u>15W</u> S <u>3</u>	Date: <u>10 / 05 / 2009</u>
Form Completed By: <u>Bourke Thomas</u>	Wetland Area: <u>B</u>

**Instructions:**

Fill out all pertinent information on the following worksheets to substantiate your review. All methods should be in accordance with the *MDEQ Wetland Identification Manual: A Technical Manual for Identifying Wetlands in Michigan* and Part 303. Nomenclature shall follow Voss (1972, 1985, and 1996) or Gleason and Cronquist (2004).

**SITE REVIEW:**

N (Y/N) Is the site significantly disturbed? If yes, describe: \_\_\_\_\_

N (Y/N) Is there a potential Problem Area as described in the MDEQ Wetland Identification Manual? If yes, describe: \_\_\_\_\_

**VEGETATION AND AQUATIC LIFE:**

<b>Dominant Vegetation on Wetland Side of the Boundary</b> (use additional sheets if necessary)			
<u>Genus/Species</u>	<u>Common Name</u>	<u>Stratum*</u>	<u>Indicator Status</u>
<i>Cyperus esculentus</i>	Field nut sedge	H	FACW
<i>ECHINOCHLOA CRUSGALLI</i>	Barnyard grass	H	FACW
<i>Polygonum pensylvanicum</i>	Bigseed smartweed	H	FACW+
<i>Salix exigua</i>	Sandbar willow	S	OBL
<i>Populus deltoides</i>	Cottonwood	O	FAC+
<b>Aquatic Life Observed</b> _____			
<b>Dominant Vegetation on Upland Side of the Boundary:</b> (use additional sheets if necessary)			
<u>Genus/Species</u>	<u>Common Name</u>	<u>Stratum*</u>	<u>Indicator Status</u>
<i>ZEA MAYS</i>	Corn	H	UPL

\* Stratum: H = Herbaceous (woody and herbaceous plants <3.2 ft. tall); S = Sapling/Shrub (≥3.2 ft. tall AND <3" DBH); O = Overstory (≥3" DBH)

**HYDROLOGY (Requires One Primary or Two Secondary Indicators):**

<p><b>Primary Indicators:</b></p> <p><input type="checkbox"/> (√) Visible observation of inundation (Depth ____ in.)</p> <p><input checked="" type="checkbox"/> (√) Visible observation of soil saturation (Depth <u>Surface</u> in.)</p> <p><input type="checkbox"/> (√) Hydraulic soils (√ below)</p> <p><input type="checkbox"/> (√) Watermarks</p> <p><input type="checkbox"/> (√) Drift lines</p> <p><input type="checkbox"/> (√) Sediment deposits</p> <p><input type="checkbox"/> (√) Drainage patterns within wetlands</p> <p>Other: _____</p>	<p><b>Secondary Indicators:</b></p> <p><input type="checkbox"/> (√) Oxidized rhizospheres in upper 12"</p> <p><input type="checkbox"/> (√) Water stained leaves</p> <p><input type="checkbox"/> (√) Confirm soil profile matches hydric soil list</p> <p><input type="checkbox"/> (√) FAC-Neutral test</p> <p><input checked="" type="checkbox"/> (√) Bare soil areas</p> <p><input type="checkbox"/> (√) Morphological plant adaptations (√ below)</p>
<p><b>Hydric Indicators for Non-Sandy Soils</b></p> <p><input type="checkbox"/> (√) Organic soils (Histosols)</p> <p><input type="checkbox"/> (√) Histic epipedon</p> <p><input type="checkbox"/> (√) Sulfidic material (H<sub>2</sub>S odor)</p> <p><input type="checkbox"/> (√) Soil color (immediately below A-horizon or within 10 inches of the surface, whichever is shallower)</p> <p><input type="checkbox"/> (√) Gleyed (gray) soil (i.e. matches Gley page)</p> <p><input type="checkbox"/> (√) Matrix chroma of 2 or less in mottled soils</p> <p><input type="checkbox"/> (√) Matrix chroma of 1 or less in unmottled soils</p> <p><input type="checkbox"/> (√) Black mineral soil with gray mottles at ≤ 10 inches</p> <p><input type="checkbox"/> (√) Confirm soil profile matches local hydric soil test</p> <p><input type="checkbox"/> (√) Iron and manganese concretions</p> <p><input type="checkbox"/> (√) Reducing soil conditions (ferrous iron test)</p> <p><input type="checkbox"/> (√) Aquic or peraquic moisture regime</p>	<p><b>Additional Hydric Indicators for Sandy Soils</b></p> <p><input type="checkbox"/> (√) High organic matter in the surface horizon</p> <p><input checked="" type="checkbox"/> (√) Streaking of subsurface horizons by organic matter</p> <p><input type="checkbox"/> (√) Organic pans: at depth of ____ inches</p> <p><b>Supplement Indicators of Hydric Soils:</b> (e.g., NRCS Field Indicators of Hydric Soils):</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p><b>Morphological Plant Adaptations Observed (√):</b> <input checked="" type="checkbox"/> Adventitious roots    <input type="checkbox"/> Shall root system    <input type="checkbox"/> Floating leaves</p> <p><input checked="" type="checkbox"/> Inflated leaves, stems, or root    <input type="checkbox"/> Polymorphic leaves    <input type="checkbox"/> Oxygen pathway to roots    <input type="checkbox"/> Floating stem</p> <p><input type="checkbox"/> Hypertrophied lenticels    <input checked="" type="checkbox"/> Multiple trunks or stooling    <input type="checkbox"/> Buttressed tree trunks    <input type="checkbox"/> Pneumatophores</p>	

**SOIL PROFILE NOTES:**

<b>Soil Profile on Wetland Side of the Boundary</b>				
<b>Map Unit from Soil Survey: Corunna Sandy Loam (36)</b>				
Depth (inches)	Matrix color (hue/value/chroma)	Motte Color (if present)	Texture (e.g., sandy loam, etc.)	Notes
0-11	10YR 2/1		Sandy loam	
11-21	10YR 5/1		Sandy loam	
<b>Soil Profile on Upland Side of the Boundary</b>				
<b>Map Unit from Soil Survey: Blount Silt Loam (41B)</b>				
Depth (inches)	Matrix color (hue/value/chroma)	Motte Color (if present)	Texture (e.g., sandy loam, etc.)	Notes
0-3	10YR 3/2		Loam	
3-8	10YR 6/3		Loam	

**WETLAND DETERMINATION**

- (√) Predominance of wetland vegetation (Fac, Fac+, FacW-, FacW, FacW+, OBL) or aquatic life
- (√) Wetland hydrology and/or hydric soil present
- (Y/N) Is the area wetland (both wetland hydrology/soils and a predominance of wetland vegetation present)?
- (Y/N) Is the area REGULATED wetland (refer to *Part 303 – Wetland Jurisdictional Determination Form*)?

**Wetland Types (√ all that are present):**

- |   |   |  |  |
|---|---|--|--|
| <input type="checkbox"/> (√) Emergent Marsh | <input checked="" type="checkbox"/> (√) Deciduous Swamp | <input type="checkbox"/> (√) Fen               | <input type="checkbox"/> (√) Shrub Swamp       |
| <input type="checkbox"/> (√) Wet Meadow     | <input type="checkbox"/> (√) Coniferous Swamp           | <input type="checkbox"/> (√) Bog/Muskeg        | <input type="checkbox"/> (√) Floodplain Forest |
| <input type="checkbox"/> (√) Wet Prairie    | <input type="checkbox"/> (√) Deciduous Forest           | <input type="checkbox"/> (√) Great Lakes Marsh | <input type="checkbox"/> (√) Submergent Marsh  |
- Other (e.g. rare and imperiled community, reed canary grass dominated, highly disturbed): \_\_\_\_\_

**Comments:** \_\_\_\_\_

**PART 303 – WETLAND DATA FORM**

This information is collected pursuant to Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Applicant <u>LG Chem</u>	For DEQ Use: File: _____ - _____ - _____
County: <u>Allegan</u> T <u>4N</u> R <u>15W</u> S <u>3</u>	Date: <u>10 / 05 / 2009</u>
Form Completed By: <u>Bourke Thomas</u>	Wetland Area: <u>C &amp; D</u>

**Instructions:**

Fill out all pertinent information on the following worksheets to substantiate your review. All methods should be in accordance with the *MDEQ Wetland Identification Manual: A Technical Manual for Identifying Wetlands in Michigan* and Part 303. Nomenclature shall follow Voss (1972, 1985, and 1996) or Gleason and Cronquist (2004).

**SITE REVIEW:**

N (Y/N) Is the site significantly disturbed? If yes, describe: \_\_\_\_\_

N (Y/N) Is there a potential Problem Area as described in the MDEQ Wetland Identification Manual?  
If yes, describe: \_\_\_\_\_

**VEGETATION AND AQUATIC LIFE:**

<b>Dominant Vegetation on Wetland Side of the Boundary</b> (use additional sheets if necessary)			
<u>Genus/Species</u>	<u>Common Name</u>	<u>Stratum*</u>	<u>Indicator Status</u>
<i>Cyperus esculentus</i>	Field nut sedge	H	FACW
<i>ECHINOCHLOA CRUSGALLI</i>	Barnyard grass	H	FACW
<i>Polygonum pensylvanicum</i>	Bigseed smartweed	H	FACW+

**Aquatic Life Observed** \_\_\_\_\_  
\_\_\_\_\_

<b>Dominant Vegetation on Upland Side of the Boundary:</b> (use additional sheets if necessary)			
<u>Genus/Species</u>	<u>Common Name</u>	<u>Stratum*</u>	<u>Indicator Status</u>
<i>ZEA MAYS</i>	Corn	H	UPL

\* Stratum: H = Herbaceous (woody and herbaceous plants <3.2 ft. tall); S = Sapling/Shrub (≥3.2 ft. tall AND <3" DBH); O = Overstory (≥3" DBH)



**HYDROLOGY (Requires One Primary or Two Secondary Indicators):**

<p><b>Primary Indicators:</b></p> <input checked="" type="checkbox"/> (√) Visible observation of inundation (Depth <u>2</u> in.) <input checked="" type="checkbox"/> (√) Visible observation of soil saturation (Depth <u>Surface</u> in.) <input type="checkbox"/> (√) Hydraulic soils (√ below) <input type="checkbox"/> (√) Watermarks <input type="checkbox"/> (√) Drift lines <input type="checkbox"/> (√) Sediment deposits <input type="checkbox"/> (√) Drainage patterns within wetlands <p>Other: _____</p>	<p><b>Secondary Indicators:</b></p> <input type="checkbox"/> (√) Oxidized rhizospheres in upper 12" <input type="checkbox"/> (√) Water stained leaves <input type="checkbox"/> (√) Confirm soil profile matches hydric soil list <input type="checkbox"/> (√) FAC-Neutral test <input checked="" type="checkbox"/> (√) Bare soil areas <input type="checkbox"/> (√) Morphological plant adaptations (√ below)
<p><b>Hydric Indicators for Non-Sandy Soils</b></p> <input type="checkbox"/> (√) Organic soils (Histosols) <input type="checkbox"/> (√) Histic epipedon <input type="checkbox"/> (√) Sulfidic material (H <sub>2</sub> S odor) <input type="checkbox"/> (√) Soil color (immediately below A-horizon or within 10 inches of the surface, whichever is shallower) <input type="checkbox"/> (√) Gleyed (gray) soil (i.e. matches Gley page) <input type="checkbox"/> (√) Matrix chroma of 2 or less in mottled soils <input type="checkbox"/> (√) Matrix chroma of 1 or less in unmottled soils <input type="checkbox"/> (√) Black mineral soil with gray mottles at ≤ 10 inches <input type="checkbox"/> (√) Confirm soil profile matches local hydric soil test <input type="checkbox"/> (√) Iron and manganese concretions <input type="checkbox"/> (√) Reducing soil conditions (ferrous iron test) <input type="checkbox"/> (√) Aquic or peraquic moisture regime	<p><b>Additional Hydric Indicators for Sandy Soils</b></p> <input type="checkbox"/> (√) High organic matter in the surface horizon <input checked="" type="checkbox"/> (√) Streaking of subsurface horizons by organic matter <input type="checkbox"/> (√) Organic pans: at depth of _____ inches
<p><b>Morphological Plant Adaptations Observed (√):</b> <input checked="" type="checkbox"/> Adventitious roots    <input type="checkbox"/> Shall root system    <input type="checkbox"/> Floating leaves  <input checked="" type="checkbox"/> Inflated leaves, stems, or root    <input type="checkbox"/> Polymorphic leaves    <input type="checkbox"/> Oxygen pathway to roots    <input type="checkbox"/> Floating stem  <input type="checkbox"/> Hypertrophied lenticels    <input type="checkbox"/> Multiple trunks or stooling    <input type="checkbox"/> Buttressed tree trunks    <input type="checkbox"/> Pneumatophores</p>	

**SOIL PROFILE NOTES:**

<b>Soil Profile on <i>Wetland Side of the Boundary</i></b>				
<b>Map Unit from Soil Survey: <i>Corunna Sandy Loam (36)</i></b>				
Depth (inches)	Matrix color (hue/value/chroma)	Motte Color (if present)	Texture (e.g., sandy loam, etc.)	Notes
0-11	10YR 2/1		Sandy loam	
11-21	10YR 5/1		Sandy loam	
<b>Soil Profile on <i>Upland Side of the Boundary</i></b>				
<b>Map Unit from Soil Survey: <i>Blount Silt Loam (41B)</i></b>				
Depth (inches)	Matrix color (hue/value/chroma)	Motte Color (if present)	Texture (e.g., sandy loam, etc.)	Notes
0-3	10YR 3/2		Loam	
3-8	10YR 6/3		Loam	

**WETLAND DETERMINATION**

- (√) Predominance of wetland vegetation (Fac, Fac+, FacW-, FacW, FacW+, OBL) or aquatic life  
 (√) Wetland hydrology and/or hydric soil present  
 (Y/N) Is the area wetland (both wetland hydrology/soils and a predominance of wetland vegetation present)?  
 (Y/N) Is the area REGULATED wetland (refer to *Part 303 – Wetland Jurisdictional Determination Form*)?

**Wetland Types (√ all that are present):**

- |  |   |  |  |
|--|---|--|--|
| <input checked="" type="checkbox"/> (√) Emergent Marsh | <input type="checkbox"/> (√) Deciduous Swamp  | <input type="checkbox"/> (√) Fen               | <input type="checkbox"/> (√) Shrub Swamp       |
| <input type="checkbox"/> (√) Wet Meadow                | <input type="checkbox"/> (√) Coniferous Swamp | <input type="checkbox"/> (√) Bog/Muskeg        | <input type="checkbox"/> (√) Floodplain Forest |
| <input type="checkbox"/> (√) Wet Prairie               | <input type="checkbox"/> (√) Deciduous Forest | <input type="checkbox"/> (√) Great Lakes Marsh | <input type="checkbox"/> (√) Submergent Marsh  |
- Other (e.g. rare and imperiled community, reed canary grass dominated, highly disturbed): \_\_\_\_\_

**Comments:** \_\_\_\_\_

**APPENDIX VI**

**Proposed Wetland Impact Table  
and  
Wetland Impact Plan**

**Proposed Wetland Impact Summary Table**

Impact	Natural Feature	Type	Acreage (On-Site)	Regulatory Status	Permanent Impact (AC.)	Cut (CU. YDS.)	Fill (CU. YDS.)	Mitigation Ratio	Mitigation Required (AC)
Impact 1	Wetland A	Emergent	2.06	MDEQ	2.06	8,058	7,459	1.5:1	3
Impact 2	Wetland C	Emergent	0.05	MDEQ	0.05	0	717	1.5:1	0.075
Impact 3	Wetland D	Emergent	0.10	MDEQ	0.1	0	619	1.5:1	0.15
<b>Totals</b>	--	--	<b>2.21</b>	--	<b>2.21</b>	<b>8058</b>	<b>8795</b>	--	<b>3.32</b>



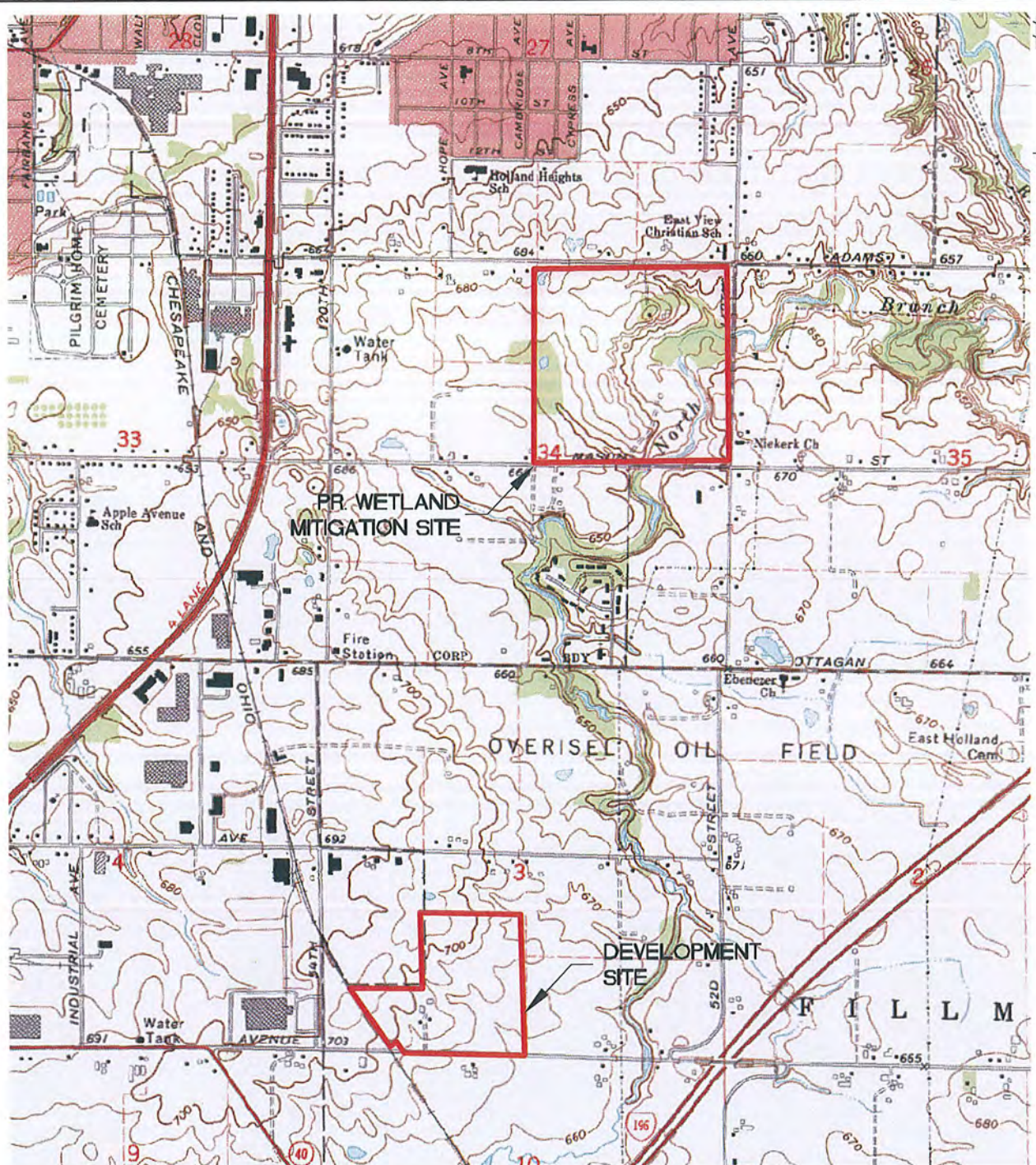




**APPENDIX VII**

**Site Location Map**

K:\109001770\dwg\Ecological\09001770-EC-04 SLM.dwg, 1/11/2010 9:28:55 AM, bthomas



SITE LOCATION MAP  
CITY OF HOLLAND  
ALLEGAN & OTTAWA COUNTIES, MICHIGAN

SCALE 0 1000 2000  
1" = 2000 FEET



**REFERENCE**  
USGS 7.5 MIN TOPOGRAPHIC QUADRANGLE  
HOLLAND EAST, MICHIGAN QUADRANGLE  
DATED: 1972, PHOTOREVISED: 1980  
SECTION 3

PROJECT: 09001770  
DATE: JANUARY 11, 2010  
DRAWN: FOD  
CHECKED: BR  
CAD FILE: 09001770EC-04

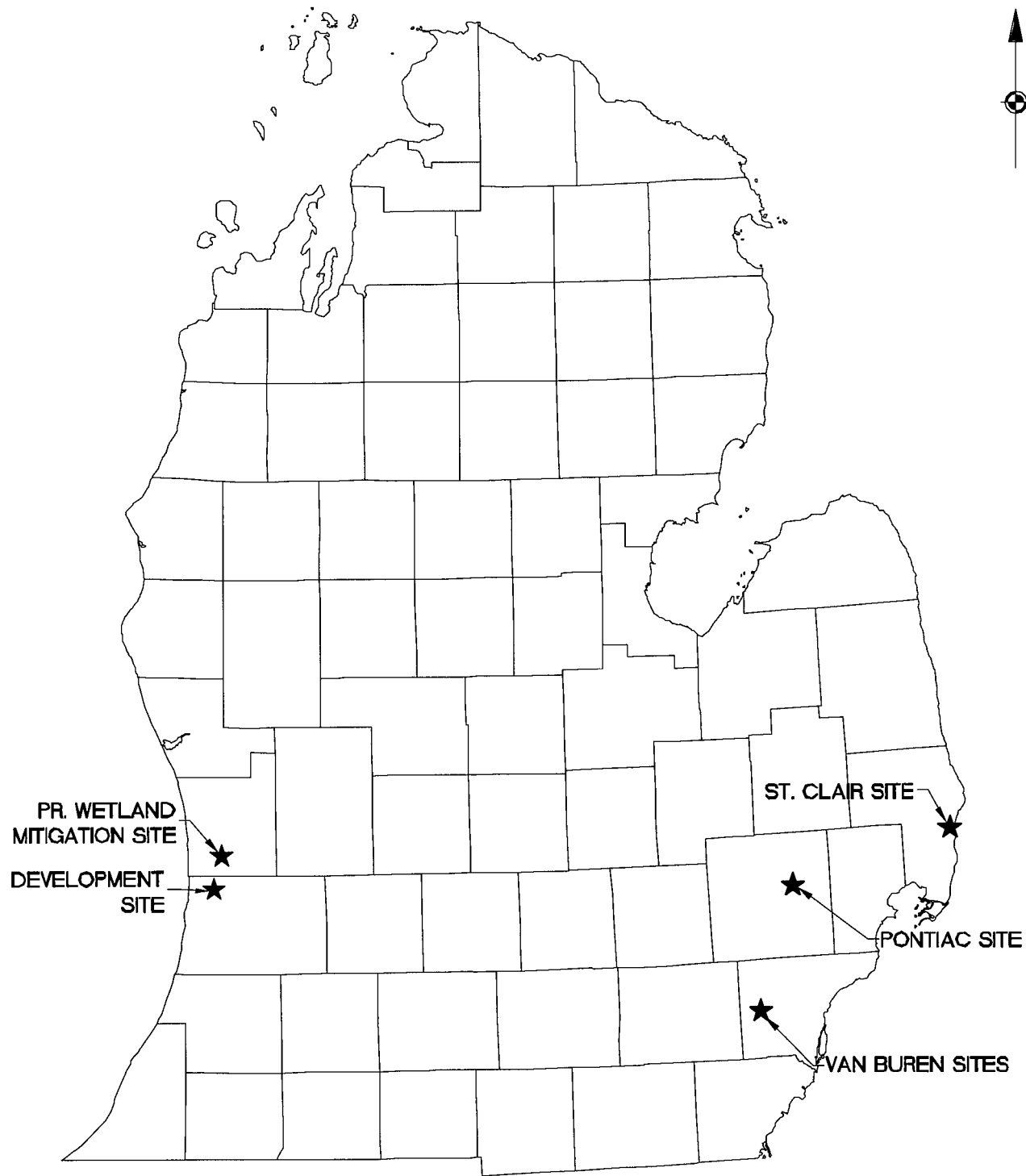
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Engineering Surveying Planning  
Environmental Ecological Water Resources

**APPENDIX VIII**

**Site Locations Map**



SITE LOCATIONS MAP  
ALLEGAN, OTTAWA, VAN BUREN, JACKSON,  
OAKLAND, ST. CLAIR, AND WAYNE COUNTIES, MICHIGAN

SCALE 0 30000 60000  
  
1" = 60000 FEET

PROJECT: 09001770
DATE: JANUARY 11, 2010
DRAWN: BWT
CHECKED: BR
CAD FILE: 09001770EC-05



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**APPENDIX IX**

**Alternative Site Analysis Chart**



80 acres	79.85 - Fullfills Requirements	84 acres - Fullfills Requirement Configuration of the land is not adequate	81 acres - Fullfills Requirement Shape of parcel would require modification of building footprint	88.5 acres - Fullfills Requirement	87 acres - Fullfills Requirement
Required	Fullfills Requirement	Does Not Meet with Requirement Additional acreage would need to be purchased	Does Not Meet with Requirement Additional acreage would need to be purchased	Fullfills Requirement	Fullfills Requirement
	Fullfills Requirement	Does Not Meet with Requirement <i>Unions present, not economically feasible for business model</i>	Does Not Meet with Requirement <i>Unions present, not economically feasible for business model</i>	Does Not Meet with Requirement <i>Unions present, not economically feasible for business model</i>	Does Not Meet with Requirement <i>Unions present, not economically feasible for business model</i>
	Fullfills Requirement	Limitation Present Electrical, Water, Sewer and Roadway Limitations (upgrade would be required)	Limitation Present Electrical improvements	Limitation Present Electrical improvements	Limitation Present Electrical improvements
	Limitation Present Road Improvements would be necessary	Limitation Present Roadway Limitations (upgrade would be required)	Fullfills Requirements	Limitation Present Road Improvements for Belleville Road with additional landscaping and pedestrian treatments	Limitation Present Road Improvements for Belleville Road with additional landscaping and pedestrian treatments
	Limitations Present Approximately 2.2 acres of emergent wetland impact is proposed. Mitigation required off site No TES	Generally Meets with Requirement Topographic limitations-excess fill required No Environmental Concerns No Wetlands, Streams or TES	Property Limitations Present Approximately 4 acres of forested wetland impact and 2,100 linear feet of drain relocation would be required.	Property Limitations Present Development would require the relocation of the McKinstry Drain and the filling of approximately 0.8 acres of forested wetland.	Property Limitations Present Approximately 6.4 acres of forested wetland impact and relocation of the Apple Run Drain would be required.
Required	Fullfills Requirement	Limitations Present (Easement Necessary)	Variance on building height would likely be necessary	Variance on building height and parking would likely be necessary	Variance on building height and parking would likely be necessary
Required	Fullfills Requirement	Does Not Meet with Requirement <i>Nearest airports are approximately 40 miles from site</i>	Fullfills Requirement	Fullfills Requirement	Limitations Present Significant extension to place rail spur
				Fullfills Requirement	Fullfills Requirement
				Consent agreement on property, close proximity to residential subdivision	Consent agreement on property, close proximity to residential subdivision

\*\*\* Important Requirement

**APPENDIX X**

**Site Layout Plan**

SITE SUMMARY  
 SITE AREA: 484 ACRES TOTAL  
 BUILDING AREA: 300,000 SF  
 PHASE 2: 300,000 SF  
 SETBACKS - BUILDING TO BE DETERMINED BASED ON M.U.D. ZONING & DEVELOPMENT AGREEMENT W/ CITY OF PONTIAC  
 PARKING: 9' x 20'  
 SITE PROVIDED: 800 SPACES (1.3 SPACE/EMP.)  
 DETENTION: 46.5 ACRES (ASSUME 5' DEPTH) (100-YEAR VOLUME)

LG CHEMICAL  
 CITY OF PONTIAC SITE  
 PROJECT NO.: 09001770  
 DATE: SEPTEMBER 14, 2009



SCALE: 1" = 400'



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 TENNESSEE  
 8 6 6 8 5 0 4 2 0 0  
 Engineering Environmental  
 Surveying Ecological  
 Planning Water Resources

**APPENDIX XI**

**Site Layout Plan**



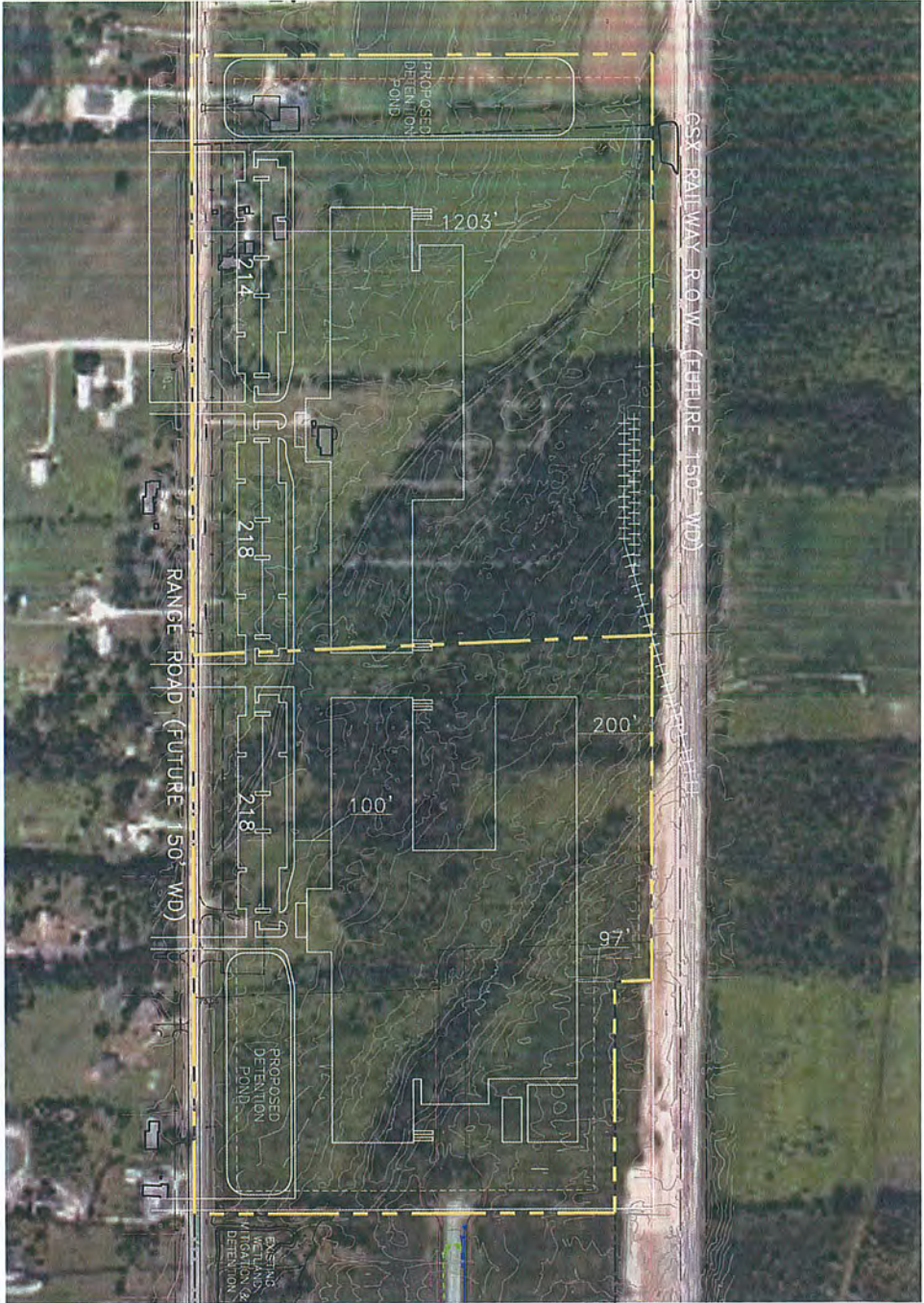
**SITE SUMMARY**  
 1.81 ACRES TOTAL  
 (1.39 AC SOUTHERN PARCEL)  
 (1.42 AC NORTHERN PARCEL)

**BUILDING AREA**  
 300,000 SF  
 PHASE 1: 300,000 SF  
 PHASE 2: 300,000 SF

**SETBACKS - BUILDING**  
 FRONT: 110' (2 RANGEL ROAD)  
 SIDE: 60'  
 REAR: 60' (35' R.R. R.O.W.)

**PARKING**  
 SIZE: 9' x 20'  
 REQUIRED: 460 SPACES  
 PROVIDED: 650 SPACES (0.94 SPACE/EMP.)  
 DETENTION: 16.5 ACRES (ASSUME 5' DEPTH)  
 (100-YEAR VOLUME)

**POTENTIAL WETLAND IMPACTS (18 AC MITIGATION)  
 DRAIN RELOCATION**



**LG CHEMICAL**  
**CITY OF ST CLAIR**  
**PROJECT NO.: 09001770**  
**DATE: SEPTEMBER 14, 2009**



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 TENNESSEE  
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Engineering  
 Surveying  
 Planning

Environmental  
 Ecological  
 Water Resources

**APPENDIX XII**

**Site Layout Plan**



**SITE SUMMARY**  
 SITE AREA: 188.5 ACRES (85.5 W/O VAN BORN)  
 BUILDING AREA: 500,000 SF.  
 PHASE 1: 300,000 SF.  
 PHASE 2: 200,000 SF.  
 SETBACKS - BUILDING  
 FRONT: 60' (BELLEVILLE RD 80' AT BUILDING HEIGHT OF 80')  
 REAR: 50' ONE/100' TOTAL  
 SIDE: 50'  
 PARKING  
 SIZE: 9.5' x 20'  
 REQUIRED: 1,360 SPACES (0.94 SPACE/EMP.)  
 PROVIDED: 1,480 SPACES  
 DETENTION: 16.5 ACRES (ASSUME 5' DEPTH) (100-YEAR VOLUME)  
 MCKINSTRY DRAIN VACATION  
 WETLAND IMPACTS



SCALE: 1" = 300'

LG CHEMICAL  
 VAN BUREN TOWNSHIP SITE - NORTH  
 PROJECT NO.: 09001770  
 DATE: SEPTEMBER 14, 2009

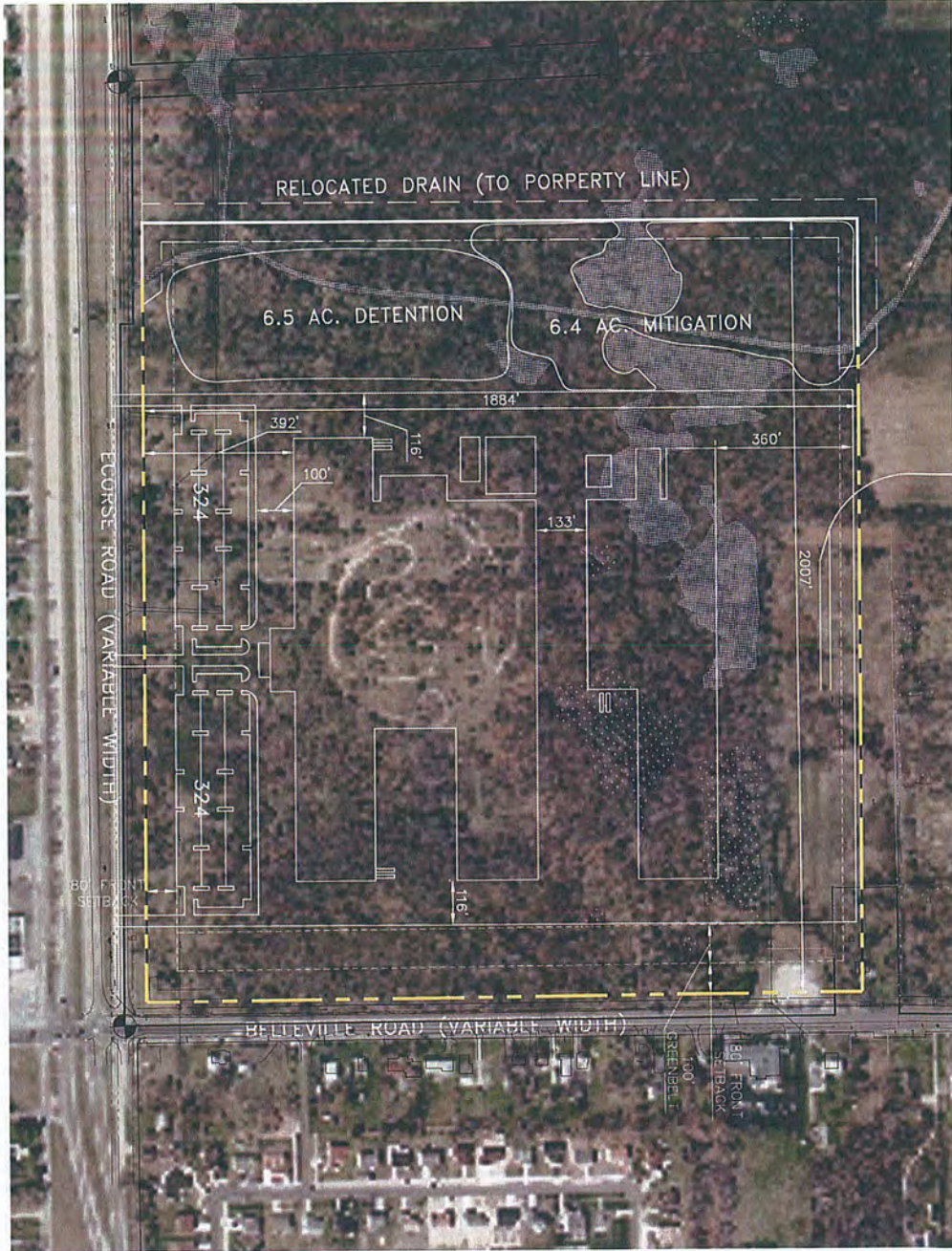


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 Engineering Surveying Planning  
 Environmental Ecological Water Resources




LG CHEMICAL  
 VAN BUREN TOWNSHIP SITE - SOUTH  
 PROJECT NO.: 09001770  
 DATE: SEPTEMBER 14, 2009

**SIT SUMMARY**  
 SITE AREA: 487 ACRES  
 BUILDING AREA: 500,000 SF.  
 PHASE 1: 300,000 SF.  
 PHASE 2: 200,000 SF.  
 SETBACKS - BUILDING  
 FRONT: 80' (BELLEVILLE RD/COURSE RD 80'  
 AT BUILDING HEIGHT OF 80')  
 SIDE: 50' ONE/100' TOTAL  
 REAR: 50'  
 PARKING  
 SIZE: 9.5' x 20'  
 REQUIRED: 1,360 SPACES (0.94 SPACE/EMP.)  
 PROVIDED: 648 SPACES (ASSUME 5' DEPTH)  
 DETENTION: 48.5 ACRES (ASSUME 5' DEPTH)  
 (100-YEAR VOLUME)  
 DRAIN RELOCATION  
 WETLAND IMPACTS (PHASE 2)



SCALE: 1" = 300'



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Engineering  
 Surveying  
 Planning  
 Environmental  
 Ecological  
 Water Resources



**APPENDIX XIII**

**State TES Letter  
and  
USFWS Allegan County List**



STATE OF MICHIGAN

JENNIFER M. GRANHOLM  
GOVERNOR

DEPARTMENT OF NATURAL RESOURCES  
LANSING

REBECCA A. HUMPHRIES  
DIRECTOR

January 22, 2010

Bourke Thomas  
Atwell, LLC  
Two Towne Square Suite 700  
Southfield MI 48076

RE: **LG Chem Holland 09001770**

Dear Bourke Thomas:

Thank you for using the Michigan DNR Endangered Species Assessment website. Based on the information you have provided, project activities may proceed. It has been determined that federal and state endangered, threatened, special concern species, exemplary natural plant communities, or unique natural features are **not known to occur** at or near the location specified:

Allegan County, T04N R15W Section 03.

The location of the request was checked against known localities for rare species and unique natural features, which are recorded in a statewide database. This continuously updated database is a comprehensive source of information on Michigan's endangered, threatened and special concern species, exemplary natural communities and other unique natural features. Records in the database indicate that a qualified observer has documented the presence of special natural features at a site. The absence of records may mean that a site has not been surveyed. Records may not always be up-to-date. In some cases, the only way to obtain a definitive statement on the presence of rare species is to have a competent biologist perform a field survey.

Michigan's endangered and threatened species are protected under Part 365 of the Natural Resources and Environmental Protection Act, Act 451 of the Michigan Public Acts of 1994. Federally listed species are protected under the United States Endangered Species Act of 1973. Special concern species, exemplary natural communities and other unique natural features are not legally protected by state or federal endangered species legislation, but they are considered to be rare and should be protected to prevent future listing.

Thank you for your advance coordination in addressing the protection of Michigan's natural resource heritage. Responses and correspondence can be sent to: Endangered Species Review, Michigan Department of Natural Resources, Wildlife Division - Natural Heritage Program, PO Box 30180, Lansing, MI 48909. If you have further questions, please call 517-373-1263 or e-mail [DNR-EndangeredSpecies@michigan.gov](mailto:DNR-EndangeredSpecies@michigan.gov).

NATURAL RESOURCES COMMISSION

Keith J. Charters-Chair \* Mary Brown \* Bob Garner \* Gerald Hall \* John Madigan \* Frank Wheatlake

STEVENS T. MASON BUILDING \* P.O. BOX 30028 \* LANSING, MICHIGAN 48909-7528

[www.michigan.gov](http://www.michigan.gov) \* (517)373-2329

## County Distribution of Michigan's Federally Threatened, Endangered, Proposed, and Candidate Species

For more information about threatened and endangered species in Michigan, contact the  
U.S. Fish & Wildlife Service office at 2651 Coolidge Road, Suite 101,  
East Lansing, Michigan 48823 (517/351-6274)

County	Species	Status	Habitat
Alcona	Kirtland's warbler ( <i>Dendroica kirtlandii</i> )	Endangered	Nests in young stands of jack pine
Alcona	Eastern massasauga ( <i>Sistrurus catenatus catenatus</i> )	Candidate	
Alcona	Pitcher's thistle ( <i>Cirsium pitcheri</i> )	Threatened	Stabilized dunes and blowout areas
Alger	Canada lynx ( <i>Lynx canadensis</i> )	Threatened	A Canada lynx was recently documented in the Upper Peninsula. The counties listed here have the highest potential for Lynx presence: Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon, Schoolcraft.
Alger	Gray wolf ( <i>Canis lupus</i> )	Endangered	Northern forested areas
Alger	Piping plover ( <i>Charadrius melodus</i> )	Endangered	Beaches along shorelines of the Great Lakes
Alger	Piping plover ( <i>Charadrius melodus</i> )	Critical Habitat Designated	
Alger	Pitcher's thistle ( <i>Cirsium pitcheri</i> )	Threatened	Stabilized dunes and blowout areas
Allegan	Indiana bat ( <i>Myotis sodalis</i> )	Endangered	Summer habitat includes small to medium river and stream corridors with well developed riparian woods; woodlots within 1 to 3 miles of small to medium rivers and streams; and upland forests. Caves and mines as hibernacula.
Allegan	Eastern massasauga ( <i>Sistrurus catenatus catenatus</i> )	Candidate	
Allegan	Karner blue butterfly ( <i>Lycaeides melissa samuelis</i> )	Endangered	Pine barrens and oak savannas on sandy soils and containing wild lupines ( <i>Lupinus perennis</i> ), the only known food plant of larvae.
Allegan	Pitcher's thistle ( <i>Cirsium pitcheri</i> )	Threatened	Stabilized dunes and blowout areas
Alpena	Piping plover ( <i>Charadrius melodus</i> )	Endangered	Beaches along shorelines of the Great Lakes
Alpena	Eastern massasauga ( <i>Sistrurus catenatus catenatus</i> )	Candidate	
Alpena	Hine's emerald dragonfly ( <i>Somatochlora hineana</i> )	Endangered	Spring fed wetlands, wet meadows and marshes; calcareous streams & associated wetlands overlying dolomite bedrock
Alpena	Dwarf lake iris ( <i>Iris lacustris</i> )	Threatened	Partially shaded sandy-gravelly soils on lakeshores
Alpena	Pitcher's thistle ( <i>Cirsium pitcheri</i> )	Threatened	Stabilized dunes and blowout areas

**APPENDIX XIV**

**Off-site Mitigation Plan**

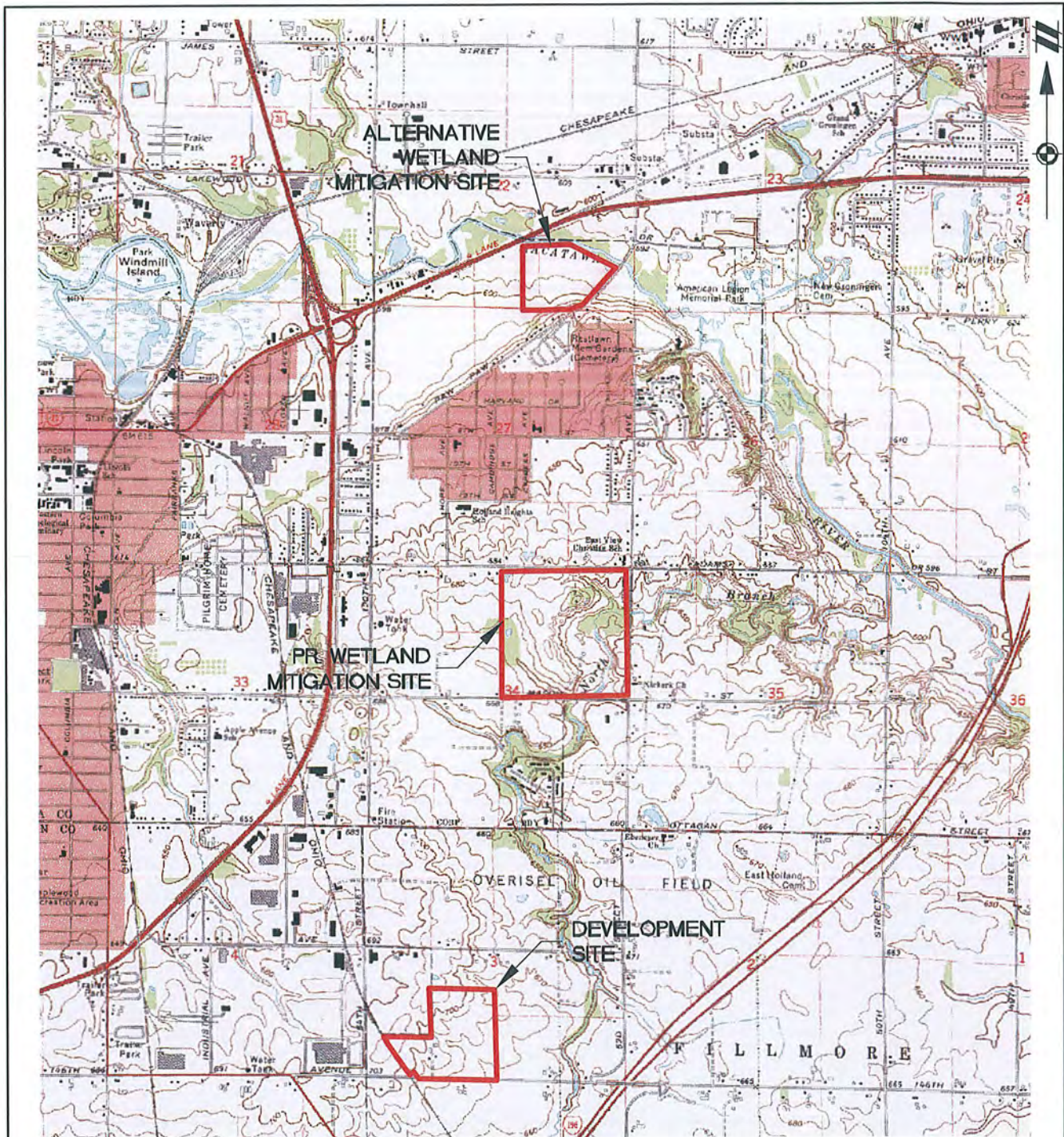




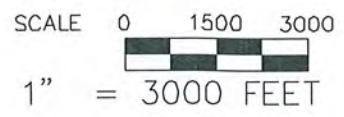
**APPENDIX XV**

**Site Location Map**





SITE LOCATION MAP  
CITY OF HOLLAND  
ALLEGAN & OTTAWA COUNTIES, MICHIGAN



**REFERENCE**  
USGS 7.5 MIN TOPOGRAPHIC QUADRANGLE  
HOLLAND EAST, MICHIGAN QUADRANGLE  
DATED: 1972, PHOTOREVISED: 1980

PROJECT: 09001770
DATE: JANUARY 11, 2010
DRAWN: FOD
CHECKED: BR
CAD FILE: 09001770EC-04



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