APPLYING FOR SEISMIC EXPLORATION UNDER GENERAL PERMIT Q

DEPARTMENT OF ENVIRONMENTAL QUALITY ♦ WATER RESOURCES DIVISION
www.michigan.gov/wetlands

Background

Seismic exploratory operations are reflection surveys that are typically non-intrusive and temporary in nature. The purpose of a seismic exploratory survey (survey) is to produce an image of the subsurface for a variety of studies ranging from subsurface mineral exploration to studies of fault age, orientation and distribution, ground water exploration and environmental studies. Surveys generally take place over large areas of land, frequently several square miles in size. The surveys that are typically processed under General Permit Category Q are conducted on foot utilizing backpack mounted or otherwise portable equipment with no construction or permanent disturbances in any wetland area. Holes are created with a 3-inch hand auger (up to 6 feet deep) to place source points that will create a seismic wave recorded by receivers placed on the surface of the ground. These survey holes are not placed within 175 feet of inland lakes or streams. No materials or debris are left on the lands over which the surveys are conducted.

This document is intended to assist with the application for, and processing of permits for seismic exploration activities under the General Permit for Survey Activities. It contains information on seismic exploratory survey operations that would be expected to cause no more than minimal impacts, and that can therefore be reviewed through an expedited permit application and review process. Also included is an example of a completed application for projects that meet the General Permit Category, including an example project description of seismic survey work that applicants can attach to their permit applications. This example is only a guide and should be modified as necessary to correctly convey the information specific to each project.

The General Permit Categories in the State of Michigan include the Survey Activities Category criteria as well as all General Permit categories, criteria, and conditions under Part 301, Inland Lakes and Streams; Part 303, Wetlands Protection; and Part 325, Great Lakes Submerged Lands, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).

Filling out the Joint Permit Application

A. Sections 1-9 on the Joint Permit Application are for project overview and summary information

1. Project Location Information
   For seismic surveys, the location of the area to be surveyed can encompass large areas and the survey areas are often not confined to discrete locations or properties. Thus, a project address, property tax identification number and latitude and longitude coordinates are not practical for describing the location of the survey. For this reason, a map depicting the areas to be surveyed that identifies the county; township; and sections, town and range numbers included in the survey area is adequate. The latitude and longitude central to the survey area can be provided.

2. Applicant and Agent Information
   This section of the application should include the name and address of the contractor for the project. The seismic contractor performing the work is typically the applicant for the project.

3. Project Description
   The applicant should indicate that the project is a seismic survey, and check the box identifying that the project is being applied for under a General Permit Category. The boxes indicating that the project is on or within 500 feet of an existing water body and/or a wetland, should be

checked. A written description of the activity and the sequence of methods should be provided. (See project description example attached.) The written description should specify that the "mini-hole seismic source technique" will be used within wetland areas to minimize impacts and that no lakes or streams will be impacted. The Seismic Exploratory Operations Survey General Permit Example Project Description document may be referred to and attached (or other project description) and any project-specific information should be included.

4. Project Purpose, Use, and Alternatives
   The applicant should indicate that the purpose of the project is for seismic surveying or geophysical exploration and refer to the Seismic Exploratory Operations Survey General Permit Example Project Description document (or other project description) and include any other project-specific information.

5. Locating Your Project Site
   As noted, for seismic surveys, the location of the area to be surveyed can encompass large areas and the survey areas are often not confined to discrete locations or properties. Because of this, a map depicting the boundaries for the proposed seismic exploration activities and identifying the sections, towns, and ranges in which the activities will be conducted is sufficient.

6. Easements and Other Permits
   As this information will not necessarily be known at the time of the permit application, a statement that all required property access consent will be obtained prior to any survey work. The issued permit should be conditioned with the following: "Applicants will obtain necessary consent for property access from parties who have the legal right to grant it prior to conducting the survey work. This permit does not authorize access to private property for this work without lawful permission."

7. Compliance
   The applicant should provide estimates of when activities will occur, and the duration of the activities. Unless any unpermitted seismic work affecting wetlands, lakes or streams was completed prior to applying for this permit, check no for all boxes.

8. Adjoining Property Owners
   Adjacent landowner information would not be required for projects qualifying under a General Permit Category.

9. Applicant's Certification
   The application must be signed by the applicant. In this case, the applicant is the contractor performing the work. An agent of the applicant may be designated, in which case an agent authorization letter must be attached.

B. Sections 10 and 12; required for activities that may impact wetlands

1. Section 10: This section is required for any activity proposed in wetlands, lakes, or streams. Since Seismic Exploratory Operations do not result in permanent measurable dredge or fill impacts, the "M. Other" box should be checked and a description of the activity added as previously done for other sections. The Seismic Exploratory Operations Survey General Permit Example Project Description document (or other project description) should be referred to and any other project-specific information included.

2. Section 12: This section is required for any activity proposed in wetlands. This section of the application requests specific information on whether a wetland assessment has been conducted, whether any grading or mechanized land clearing is proposed and the amount of fill or dredge materials proposed. Given the nature of seismic surveying, most of these should be checked "No". If the answer is unknown (e.g., Department of Environmental Quality Easement and purchase date information) it should be left blank and this information will be determined upon permit processing.

   The "other" box should be checked as the Proposed Activity with the description "Seismic Exploratory Operations GP Category Activities." "N/A" should be noted in the fill or dredge area, and a brief description of the activities under proposed wetland impacts should be provided. Again, to satisfy the project impact and avoidance and minimization sections the Seismic Exploratory Operations Survey General Permit Example Project Description document (or other project description) should be referred to and any other project-specific information included.

C. Staking or flagging the areas of seismic surveys for site inspection is not required.

D. Maps and Drawings.

1. Any maps or drawings submitted must be black and white, legible, reproducible, and sized to 8.5" x 11".

2. Vicinity maps to the proposed project location(s) showing streets, roads, intersections, highways, or cross-roads to the project are required to the extent necessary to adequately locate the project given the area covered by the seismic survey.

3. Project Site Plan: Given the nature of seismic surveying and the large areas it may cover, plat maps are sufficient showing the proposed location for the seismic survey.

E. Fee

Payment to the State of Michigan in the amount set forth in statute. Be sure to check for current fee information.

This publication is intended for guidance only and may be impacted by changes in legislation, rules, policies, and procedures adopted after the date of publication. Although this publication makes every effort to teach users how to meet applicable compliance obligations, use of this publication does not constitute the rendering of legal advice.

For information or assistance on this publication, please contact the Water Resources Division, through the DEQ Environmental Assistance Center at 800-662-9278. This publication is available in alternative formats upon request.

Seismic Exploratory Operations Survey General Permit

Example Permit Application

This document is intended to be used as a guide for seismic exploratory operations survey General Permit applicants and should be modified as necessary to correctly convey the information specific to each project However, modification to the Best Management Practices and other information described herein may result in the project not meeting the General Permit requirements.

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

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

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

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

Project Address (road, if no street address)	Zip Code	Municipality (Township/Village/City)	County
Survey Area: 6 square miles between Buchanan & Johnson Roads and 144th & 120th Avenues	***NA***	***Ferry, Twp***	***Oceana County***

Property Tax Identification Number(s)	Latitude	Township/Range/Section (TRS)
NA	***43.61*** N	T ***14N*** N or S; R ***16 W*** E or W;
Subdivision/Plat and Lot Number ***NA***	Longitude - ***86 22*** W	Sec***8,9,10,15,16&17*** OR Private Claim # _____

2 Applicant and Agent Information

Owner/Applicant (individual or corporate name)	Agent/Contractor (firm name and contact person)
Applicant: Seismic Contractor	***Agent: Permit Agent***
Mailing Address ***1492 Exploration Lane***	Mailing Address ***521 Permit Drive***
City ***Lansing*** State ***MI*** Zip Code ***48901***	City ***Allegan*** State ***MI*** Zip Code ***49010***
Contact Phone Number ***517-867-5309*** Fax ***517-867-5310***	Contact Phone Number ***269-867-5309*** Fax ***269-867-5310***
Email ***ssmith@exploration.com***	E-mail ***dsmith@permitagent.com***

☒ 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 property owners including the owner of the disposal site.

Property Owner's Name (If different from applicant) ***General Permit Category Q; Seismic Exploratory Operations***	Mailing Address ***Seismic Contractor, 1492 Exploration Lane***
Contact Phone Number ***517-867-5309***	City ***Lansing*** State ***MI*** Zip Code ***48901***

3 Project Description

Project Name ***2D or 3D Seismic Survey***	Preapplication File Number – – –P
Name of Water body ***N/A***	Date project staked/flagged ***N/A General Permit Category Q; Seismic Exploratory Operations***

The proposed project is on, within, or involves (check all that apply)

- ☐ an inland lake (5 acres or more)
- ☐ a pond (less than 5 acres)
- ☐ a stream, river, ditch or drain
- ☐ a legally established County Drain
  Date Drain was established
- ☐ a channel/canal
- ☒ 500 feet of an existing water body
- ☐ a Great Lake or Section 10 Waters
- ☒ a wetland
- ☐ a 100-year floodplain
- ☐ a dam
- ☐ a designated high risk erosion area
- ☐ a designated critical dune area
- ☐ a designated environmental area

Project Use

- ☒ private
- ☐ commercial
- ☐ public/government
- ☐ project is receiving federal/state transportation funds
- ☐ Wetland Restoration
- ☐ other

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

Written Summary of All Proposed Activities ***Seismic Exploratory Operations as defined by General Permit Category Q. No permanent fill or dredge will occur. Specifically, the seismic mini-hole source technique will be used for all source points located in regulated or non-regulated wetlands located in the project area. A source set back of 175 feet from a lake or stream will be adhered to, as required by the MDNR for these surveys. The survey is temporary and non-intusive in nature, man-portable equipment and hand cutting of vegetation in wetland areas will be used as neccesary to reduce the possibility of any rutting. Upon completion of the survey all pin flags, flagging and directional aids used by the crew will be removed. Please refer to the attached Seismic Exploratory Operations Survey General Permit Project Description for more details.***

Construction Sequence and Methods ***Please refer to the attached Seismic Exploratory Operations Survey General Permit Project Description for more details on the following sequencing of seismic survey activities proposed:***

The on-site work will consist of 5 distinct phases which may overlap depending on the size of the project.

1) Establishing the source and receiver locations. This is accomplished by traditional measuring techniques and is generally a non-regulated activity.

2) The drilling and loading of the source points operations. This activity is a regulated activity when it is performed in wetland areas.

3) The placement of temporary recording sensors, (geophones). This activity is normally unregulated when it is performed in wetlands, as long as the recording sensors are removed at the completion of the recording phase.

4) The recording of the Seismic Survey. This activity includes the detonation of Seismic mini-hole sources and the recording by the sensors of the reflected signal.

5) Clean up operations. This consists of the removal of all recording sensors, directional aids and flagging, and any other equipment associated with the work

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

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

This Seismic Exploratory Operation fits the General Permit Category Q. Please refer to the attached project description for project purpose, use and alternatives associated with this project.

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

Please refer to the attached project description for a description of the avoidance and minimization techniques utilized in seismic surveys.

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

Names of roads of closest intersection ***South 132nd Ave & East Pierce Road***

Directions from main intersection to the project site, with distances from the best and nearest visible landmark and water body ***7 miles due east of Shelby MI and 1 mile due north of Ferry MI.***

Description of buildings on the site *(color; 1 or 2 story, other)*	Description of adjacent landmarks or buildings *(address; color; etc)*
N/A	***N/A***

How can your site be identified if there is no visible address? ***Site location is : Sections 8, 9, 10 15,16 & 17, Ferry Twp. Oceana Co., MI, Please refer to attached project location map. Project area is approximately 6 square miles.***

6 Easements and Other Permits

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

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

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

Agency	Type of Approval	Number	Date Applied	Date approved /denied	Reason for denial
All legally required permissions will be obtained prior to start of work					

7 Compliance

If a permit is issued, when will the activity begin? (M/D/Y) ***Upon issuance of permit.***	Proposed completion date (M/D/Y) ***within 1 year of issuance of permit***

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

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

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

➡If Yes, list the permit numbers

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

➡ If Yes, attach explanation.

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

☐ Established Lake Board ☐ Lake Association	Contact Person ***N/A***	Mailing Address	City	State and Zip Code

List all adjoining property owners.

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

Property Owner's Name	Mailing Address	City	State and Zip Code
N/A			
N/A			

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 DEQ, USACE, and/or their agents or contractors to enter upon said property in order to inspect the proposed activity site before and during construction and after the completion of the project. I understand that I must obtain all other necessary local, county, state, or federal permits and that the granting of other permits by local, county, state, or federal agencies does not release me from the requirements of obtaining the permit requested herein before commencing the activity. I understand that the payment of the application fee does not guarantee the issuance of a permit.			
☐ Property Owner ☒ Agent/Contractor ☐ Corp. or Public Agency / Title	Printed Name ***Seismic Contractor***	Signature	Date

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

- Complete only those sections A through M applicable to your project.
- If your project impacts wetlands also complete Section 12. If your project impacts regulated floodplains also complete Section 13.
- To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27. Example: (25 ft long x 10 ft wide x 2 feet deep) / 27 = 18.5 cubic yards
- Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness.

➡Provide a black and white overall site plan, with cross-section and profile drawings. Show existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures, land change activities and soil erosion and sedimentation control measures. Review Appendix B and EZ Guides for aid in providing complete site-specific drawings.

➡Provide tables for multiple impact areas or multiple activities such as multiple fill areas or multiple culverts. Include your calculations.

Water Level Elevation

On inland waters ☐ NGVD 29 ☐ NAVD 88 ☐ other Observed water elevation (ft) date of observation (M/D/Y)

On a Great Lake ☐ IGLD 85 ☐ surveyed ☐ converted from observed still water elevation.

☐ A. PROJECTS REQUIRING FILL (See All Sample Drawings)

➡Attach a site plan and cross-section views to scale showing maximum and average fill dimensions with calculations.

➡ For multiple impact areas on a site provide a table with location, dimensions and volumes for each fill area.

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

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

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

Type of clean fill ☐ peastone % ☐ sand % ☐ gravel % ☐ other

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

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

- Refer to www.mi.gov/jointpermit for spoils disposal and authorization requirements.

➡Attach a site plan and cross-section views to scale showing maximum and average dredge or excavation dimensions with calculations.

➡For multiple impact areas on a site provide a table with location, dimensions and volumes for each dredge/excavation area.

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

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

Has this same area been previously dredged?	☐ No ☐ Yes	If Yes, provide date and permit number:
Will the previously dredged area be enlarged?	☐ No ☐ Yes	If Yes, when and how much?
Is long-term maintenance dredging planned?	☐ No ☐ Yes	If Yes, how often?

Dredge or Excavation Method ☐ Hydraulic ☐ Mechanical ☐ other

Spoils Disposal

Dredged or excavated spoils will be placed ☐ on-site ☐ landfill ☐ USACE confined disposal facility ☐ other upland off-site

For disposal, provide a ➡Detailed spoils disposal area location map and site plan with property lines.

➡Letter of authorization from property owner of spoils disposal site, if disposed off-site.

For volumes less than 5,000 cu yards, has proposed dredge material been tested for contaminants within the past 10 years?

☐ No ☐ Yes ➡If Yes, provide test results with a map of sampling locations.

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

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

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

☐ **D. SHORE PROTECTION PROJECTS** (See EZ Guides and Sample Drawings 2, 3, and 17. Complete Sections 10A, B, and/or C.)
➡ For bioengineering projects include the list of native plants/seeds, if available.

Type and length (ft) ☐ bioengineering (ft) ☐ revetment (ft) ☐ riprap (ft) ☐ seawall/bulkhead (ft)

Structure is ☐ new ☐ repair ☐ replacement of an existing structure | Will the existing structure be removed? ☐ No ☐ Yes

Proposed Toe Stone (linear feet) | Distance of project from adjacent property lines (ft)

Distance of project from an obvious fixed structure (example - 50 ft from SW corner of house)

For bioengineering projects indicate the structure type ☐ brush bundles ☐ coir log ☐ live stakes ☐ tree revetment ☐ other

☐ **E. DOCK - PIER – MOORING PILINGS** (See Sample Drawing 10)
➡ Attach a copy of the property legal description, mortgage survey, or a property boundary survey report.

Dock Type ☐ open pile ☐ filled ☐ crib ☐ floating ☐ cantilevered ☐ spring piles ☐ piling clusters ☐ other

Is the structure within the applicant's riparian area interest area? ☐ No ☐ Yes ➡ Show parcel property lines on the site plan.

Proposed structure dimensions (ft) length width | Use ☐ private ☐ public ☐ commercial

Dimensions of nearest adjacent structures (ft) length width | Distance of dock from adjacent property lines (ft)

☐ **F. BOAT WELL** (See EZ Guide. Complete Sections 10A and 10B)

Dimensions (ft) length width depth | Number of boats

Type of sidewall stabilization ☐ concrete ☐ riprap ☐ steel ☐ vinyl ☐ wood ☐ other

Volume of backfill behind sidewall stabilization (cu yd) | Distance of boat well from adjacent property lines (ft)

☐ **G. BOAT RAMP** (See EZ Guide. Complete sections 10A, 10B, and 10C for mattress and pavement fill, dredge, and riprap)

Type ☐ new ☐ existing ☐ maintenance/improvement | Use ☐ private ☐ public ☐ commercial

Existing overall boat ramp dimensions (ft)
length width depth | Type of construction material
☐ concrete ☐ wood ☐ stone ☐ other

Proposed overall ramp dimensions (ft)
length width depth | Proposed ramp dimensions (ft) below ordinary high water mark
length width depth

Number of proposed skid piers | Proposed skid pier dimensions (ft)
length width | Distance of ramp from adjacent property lines (ft)

☐ **H. BOAT HOIST – ROOFS** (See EZ Guide)

Type ☐ cradle ☐ side lifter ☐ other | Located on ☐ seawall ☐ dock ☐ bottomlands

Hoist dimensions, including catwalks (ft) length width

Area occupied, including cat walks (sq ft) | Distance of hoist from adjacent property lines (ft)

Permanent Roof ☐ No ☐ Yes
➡ If Yes, how is the roof supported? | Maximum Roof Dimensions (ft): length width height

☐ **I. BOARDWALKS and DECKS in WETLANDS or FLOODPLAINS** (See Sample Drawings 5 and 6. Complete Sections 12 and/or 13)
➡ Provide a table for multiple boardwalks and decks proposed in one project; include locations and dimensions.

Wetlands		Floodplains	
Boardwalk ☐ on pilings ☐ on fill Dimensions (ft) length width	Deck ☐ on pilings ☐ on fill Dimensions (ft) length width	Boardwalk ☐ on pilings ☐ on fill Dimensions (ft) length width	Deck ☐ on pilings ☐ on fill Dimensions (ft) length width

☐ **J. INTAKE PIPES** (See Sample Drawing 16) or **OUTLET PIPES** (See Sample Drawing 22)

If outlet pipe, discharge is to ☐ inland lake ☐ stream, drain or river ☐ overland flow ☐ Great Lake ☐ wetland ☐ other

Number of pipes | Pipe diameters and invert elevations | Does pipe discharge below the OHWM? ☐ No ☐ Yes
Is the water treated before discharge? ☐ No ☐ Yes

Type ☐ headwall ☐ end section ☐ other | Dimensions of headwall OR end section (ft)
length width height

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

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

Purpose of buoy ☐ mooring ☐ navigation ☐ scientific structures ☐ swimming ☐ other

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

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

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

☐ **L. FENCES**

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

Purpose of fence ☐ Airport ☐ Cervidae ☐ Livestock ☐ Residential ☐ Security ☐ Other

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

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

Structure description, dimensions and volumes. Complete Sections 10A-C as applicable. ***Seismic Exploratory Operations as defined by General Permit Category Q. No permanent fill or dredge will occur. Specifically, the seismic mini-hole source technique will be used for all source points located in regulated or non-regulated wetlands located in the project area. A source set back of 175 feet from a lake or stream will be adhered to, as required by the MDNR for these surveys. The survey is temporary and non-intusive in nature, man-portable equipment and hand cutting of vegetation in wetland areas will be used as neccesary to reduce the possibility of any rutting. Upon completion of the survey all pin flags, flagging and directional aids used by the crew will be removed. Please refer to the attached Seismic Exploratory Operations Survey General Permit Project Description for more details.***

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

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

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

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

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

Maximum dimensions (ft) length width depth	Maximum Area: ☐ acres ☐ sq ft

Has the there been a hydrologic study performed on the site?	☐ No ☐ Yes	➡ If Yes, provide a copy.
Has the DEQ conducted a wetland assessment for this parcel?	☐ No ☐ Yes	➡ If Yes, provide a copy or WIP number:
Has a professional wetland delineation been conducted for this parcel?	☐ No ☐ Yes	➡ If Yes, provide a copy with data sheets.

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

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

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

Has the DEQ conducted a wetland assessment for this parcel?	☒ No ☐ Yes	➡ If Yes, provide a copy or WIP number:
Has a professional wetland delineation been conducted for this parcel?	☒ No ☐ Yes	➡ If Yes, provide a copy with data sheets
Is there a recorded DEQ easement on the property?	☐ No ☐ Yes	➡ If Yes, provide the easement number ***unknown***
Did the applicant purchase the property before October 1, 1980?	☒ No ☐ Yes	➡ If Yes, provide documentation.
Is any grading or mechanized land clearing proposed?	☒ No ☐ Yes	➡ If Yes, label the locations on the site plan.
Has any of the proposed grading or mechanized land clearing been completed?	☒ No ☐ Yes	➡ If Yes, label the locations on the site plan

Proposed Activity			
	☐ boardwalk or deck (Section 10I)	☐ bridges and culverts (Section 14)	☐ designated environmental area
	☐ dewatering	☐ draining surface water	☐ driveway / road
	☐ fences (Section 10L)	☐ fill or dredge	☐ restoration
	☐ septic system	☐ stormwater discharge (Section 10J)	☒ other ***Seismic Exploratory Operations General Permit Category Q (No Fill or dredging performed)***

FILL	Dimensions maximum length (ft) ***See attached*** maximum width (ft) ***description***	Area ☐ acres ☐ sq ft ***NA***	Average depth (ft) ***NA***	Volume (cu yd) ***NA***
DREDGE	Dimensions maximum length (ft) ***See attached*** maximum width (ft) ***description***	Area ☐ acres ☐ sq ft ***NA***	Average depth (ft) ***NA***	Volume (cu yd) ***NA***

~~Spoils Disposal~~

~~Dredged or excavated spoils will be placed ☐ on-site ☐ landfill ☐ USACE confined disposal facility ☐ other upland off-site~~

~~For disposal, provide a ➡ Detailed spoils disposal area location map and site plan with property lines.~~

~~➡ Letter of authorization from property owner of spoils disposal site, if disposed off-site.~~

~~Septic System~~

~~The proposed project will be serviced by:~~
~~☐ public sewer ☐ private septic system~~
~~➡ Show system on plans.~~

~~If a private septic system is proposed, has an application for a permit been made to the County Health Department? ☐ No ☐ Yes~~
~~If Yes, has a permit been issued? ☐ No ☐ Yes ➡ Provide a copy of the permit.~~

Describe the wetland impacts, the proposed use or development, and the alternatives considered:

Seismic Exploratory Operations as defined by General Permit Category Q. No permanent fill or dredge will occur. Specifically, the seismic mini-hole source technique will be used for all source points located in regulated or non-regulated wetlands located in the project area. A source set back of 175 feet from a lake or stream will be adhered to, as required by the MDNR for these surveys. The survey is temporary and non-intusive in nature, man-portable equipment and hand cutting of vegetation in wetland areas will be used as neccesary to reduce the possibility of any rutting. Upon completion of the survey all pin flags, flagging and directional aids used by the crew will be removed. Please refer to the attached Seismic Exploratory Operations Survey General Permit Project Description for more details on the avoidance and minimization techniques employed for this seismic survey.

Does the project impact more than 1/3 acre of wetland? ☒ No ☐ Yes

➡ If Yes, submit a Mitigation Plan with the type and amount of mitigation proposed. For more information go to www.mi.gov/wetlands

Describe how impacts to waters of the United States will be avoided and minimized:

Refer to the attached Seismic Exploratory Operations Survey General Permit Project Description for details.

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

NA

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

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

Proposed Activity ☐ fill ☐ excavation or cut ☐ other	100-year floodplain elevation (ft) (if known) Datum ☐ NGVD 29 ☐ NAVD 88 ☐ other
Site is feet above ☐ ordinary high water mark (OHWM) OR ☐ observed water level. Date of observation (M/D/Y)	
Fill volume below the 100-year floodplain elevation (cu yds)	Compensating cut volume below the 100-year floodplain elevation (cu yds)

Buildings and/or Additions

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

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

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

Stream Information

The site has a high water elevation (ft) ☐ above or ☐ below the Reference Point of Date observed		
Reference datum used ☐ NGVD 29 ☐ NAVD 88 ☐ IGLD 85 (Great Lakes coastal areas) ☐ other		
Average stream width (ft) at the ordinary high water mark (OHWM) outside the influence of any ponding or scour holes around the structure	Upstream	
	Downstream	
Cross-sectional area of primary channel (sq ft) (See Sample Drawing 14C for more information)		
The width of the stream where the water begins to overflow its banks. Bankfull width (ft)		
The invert of the stream 100-feet from structure (ft)	Upstream	
	Downstream	
Is the existing culvert perched? ☐ No ☐ Yes If Yes, provide a profile of the channel bottom at the high and low points for a distance of 200 feet upstream and downstream of the culvert.		

	Complete this form for each bridge / culvert location.		Existing	Proposed
Bridge	Number of bridge spans			
	Bridge type (concrete box beam, concrete I-beam, timber, etc.)			
	Bridge span (length perpendicular to stream) (ft)			
	Bridge width (parallel to stream) (ft)			
	Bottom of bridge beam (ft)	Upstream		
		Downstream		
	Stream invert elevation at bridge (ft)	Upstream		
		Downstream		
	Bridge rise from bottom of beam to streambed (ft)			
Culvert	Number of culverts			
	Culvert type (arch, bottomless, box, circular, elliptical, etc.)			
	Culvert material (concrete, corrugated metal, plastic, etc.)			
	Culvert length (ft)			
	Culvert ☐ width ☐ diameter (ft)			
	Culvert height prior to any burying (ft)			
	Depth culvert will be buried (ft)			
	Elevation of culvert crown (ft)	Upstream		
		Downstream		
	Higher elevation of ☐ culvert invert OR ☐ streambed within culvert (ft)	Upstream		
		Downstream		
Complete for both Bridges and Culverts	Entrance design (mitered, projecting, wingwalls, etc.) Total structure waterway opening above streambed (sq ft)			
	Total structure waterway area below the 100-year elevation (sq ft) (if known)			
	Elevation of road grade at structure (ft)			
	Elevation of low point in road (ft)			
	Distance from low point of road to mid-point of bridge crossing (ft)			
	Length of approach fill from edge of bridge/culvert to existing grade (ft)			

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

Is Certification Language attached? ☐ No ☐ Yes

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

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

Stream Information	Water elevation (ft) datum ☐ NGVD 29 ☐ NAVD 88 ☐ IGLD 85 (Great Lakes coastal areas) ☐ other ➡ Show elevation on plans with description.
	Dimensions (ft) of existing stream/drain channel (ft) length width depth
	Existing channel average water depth in a normal year (ft)

Proposed Activity ☐ enclosure ☐ improvement ☐ maintenance ☐ new drain ☐ relocation ☐ wetlands ☐ other	
If an enclosed structure is proposed, check material type ☐ concrete ☐ corrugated metal ☐ plastic ☐ other	
Dimensions (ft) of the structure: diameter length	Volume of fill (cu yds)
Will old/enclosed stream channel be backfilled to top of bank grade? ☐ No ☐ Yes	
Length of channel to be abandoned (ft)	Volume of fill (cu yds)
Dimensions (ft) of improved, maintained, new, relocated or wetland stream/drain channel. length width depth	Volume of dredge/excavation (cu yds)
How will slopes and bottom be stabilized?	Proposed side slopes (vertical / horizontal)

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

16 Drawdown of an Impoundment

- If wetlands will be impacted, complete Section 12.

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

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

- For more information go to www.mi.gov/damsafety. If wetlands will be impacted, complete Section 12.
- Information on removing a dam is available at www.mi.gov/damsafety and following the Related Link –Dam Management.

➡➡Attach detailed signed and sealed engineering plans for a Part 315 dam repair, dam alteration, dam abandonment, or dam removal.
➡Part 315 Dam Safety application fees are added to all other application fees.
➡Mail applications for dams regulated under Part 315 to DEQ, WRD, P.O. BOX 30458, LANSING, MI 48909-7958, attention Dam Safety.

Proposed Activity ☐ abandonment ☐ alteration ☐ enlargement of an existing dam
☐ removal ☐ repair ☐ reconstruction of a failed dam
☐ new dam construction ☐ other

Dam ID Number, if known	Type of outlet discharge structure ☐ surface ☐ bottom ☐ mid-depth

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

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

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

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

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

Will a water diversion during construction be required? ☐ No ☐ Yes

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

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

For Part 315 regulated dams, the following must be attached:
➡ Site-specific conceptual plans of the dam for resource impact review (An engineering report and detailed engineering plans are not required until the project has been determined to be permitable).
➡ A description and evaluation of the loss of natural resources associated with the project.
➡ A description of the natural resources that are associated with or created by the impoundment and how they offset the natural resources lost by the creation of the impoundment.
➡ An assessment of all known existing and potential adverse effects within the scope of the project.

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

Have soil borings been taken at dam location?	☐ No ☐ Yes	➡ If Yes, attach results.
Do you have flowage rights to all proposed flooded property at the design flood elevation?	☐ No ☐ Yes	➡ If No, provide a letter of authorization from the property owner.

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

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

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

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

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

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

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

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

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

Proposed Marina Activity ☐ New construction ☐ Expansion ☐ Reconfiguration

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

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

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

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

Critical Dune Areas (See Sample Drawing 20)

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

High Risk Erosion Areas (See Sample Drawing 19)

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

Critical Dune Areas

Parcel dimensions (ft) width depth	Date project staked (M/D/Y)
Property is a ☐ platted lot ☐ unplatted parcel	Year current property boundaries created

Dune habitat present in Building Site and access route (check all that apply): ☐Wooded ☐Open Dune ☐Shrubs ☐Bare Sand ☐Lakefront Lot ☐MNFI Community if known:_____

Type of construction activities ☐ addition ☐ driveway ☐ garage ☐ new home ☐ renovation ☐ septic ☐ deck(s) ☐ other

☐ Provide a sand relocation plan with location and dimensions of disposal area. Indicate ☐ on-site OR ☐ off-site
If on-site show location and how the disposal site will be accessed on the plans. Indicate the depth of the disposed sand on the plans.

☐ Provide the permit or letter from the County Enforcing Agent stating the project complies with Part 91 (Soil Erosion and Sedimentation Control).

The proposed project will be serviced by ☐ public sewer ☐ private septic system.
➡ On the plans, show the location and dimensions of the private septic system.
If a private septic system is proposed, has a permit been issued by the health department? ☐ No ☐ Yes
➡ If Yes, provide a copy of the permit for all Critical Dune Area projects.

☐ Provide a copy of the vegetation assurance letter.
☐ Provide a re-vegetation plan, including #_____ of trees to be removed and #_____ of trees to be replanted.

Proposed Utility Installation	Proposed New Construction
Utility Installation Method ☐ directional bore ☐ plowing in ☐ open trench ☐ other	Foundation type ☐ basement ☐ concrete slab ☐ pilings ☐ crawl space ☐ other
➡Show utility locations and dimensions on the site plan.	Area of existing structure (sq ft)
➡Show construction access route on the site plan.	Area of proposed structure (sq ft)
➡Show existing and proposed grades on the cross-section.	Area of existing deck (sq ft)
➡Show locations of vegetation to be removed on the site plan.	Area of proposed deck (sq ft)

Provide the following information for special use projects:
(a) Lot size, width, density, and front and side setbacks.
(b) Storm water drainage that provides for disposal of drainage water without serious erosion.
(c) Methods for controlling erosion from wind and water.
(d) Re-stabilization plan.
(e) Environmental Impact Statement.

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

Project Description

Project Summary and Purpose

This seismic reflection survey is non-intrusive and temporary in nature. No exploratory trenching, dredging, excavation, placement of fill, or mechanized land clearing will take place as part of the operation. The purpose of this seismic exploratory survey (survey) is to produce an image of the subsurface for a specific purpose (*e.g.,* mineral exploration, scientific studies) by placing source points in the ground that will create a seismic wave to be recorded by acoustic sensors (receivers). Source holes for this project will not be placed within 175 feet of inland lakes or streams. In regulated wetlands located in the project area, the source holes will be placed utilizing man-portable equipment with no construction or permanent disturbances in any wetland areas, and the mini-hole technique will be used as the seismic source for this survey. The mini-hole seismic source technique specifically consists of a small cluster pattern of 2 to 5 holes per source point location; the holes are approximately 3 inches in diameter, a minimum of 5 feet deep and a maximum of 10 feet deep. A maximum seismic charge (pentolite or equivalent) of 220 grams will be placed in each hole. A reduced charge size will be used if specific site conditions warrant the reduction of charge size. Seismic charges are a special composition of explosives designed to burn with a constant velocity producing a controlled energy wave front that is directed downward and reflected by subsurface changes in density. The reflections from this wave front are what a seismic survey measures, with acoustic sensors (receivers), called geophones, which are placed elsewhere on the surface of the ground. An image of the subsurface is then calculated from these reflections, much in the way that a modern CAT scan is produced using energy from x-rays, except seismic reflection uses energy from acoustic waves. Since the purpose of the survey is to use acoustic energy to create a map of the subsurface, the source points are designed to direct downward the acoustic energy generated from the explosive source, resulting in no permanent disturbance or alteration of the ground surface. No materials or debris will be left after the survey is conducted.

Construction Sequence

The on-site work will consist of five distinct phases which may overlap depending on the size of the project. These phases are:

1) Establishing the source and receiver locations. This is accomplished by traditional measuring techniques and is generally a non-regulated activity.
2) The drilling and loading of the source points operations. This activity is a regulated activity when it is performed in wetland areas.
3) The placement of temporary recording sensors, (geophones). This activity is normally unregulated when it is performed in wetlands, as long as the recording sensors are removed at the completion of the recording phase.
4) The recording of the survey. This activity includes the detonation of seismic mini-hole sources and the recording by the sensors of the reflected signal.
5) Clean up operations. This consists of the removal of all recording sensors, directional aids and flagging, and any other equipment associated with the work

Avoidance and Minimization of Impacts: Layout of Survey Area and Construction Technologies

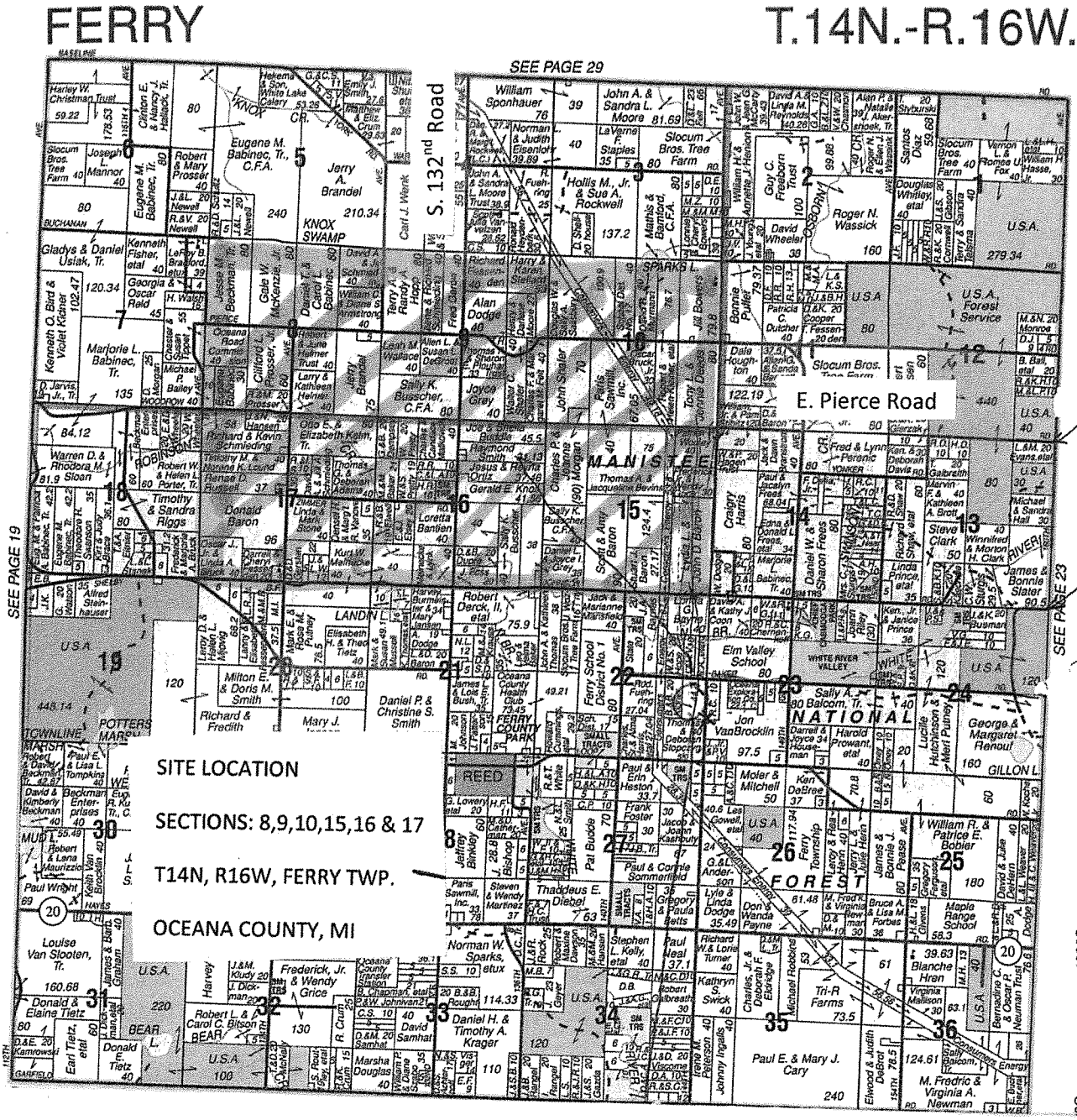
The survey process began by defining areas to be surveyed on a topography map and overlaying survey lines for placing the source point (mini-shot hole clusters) and receiver (geophone) locations. See attached map for the defined project area. Source point and receiver point *potential* locations are mapped out in a grid pattern across the defined survey area at regular station intervals without regard to any limiting features. During the preliminary station positioning portion of the work, the positioning survey crews will determine the *actual* shot-hole locations, and carry the necessary equipment to place the physical station locations on the ground (pin flags). The surveyors will identify a number of both man-made and natural hazards, (including wetlands), and adjust the physical location of the pin flags accordingly to conform with IAGC (International Association of Geophysical Contractors) standards, Michigan Department of Natural Resources (MDNR) requirements, and industry Best Management Practices. Specifically, the MDNR guidelines require that shot holes, (either mini-holes or conventional holes located in upland areas), must be placed 175 feet away from rivers, lakes and streams. Therefore, impacts to these features will be completely avoided. In addition to modifying source point locations based on natural features, Industry BMPs concerned with health and human safety; and the handling, use, and storage of explosives will be applied. These include inspection of the source locations to ensure applicable source separation from overhead utilities, underground utilities, natural features (lakes and streams), man-made features (sub stations, culverts and bridges), and occupied structures. Soil conditions at the specific source point location will also be evaluated during placement of source points, and a charge will be selected that is suited for the soil and drilling conditions when weighed against any hazards that may be in the proximity of the source point.

To minimize disturbance to natural resources, there will be minimal hand cutting of vegetation as necessary to establish a line of sight between stations, (hand cutting will be limited to vegetation less than two inches in size), and the mini-hole source technique will be used in wetland areas. The mini-hole source technique includes augering of source point holes with man-portable gas powered equipment that will result in no permanent disturbance to any wetland areas. Each mini-hole cluster pattern will consist of 2 to 5 holes utilizing an appropriate seismic charge, (pentolite or equivalent), that will be augered to a minimum depth of five feet using a 2 7/8 inch diameter solid stem auger attached to a man-portable, backpack-mounted, gas-powered engine. No drilling mud will be used. The volume of each hole is approximately 0.01 cubic yards. A single mini-hole pattern will equal approximately 0.05 cubic yards, or less, of total volume displaced depending on the number of holes in the pattern. A small seismic charge, suitable for the soil conditions (typically 220 grams, approximately 8 ounces or less), is then placed in each hole of the mini-hole pattern. The native soil from the augered holes is returned to each hole after the charge is placed.

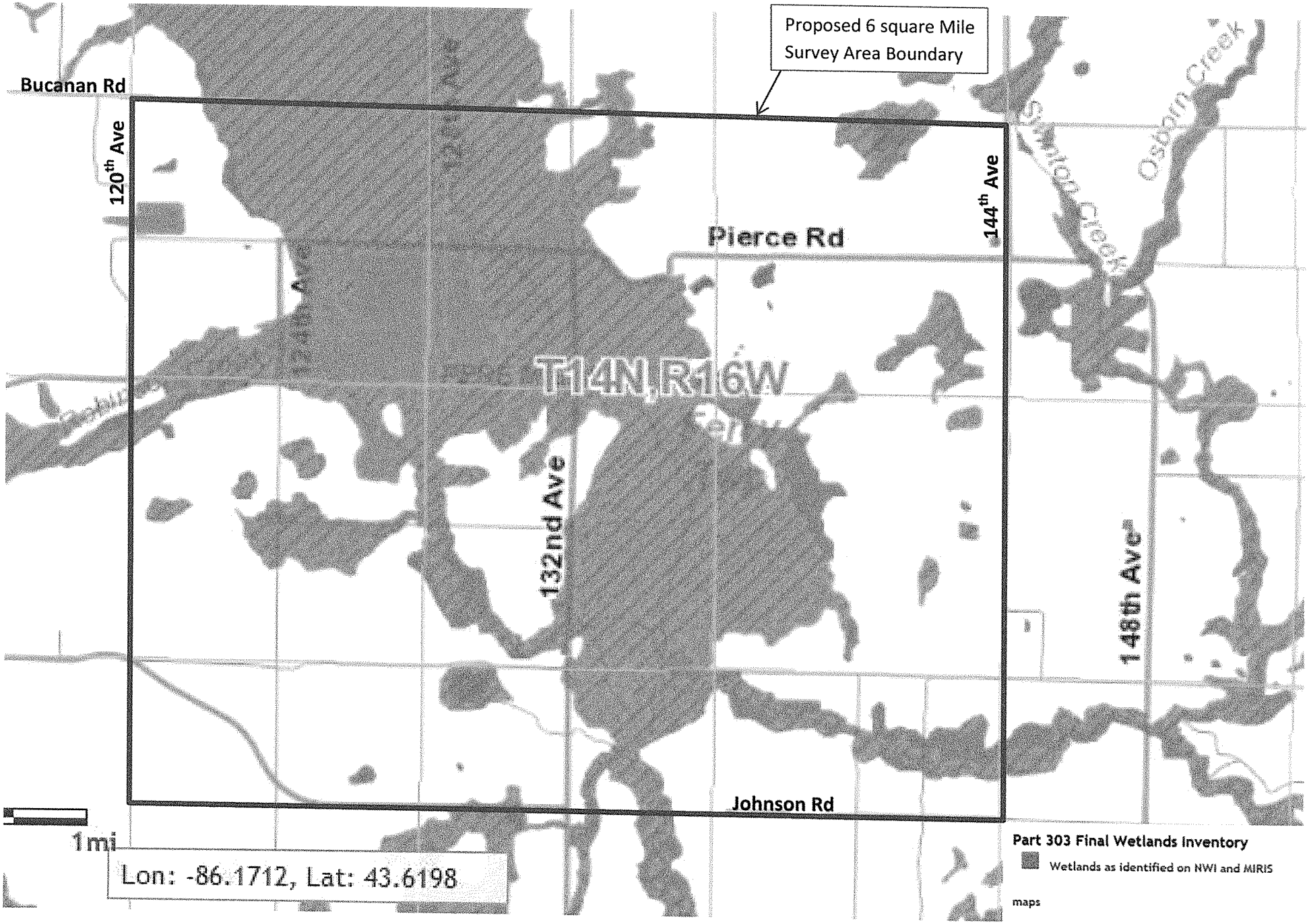
The mini-hole seismic source patterns, (which constitute the primary regulated activity), are designed to direct the energy from the source point detonation downward into the earth. This energy is then reflected back from the subsurface to produce the signal that the receivers measure. These signals are recorded and processed to produce an image of the subsurface that can extend down to a depth of 10,000 feet or more. It is very important that the energy from these seismic charges is well coupled with the earth so that energy can be reflected from the deeper rock interfaces.

Once the charges are placed for the entire survey, the operation of recording the data will begin. Receivers will be placed at each flagged location along the surveyed lines. The receivers will consist of a small plastic case about the size of a golf ball and will be placed in a regular grid pattern over the entire survey area both on dry land and in wetland areas. The receivers will be placed on the ground surface and connected by small wires and cables to the recording system. Individual source point locations (clusters of mini-holes) will be detonated one at a time followed by a brief recording time while the subsurface reflections are measured. The next source point will then be detonated and recorded, and thus the survey will progress over several days until the entire survey has been recorded. Typically approximately 800 receiver locations are actively recording for each individual source point. Depending on the extent of the area involved in the seismic testing, this part of the operation can take place over a time period of two weeks to six months for a larger survey. When the testing is completed, the wiring, equipment pin flags, and sensors are removed from the test area. The testing is of a limited, temporary duration.

Source point detonations are completed with the seismic survey crew in close proximity (within 100 feet) so as to immediately observe any deficiencies or abnormalities in the detonation. In seismic exploratory operations much cost and effort is expended in the drilling and loading of mini-hole patterns so as to create a proper downward source of energy. Any energy from a mini-hole pattern that is not directed downward into the earth is wasted energy and wasted expense. The term “blow out” refers to any unwanted surface soil movement causing a loss of energy; the term does not refer to soil actually blowing out of the shot point area that would create craters. From a data acquisition standpoint, the rare occurrence of a blowout generates noise compromising the data recorded on a seismic record. However, when blow outs (i.e., when the energy is not completely directed downward) occur it is usually caused by dry soil conditions, which is typically not encountered in wetland areas. In addition, suitable matching of seismic charge with an appropriate mini-hole depth will minimize or eliminate the occurrence of blow outs. Further, the moisture and elasticity of typical wetland soils also helps to minimize the occurrence of blow outs in wetland areas. If blowouts occur in wetlands that displace soil, they will be repaired with hand equipment, (shovels and rakes) immediately after detonation.



Survey grid lines will be located approximately 660 feet apart and run both North-South (sources) and East-West (receivers). No source point locations will be drilled within 175 feet of a lake or stream. Surveyors will field adjust the positions of source points to accommodate both man-made and natural hazards located in the survey area.



Seismic Exploratory Survey Operation Location Map
Part 303 Final Wetlands Inventory Map layer shown