



ERM

30% Erosion and Sediment Control Plan Narrative

KCE MI 4

PREPARED FOR
KCE MI 4, LLC

DATE
November 2025

REFERENCE
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DOCUMENT DETAILS

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ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
EGLE	Michigan Department of Environment, Great Lakes, and Energy
E&S	Erosion and Sediment
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
HSG	Hydrologic Soil Group
MW	Megawatt
NRCS	Natural Resources Conservation Service
PCSM	Post Construction Stormwater Management
POI	Point of Interest
RCE	Rock Construction Entrance
SESC	Soil Erosion and Sediment Control
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1. PROJECT IDENTIFICATION

1.1 GENERAL DESCRIPTION

This report presents a summary of post-construction stormwater management to be used for Special Land Use Permit Application support in Blendon Township for a proposed 100 Megawatt (MW) Battery Energy Storage System (BESS). The Project Area is located at 8284 88th Avenue in Ottawa County, Michigan (Tax Map ID: 70-13-08-300-022) and to be operated by KCE MI 4, LLC (KCE).

The Project Area is limited to a 11.9 acre limit of disturbance of a 40-acre private parcel with an off-site (but adjacent) connection to existing electrical infrastructure. The Van Buren substation is located immediately west of the Project Area (ID: 70-13-08-300-009), owned by Michigan Electric Transmission Co. A power corridor owned by Consumers Energy is located immediately south of the Project Area. Development of the Project will involve installation and operation of battery modules housed in containers, a small, dedicated substation, and associated support infrastructure (e.g., access roads, inverters).

The majority of the existing site is generally open space and woods. Access to the site is off of 88th Avenue via private drive.

1.2 RECEIVING WATERS AND FEMA MAP

The entire site ultimately drains to an unnamed tributary (UNT) to Bass River. During construction, erosion and sediment (E&S) control best management practices (BMPs), such as compost filter sock, temporary check dams, sediment traps, and rock construction entrance, shall be installed in order to reduce suspended solids released from the site.

The project area is not located within a floodplain on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM). The FEMA – FIRM with the project location is included in **Appendix B**.

1.3 SOILS IDENTIFICATION

Site soils information was extracted from the Custom Soil Resource Report for Ottawa County, Michigan, using the United States Department of Agriculture – Natural Resources Conservation Service (USDA – NRCS) website.

The soil classification and type located on the property are summarized in **Table 1**.

TABLE 1 SOIL CLASSIFICATION

Symbol	Series Name/Slope	HSG	Hydric?	Prime Farmland	Percent in Project Area
CrB	Croswell sand, 0 to 6 percent slopes	A	No	No	27.4%
PfabbB	Plainfield sand, lake plain, 0 to 6 percent slopes	A	No	No	66.1%
PpsaaA	Pipestone-Covert-Saugatuck sands, 0 to 3 percent slopes	A/D	No	No	6.5%

Source: USDA NRCS Custom Soil Resource Report for Ottawa County, Michigan

The approximate soil boundaries are shown on the Soils Map which is provided in **Appendix B**. The contractor should analyze the soils utilized during the construction process. Caution should be exercised in the areas of poor soils. A qualified geotechnical engineer should be consulted during construction when unsuitable conditions occur. The recommended foundation design based on the soil findings shall supersede the USDA soil limitations listed above. The contractor should ensure that soils are not cut steeper than the design slopes and that fills are compacted in accordance with the site geotechnical report. Immediate seeding and mulching of disturbed areas will aid in soil stabilization and reduce soil erosion once vegetation is established.

1.4 TOPOGRAPHIC FEATURES AND WATERSHED

The property is located east of 88th Avenue, approximately 0.35 miles north of the intersection with Polk Street Road and approximately 0.65 miles south of the intersection with Taylor Street. The property is located north of the city of Zeeland. All existing topographic information for the project area and immediate surrounding areas has been provided in the Plans Issued for Special Land Use Permitting. The existing site contains eleven subdrainage areas that drain to a point of interest (POI) offsite (POIs 1, 2, and 3) with an additional twelfth subdrainage area to be restored, refer to the 30% Post Construction Stormwater Management Plan and Report for drainage area maps showing POIs and sub drainage areas. All POIs ultimately drain to Bass River. During construction, E&S BMPs, such as compost filter sock, a sediment trap, temporary check dams, and rock construction entrances, shall be installed in order to reduce suspended solids released from the site.

1.5 PERMIT

This 30% Erosion and Sediment Control Plan provides supporting calculations for the KCE MI 4 Special Use Permit Application. Once the Special Land Use Permit Application has been approved, this report will be finalized and used to apply for the Soil Erosion and Sedimentation Control permit with Ottawa County.

1.6 DATES OF CONSTRUCTION

Construction dates of the project are to be determined at a later date.



1.7 PLAN PREPARERS

This plan was prepared under the direct supervision of Wayne T. Sicora, P.E., Principal Consultant at Environmental Resources Management, Incorporated, (ERM, Inc.). Mr. Sicora has previously prepared numerous Erosion and Sedimentation Control Plans for projects throughout Michigan.

1.8 PERSONS RESPONSIBLE FOR CONSTRUCTION

The general contractors responsible for this project are undetermined at time of submittal. It will be the responsibility of the Contractor to provide satisfactory soil erosion and sediment pollution controls and to interface with all regulatory bodies.

The Contractor is responsible for having an approved E&S control permit for any off-site borrow area locations if fill is necessary. If off-site disposal is required, disposal must occur in a landfill approved by the Michigan Department of Environment, Great Lakes, and Energy (EGLE). Proof of these permissions must be provided upon request.

The Contractor may submit an E&S Control plan of his or her own design. The plan must be submitted as part of the Soil Erosion and Sedimentation Control Permit application to Ottawa County for approval. In the event the Contractor chooses to develop his or her own plan, a copy of the approval must be submitted to the engineer prior to any earthmoving activities.

1.9 POTENTIAL THERMAL IMPACTS TO SURFACE WATERS

Thermal impacts from earth disturbance activity are minimized by different erosion and sediment control measures, such as compost filter sock, a sediment trap, and rock construction entrances. These erosion and sediment control measures will protect runoff from **overheating**.

2. DESCRIPTION OF EROSION AND SEDIMENT CONTROLS

The control measures shown on the drawings are the minimum controls necessary to protect off-site areas from sediment-laden runoff generated on the project site. Additional controls may be required depending on the process of construction and varying conditions encountered. The use of the term "Engineer" in this report shall also include any owner's representative or authorized inspector. The E&S Control measures incorporated into this report and drawings are in accordance with the Ottawa County Chapter Soil Erosion and Sedimentation Control Ordinance, as authorized Michigan's Part 91 Soil Erosion and Sedimentation Control of the Natural Resources and Environmental Protection Act, Act 451 of the Public Acts of 1994 as amended.

2.1 TEMPORARY STRUCTURAL PRACTICES

Rock Construction Entrance (50' long). In order to prevent the tracking of mud onto public roadways, a rock construction entrance (50' long minimum) shall be installed, with approval of the engineer, wherever the contractor shall establish a construction entrance from a public road. Anticipated RCE location is shown on the plan sheets. The contractor may deviate from the location shown on the plan, but must obtain prior approval from the property owner, engineer, and Ottawa County. Upon site stabilization, the entrance shall be removed along with any unsuitable material, and the area restored.



Compost Filter Sock - Compost filter sock sediment barriers will be installed in all the locations shown on the drawings to filter sediment-laden runoff from areas of sheet flow.

Pumped Water Filter Bag - Sediment laden water that collects during excavation shall be pumped into a sediment filter bag. The means and methods of construction by the contractor shall dictate the location and placement of this control, but the contractor must conform to the manufacturer's recommendations for use of this control.

Temporary Seeding - Place temporary seeding and mulch within 14 days on disturbed areas that shall not be reworked within 21 days. Refer to Section 2.3, Permanent and Temporary Vegetative Practices, in this Report for temporary seeding specifications.

Temporary Check Dams - Temporary check dams will be installed in all the location shown on the drawings to filter sediment-laden runoff and reduce erosive velocities from channels during construction.

Slope Stabilization Blanket - Place temporary erosion control blankets on all slopes 3H: 1V and greater.

Concrete Washout - Concrete washouts will be installed at the location on the erosion control plan and in accordance with the Plans Issued for Special Land Use Permitting detail. Concrete washouts must be used in areas in which concrete will be poured or otherwise formed on site, a suitable washout facility must be provided for the cleaning of chutes, mixers, and hoppers of the delivery vehicles unless such a facility will be used at the course of the concrete.

Dust Control - During construction activities, dust control shall be enforced to limit air borne dust particles within the site. Dust shall be controlled using water, or if necessary, chemical dust suppressants as per the Plans Issued for Special Land Use Permitting detail. The proposed dust control application rate and resulting dust shall be monitored and the application rate shall be adjusted, as required, to meet all regulations bound by this project.

Sediment Trap - A sediment trap shall be constructed at the location shown on the erosion control plan and in accordance with the Plans Issued for Special Land Use Permitting detail. A sediment removal stake shall be placed near the center of the trap. The stake shall indicate the elevation at which the sediment must be removed. The sediment trap shall be installed during construction of the project. Once construction activities are finished, the sediment basin shall be converted into an infiltration basin for post construction stormwater management; refer to the Plans Issued for Special Land Use Permitting for sequencing.

2.2 PERMANENT STRUCTURAL PRACTICES

Permanent Seeding - Place permanent seeding on all final graded areas that are not to receive pavement or other impervious treatment. Refer to the Plans Issued for Special Land Use Permitting for Permanent and Temporary Vegetative Practices and seeding specifications.

2.3 TEMPORARY AND PERMANENT VEGETATIVE PRACTICES

2.3.1 MATERIALS

Mulch – Mulch shall be applied to the site during or immediately after seeding. If straw mulch is used, it shall be small-grain straw applied at the rate of 2 tons per acre.

Erosion Control Mulch Blankets – Erosion control mulch blankets shall be as per the Plans Issued for Special Land Use Permitting detail and applied to areas where erosion potential is high or failure to establish vegetation is costly such as slopes greater than 3:1, constructed channels, or stream banks.

Seed Mixture – Use seed mixture bearing a guaranteed statement of analysis and composed of the stated varieties. Refer to the Plans Issued for Special Land Use Permitting for temporary seeding mixtures and application rates.

Seeding – Properly sow permanent seeding by providing a uniform distribution of seed and as described in the Plans Issued for Special Land Use Permitting. Apply seed at the rate specified within the Plans Issued for Special Land Use Permitting by the end of the work day in which final grade is achieved. Seed shall be applied uniformly with a cyclone spreader, drill, cultipacker seeder, or hydroseeder. When feasible, seed that has been broadcast shall be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used, the seed and fertilizer will be mixed on-site and the seeding shall be done immediately and without interruption.

Reseeding, Re-fertilization, and Re-mulching – Reseed, re-fertilize, and re-mulch any area that fails to establish a stand due to weather conditions or adverse soil conditions, as directed by the Engineer or Inspector.

Preparation of Seeding – Remove large rock or debris that will interfere with seeding operations. If the ground has become crusted, a disk or a harrow should be used to loosen the soil. A soil test is necessary to adequately predict the need for lime and fertilizer. Seedings that are expected to be long lasting (over 1-3 months), should have lime and fertilizer applied as recommended by a soil test.

2.3.2 PERMANENT SEEDING

Stabilize all areas which have been disturbed by construction by permanent seeding after achieving final grade at the end of each workday. A person shall complete permanent soil erosion control measures for all slopes, channels, ditches or any disturbed land area within 5 calendar days after final grading or the final earth change has been completed. If it is not possible to permanently stabilize a disturbed area after an earth change has been completed or if significant earth change activity ceases, then a person shall maintain temporary soil erosion and sediment control measures until permanent soil erosion control measures are in place and the area is stabilized. Straw mulch must be applied at rates previously mentioned in section 2.3.1. Refer to the Plans Issued for Special Land Use Permitting for permanent seed mix specifications.

2.3.3 TEMPORARY SEEDING

Immediately apply temporary seeding within 14 days to denuded areas which shall remain dormant for an excess of 21 days. Straw mulch must be applied at rates previously mentioned in section 2.3.1. Applications of temporary seeding shall include mulch which shall be applied during or immediately after seeding. Seedings made during optimum seeding dates on favorable very flat soil conditions may not need mulch to achieve adequate stabilization. Refer to the Plans Issued for Special Land Use Permitting for temporary seed mix specifications.

2.4 SUMMARY OF BEST MANAGEMENT PRACTICES (BMP'S)

As much as possible, the construction should be done during periods of dry weather. During the work for the site development, the measures described in this report shall be used as a minimum to control accelerated erosion.

The RCE(s) will be installed to prevent construction vehicles from tracking sediment and debris onto the adjacent public roadways.

Compost filter sock will be installed in all the locations shown on the drawings to filter sediment-laden runoff from disturbed areas that generate sheet flow. They are being used for boundary controls to protect adjacent roads and inlets from sediment.

Sediment traps shall be installed in location shown on the drawings to filter sediment-laden runoff from disturbed areas that generate sheet flow.

Any stormwater that is collected within excavated areas shall be pumped to sediment filter bags for removal of sediment. The contractor will determine the location and number of pumps required.

Slope fill operations away from the proposed embankment face (from the top of slope back towards the interior of the site). Pump accumulated water through pumped water filter bags.

Installation of the site BMPs shall be as specified in the sequencing of construction. The contractor shall maintain, improve and/or replace E&S controls as necessary to meet the requirements of this plan.

Remove temporary E&S control measures only when disturbed areas have been stabilized, as defined by a minimum of 70% growth density, based on a visual inspection. Restore areas around removed controls.

No earthmoving activities shall fall outside of the construction limits or limit of disturbance.

The contractor must retain records of maintenance logs and inspection reports for the E&S control measures at the site. The contractor shall comply with the maintenance schedule shown on plans and shall immediately rectify any non-compliance issues cited by inspection report(s).

3. SEQUENCING OF CONSTRUCTION

3.1 GENERAL

This construction sequence is intended to provide a general course of action during project construction to conform to applicable regulatory agency requirements for temporary and permanent soil erosion and sediment control. It shall be the responsibility of the contractor to comply with EGLE and all local, state, and federal regulations; including but not limited to, the manner, direction, location, and condition of the waste disposal site chosen by the contractor. All necessary parts for proper and complete execution of work pertaining to this plan, whether specifically mentioned or not, are to be performed by the contractor. It is not intended that the drawings and this report show every detailed material, installation, maintenance activity or piece of equipment. The contractor shall comply with all requirements listed in this section. The contractor may be required to alter controls based on effectiveness of controls or differing site conditions encountered. All disturbed areas that will lie dormant for over 21 days must be stabilized within 14 days of the date the area becomes inactive.

3.2 SEQUENCE OF CONSTRUCTION

The sediment trap shall be one of the first items of construction and must be stabilized prior to allowing any storm water to be discharged into it. All E&S controls are to be installed in accordance with this narrative and as shown on the E&S Control Plan in the Plans Issued for Special Land Use Permitting accompanying this report. Any additions, substitutions, or exceptions to the E&S Control Plan shall be approved by the Engineer. Please refer to the E&S Sequence of Construction on the Erosion and Sediment Pollution Control Notes Sheet of the Plans Issued for Special Land Use Permitting.

4. MAINTENANCE PROGRAM

The following maintenance program shall be implemented throughout the duration of the project.

- Maintain all temporary erosion and sediment control measures throughout the entire project period.
- Erosion and sediment control BMPs must be constructed, stabilized, and functional before site disturbance begins within the tributary areas of those BMPs.
- After final site stabilization has been achieved, temporary erosion and sediment control BMPs must be removed. Areas disturbed during removal of the BMPs must be stabilized within the respective BMP's maintenance time frame.
- Until the site is stabilized, all erosion and sediment control BMPs must be maintained properly. If erosion and sediment control BMPs fail to perform as expected, replacement BMPs, or modifications of those installed will be required.
- Erosion and sediment controls shall be inspected by the site superintendent or his/her representative a minimum of once weekly, unless otherwise noted, and within 24 hours after any storm event that results in discharge from the site. Any inadequacies, failures, maintenance issues noted during the inspection must be addressed by the end of day in which the inspection occurs.



- Vehicles and equipment must enter and exit the site via the RCE. Additional stone shall be added to the RCE as needed to maintain original dimensions. A stockpile of stone shall be maintained on site for this purpose. The contractor shall maintain the stone from the RCE as to not create a hazardous roadway condition on the adjoining roadway. Required maintenance shall be performed by the end of the work day.
- All site entrance and exit points shall be inspected for evidence of off-site tracking of mud. It is the Contractor's responsibility to clean streets of stone, mud and/or dust and take whatever steps are necessary to keep the streets in a clean and dust-free condition.
- Compost filter sock shall be checked to ensure functionality at all times. If the compost filter sock becomes damaged, they should be repaired or replaced as necessary. Sediment shall be removed from the base of the upslope side of the silt fence when accumulation has reached half of the effective height of the silt fence. Required maintenance shall be performed by the end of the work day.
- All slopes shall be checked for signs of erosion and/or sediment and repaired immediately, if necessary.
- All discharge locations shall be inspected to ascertain the effectiveness of the controls. Additional control measures shall be implemented as directed.
- The pumping rate to temporary pumped water filter bags shall be 750 GPM or half the maximum pumping rate recommended by the manufacturer, whichever is less. Pump intakes shall be floating and screened. A suitable means of accessing the bag with machinery required for disposal purposes must be provided. The bags shall be replaced when they become half full. Spare bags shall be kept available for replacement of those that have failed or are filled. Once the bag is half full of sediment, cut the bag open, dry trapped sediment within bag, and spread on site. Dispose of filter bag in dumpster. The pump discharge hose shall be inserted into the bags in the manner specified by the manufacturer and securely clamped. Filter bags shall be inspected daily. If any problem is detected, pumping shall cease immediately and not resume until the problem is corrected. All required maintenance shall be performed by the end of the work day.
- Sediment within sediment trap should be removed when it exceeds the volume provided in excavated area.
- The sediment trap embankment shall be inspected for signs of seepage, settlement or slumping. These problems should be repaired immediately.
- Sediment cleaned from the erosion control devices shall be disposed of by utilizing for site restoration activities or hauled to an approved disposal site.
- All topsoil stripped on this project shall be temporarily stockpiled and reused as part of the final grading requirements. Excess cut excavation shall be utilized on site when feasible or deposited of at an EGLE approved off-site location as determined by the Contractor.
- Seeded and vegetated areas shall be checked regularly to ensure a good stand is maintained. Areas shall be fertilized, reseeded, and watered as needed. If erosion gullies have formed in vegetated areas, measures such as diverting up-slope water will be taken to achieve and maintain a good stand.
- Erosion control mulch blankets shall be checked to insure they are intact with the ground surface. Seams shall be checked and pins/anchors shall be replaced or reinstalled if any part of the seam is loose, unconnected, or not securely driven into the ground.



- All preventative and remedial maintenance work, including clean out, repair, replacement, regrading, reseeding, re-mulching and re-netting must be performed by the end of the work day.
- The contractor shall maintain seeded/vegetated areas for a period of one year from substantial completion of the project in accordance with the project specifications.
- Remove temporary E&S control measures only when disturbed areas have been stabilized, defined by a minimum uniform 70% vegetative growth density. Restore areas around removed controls.
- Burning of site debris is not permitted. All other construction debris not to be reused shall be properly disposed of via dumpster and as per all federal, state and local regulations.
- The contractor shall maintain records of all inspections and associated maintenance/repair activities.

4.1 RECYCLING OR DISPOSAL OF MATERIAL FROM THE SITE

It shall be the responsibility of the contractor to comply with EGLE and applicable local, state, and federal regulations; including but not limited to, the manner, direction, location, and condition of the waste disposal site chosen by the contractor. The following guidelines shall be followed by the contractor.

- All miscellaneous construction wastes (excess soil material, broken castings, pieces of pipe, pallets, forms, packaging, etc.); unsuitable material; and garbage shall be hauled off the site and disposed of at an approved location in compliance with all local, state, and federal regulations.
- All offsite waste/borrow areas shall be approved by Ottawa County.
- Concrete wash out areas shall be limited to areas that are upstream of a BMP. Leftover concrete debris shall be removed from the site to an approved location.
- Existing demolished concrete/pavement shall be broken into sizes acceptable to fill specifications and used as necessary or hauled away to an approved location.
- All building materials and wastes shall be removed from the site and recycled or disposed of in accordance with state and local regulations. No building materials or wastes or unused building materials shall be burned, buried, dumped, or discharged at the site.

5. REFERENCES

Ottawa County Michigan. Soil Erosion Control Ordinance. <https://miottawa.org/wp-content/uploads/Ottawa-County-Soil-Erosion-Sedimentation-Control-Ordinance.pdf>

Michigan Department of Environment, Great Lakes, and Energy. 2017. *EGLE Nonpoint Source Best Management Practices Manual*.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed 06/25.



APPENDIX A

EGLE SESC CHECKLIST AND OTTAWA
COUNTY APPLICATION



MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
Part 91, Soil Erosion and Sedimentation Control Plan

Minimum Requirements

Project: _____

Rule 1703 Requirement	Included in Plan?*	Comments
Map with scale: 1" = 200' or less, or indication of exact distances between noted features on site plan, including site location sketch	Yes No <input type="checkbox"/> <input type="checkbox"/>	
Legal description of property (town, range, section, quarter-quarter section)	Yes No <input type="checkbox"/> <input type="checkbox"/>	
Proximity of any proposed earth change to lakes and/or streams	Yes No <input type="checkbox"/> <input type="checkbox"/>	
Predominant land features	Yes No <input type="checkbox"/> <input type="checkbox"/>	
Slope description or contour intervals	Yes No <input type="checkbox"/> <input type="checkbox"/>	
Soils survey or written description of the soil types of the proposed exposed land area	Yes No <input type="checkbox"/> <input type="checkbox"/>	
Description and location of the physical limits of each proposed earth change	Yes No <input type="checkbox"/> <input type="checkbox"/>	
Description and location of all existing and proposed on-site drainage and dewatering facilities	Yes No <input type="checkbox"/> <input type="checkbox"/>	
Timing and sequence of each proposed earth change	Yes No <input type="checkbox"/> <input type="checkbox"/>	
Location and description for installing and removing all temporary SESC measures	Yes No <input type="checkbox"/> <input type="checkbox"/>	
Description and location of all proposed permanent SESC measures	Yes No <input type="checkbox"/> <input type="checkbox"/>	
Maintenance program for all permanent SESC measures and designation of person responsible for maintenance	Yes No <input type="checkbox"/> <input type="checkbox"/>	

***If no is checked above, the plan must be revised to include the missing element prior to submittal/approval.**

Other Comments:

If you need this information in an alternate format, contact EGLE-Accessibility@Michigan.gov or call 800-662-9278.

EGLE does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetic information, or sexual orientation in the administration of any of its programs or activities, and prohibits intimidation and retaliation, as required by applicable laws and regulations. Questions or concerns should be directed to the Nondiscrimination Compliance Coordinator at EGLE-NondiscriminationCC@Michigan.gov or 517-249-0906.

This form and its contents are subject to the Freedom of Information Act and may be released to the public.



County of Ottawa

Soil Erosion & Sediment Control Agency

Jon Braxmaier
Erosion Control Agent

12220 Fillmore Rm. 141 West Olive, MI 49460

Phone (616) 994-4528
Fax (616) 994-4529

APPLICATION FOR SOIL EROSION & SEDIMENTATION CONTROL PERMIT (Part 91, of Act 451, of 1994, as amended)

A Soil Erosion & Sedimentation Control permit is required for all earth changes that disturb one or more acres of land, or that are within 500 feet of a lake, stream or county drain.

Your application and soil erosion and sedimentation control plan will be reviewed by this office, a site inspection will be made and if no additional information is needed a permit will be issued. **Review of application and soil erosion and sedimentation control plan can take up to 30 days upon receipt of completed application. No earthwork shall commence prior to obtaining a Soil Erosion & Sedimentation Control Permit from this office. Projects starting without a permit may be subject to appropriate fines and civil penalties.**

Form must be completed in its entirety. A permit will not be issued until all information required for both application and plan are received by this office, along with applicable fees.

If you have any questions or are in need of assistance in filling out the application, please call this office at (616) 994-4528.

Please make check payable to: **OTTAWA COUNTY SESC**

Mail or drop off all necessary information to:

**SESC
Water Resources Commissioner's Office
12220 Fillmore Rm. 141
West Olive, MI 49460**

SESC Plan Requirements

****All permit applications MUST contain the following information,****
**** or they will be returned to the applicant.****

OTTAWA COUNTY SOIL EROSION & SEDIMENTATION CONTROL PERMIT APPLICATION

PROPOSED EARTH CHANGE/CIRCLE Residential Commercial Multi Family Subdivision Industrial Sand Mining School Other

Detailed Project Description 100 MW/400 MWh Battery energy storage facility

PROPERTY Tax ID/Parcel # 70-13-08-300-022 **City/Village/Twp** Blendon Township **Sec #** _____

(CIRCLE ONE)

Address 8284 88th Avenue **Subdivision** _____ **Lot** _____

LANDOWNER

Name / Company _____ **Contact Person:** _____

Address _____ **City** _____ **State** ____ **Zip** _____

Phone () _____ **Fax** () _____ **Mobile** () _____ **E-Mail** _____

"ON-SITE" PERSON RESPONSIBLE FOR EARTH CHANGE

Company KCE MI 4, LLC **Contact Person:** Brian Madigan

Address 25 Monroe Street, Suite 300 **City** Albany **State** NY **Zip** 12210

Phone (518) 903-4187 **Fax** () _____ **Mobile** () _____ **E-Mail** brian.madigan@keycaptureenergy.com

CONTRACTOR

Company TBD **Contact Person:** _____

Address _____ **City** _____ **State** ____ **Zip** _____

Phone () _____ **Fax** () _____ **Mobile** () _____ **E-Mail** _____

ENGINEER

Company Environmental Resources Management, Inc. **Contact Person:** Wayne Sicora

Address 222 South 9th Street, Suite 2900 **City** Minneapolis **State** MN **Zip** 55402

Phone (612) 597-4574 **Fax** () _____ **Mobile** () _____ **E-Mail** wayne.sicora@erm.com

¶ SIZE OF EARTH CHANGE

Total site (lot) size, in acres 40 **Total size of disturbance** _____ acres sq ft (CHECK ONE)

¶ LOCATION OF NEAREST WATER FEATURE

Distance to nearest water feature / feet _____ **Name and/or Type of water feature** _____

¶ SOIL INFORMATION

Types of soils being disturbed on site: A soils

(Derived from) Soil Survey **Soil Borings** _____ **Other** _____

¶ SITE STABILIZATION

Permanent Stabilization Will Be Achieved By:

Lawn/Landscaping Pavement/Gravel Woodchips Other: _____

SOIL EROSION & SEDIMENTATION CONTROL PLAN (See the Plan Checklist for required info.)

Prepared by: _____
 Company: ERM Contact Person: Wayne Sicora Phone (612) 597-4574

EARTH CHANGE DESCRIPTION

Additional Earth Change Information (CHECK YES OR NO)

- Is the earth-moving activity five or more acres in size with a direct discharge of storm water to a lake, stream or wetland? Yes No If yes, an NPDES permit may be required from EGLE storm water unit @ (616) 356-0217.
- Will work be occurring near or in an inland, lake, stream, floodplain or wetland? Yes No If yes, permit(s) may be required from EGLE, (616) 356-0500.
- Will de-watering occur? Yes No If yes, supply a plan indicating method i.e. sock tile or well point and where discharge will be.
- Will designated county drain be affected? Yes No If yes, contact the Ottawa County Water Resources Commissioner's Office.

CONSTRUCTION SCHEDULE

Proposed Start Date: _____ Proposed Completion Date: _____

Construction/SESC Measure Installation Sequence	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PERFORMANCE GUARANTEE (required for projects where 10 or more acres are being disturbed)

This may also be required for sites under 10 acres at the discretion of the enforcing agent.

Performance Guarantee (\$1,000.00 per acre of disturbed area) \$ 16,500

Performance Guarantee may be in the form of a bond, letter of credit, or a surety check.
 Contact our office for a standard bond or letter of credit form if needed.

SIGNATURE

I, the Landowner, hereby certify that the above information is accurate to the best of my knowledge, I (we) will conduct the previously described earth change in accordance with Part 91, of Act 451, of 1994, formerly Act 347, and agree to conform to all applicable laws/requirements of the State of Michigan and Ottawa County.

Landowner Signature _____ Print Name _____ Date _____

**** LANDOWNER SIGNATURE REQUIRED ON THIS APPLICATION FORM. ****

IF LANDOWNER CHOOSES TO USE A DESIGNATED AGENT, A WRITTEN STATEMENT FROM LANDOWNER IS REQUIRED, AUTHORIZING THE AGENT TO SECURE PERMIT IN LANDOWNER'S NAME.

THIS AUTHORIZATION MUST BE SUBMITTED WITH APPLICATION, AND MUST INCLUDE ALL CONTACT INFORMATION FOR THE DESIGNATED AGENT.



APPENDIX B SOIL MAP AND FIRM MAP



United States
Department of
Agriculture

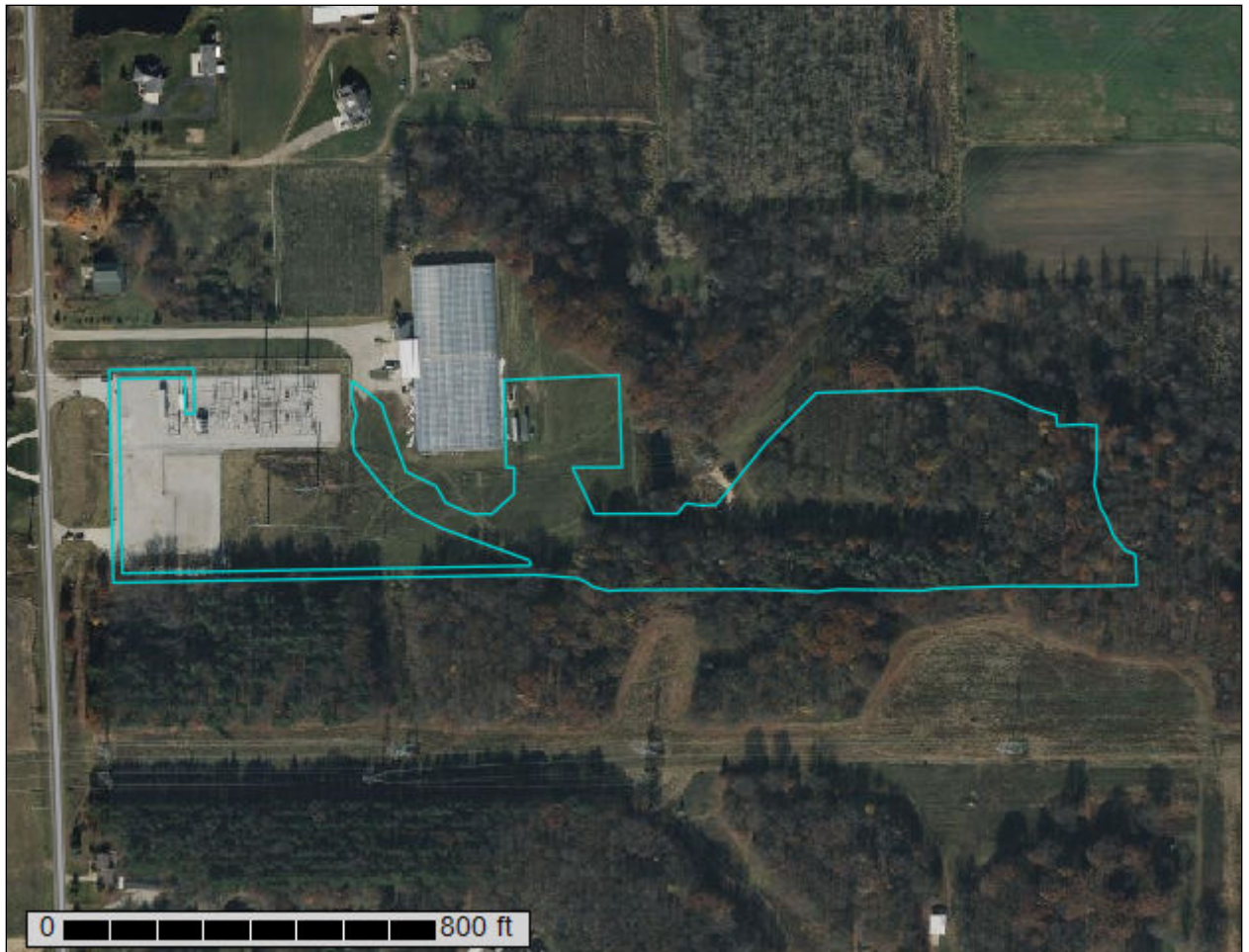
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Ottawa County, Michigan

Limit of Disturbance



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

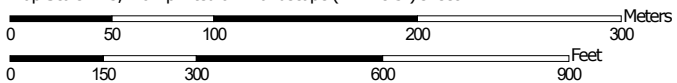
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




Map Scale: 1:3,710 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

 Streams and Canals

Transportation

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

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ottawa County, Michigan
 Survey Area Data: Version 19, Aug 28, 2024

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

Date(s) aerial images were photographed: Oct 4, 2022—Nov 7, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CrB	Croswell sand, 0 to 6 percent slopes	3.3	27.4%
Pf1abB	Plainfield sand, lake plain, 0 to 6 percent slopes	7.9	66.1%
PpsaaA	Pipestone-Covert-Saugatuck sands, 0 to 3 percent slopes	0.8	6.5%
Totals for Area of Interest		11.9	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

Custom Soil Resource Report

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Ottawa County, Michigan

CrB—Croswell sand, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 6ggq
Elevation: 600 to 1,000 feet
Mean annual precipitation: 30 to 36 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 140 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

Croswell and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Croswell

Setting

Landform: Outwash plains, lake plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy lacustrine deposits

Typical profile

H1 - 0 to 2 inches: sand
H2 - 2 to 8 inches: sand
H3 - 8 to 14 inches: sand
H4 - 14 to 24 inches: sand
H5 - 24 to 60 inches: sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: F097XA006MI - Moist Acidic Sandy Flatwoods
Hydric soil rating: No

Minor Components

Au gres

Percent of map unit: 5 percent

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Landform: Outwash plains, lake plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F097XA006MI - Moist Acidic Sandy Flatwoods
Hydric soil rating: No

Rubicon

Percent of map unit: 5 percent
Landform: Lake plains, outwash plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F097XA004MI - Dry Sandy Lake Plain
Hydric soil rating: No

PlfabB—Plainfield sand, lake plain, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2w4kc
Elevation: 580 to 750 feet
Mean annual precipitation: 30 to 41 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Plainfield, lake plain, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Plainfield, Lake Plain

Setting

Landform: Nearshore zones (relict)
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve, head slope, nose slope, side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Sandy glaciolacustrine deposits

Typical profile

A - 0 to 8 inches: sand
Bw - 8 to 27 inches: sand
BC - 27 to 35 inches: sand
C - 35 to 80 inches: sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches

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Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 0.1 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: F097XA004MI - Dry Sandy Lake Plain
Hydric soil rating: No

Minor Components

Brems

Percent of map unit: 8 percent
Landform: Nearshore zones (relict)
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F097XA006MI - Moist Acidic Sandy Flatwoods
Hydric soil rating: No

Kaleva

Percent of map unit: 4 percent
Landform: Nearshore zones (relict)
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Interfluve, head slope, nose slope, side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F097XA004MI - Dry Sandy Lake Plain
Hydric soil rating: No

Brethren

Percent of map unit: 2 percent
Landform: Nearshore zones (relict)
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F097XA006MI - Moist Acidic Sandy Flatwoods
Hydric soil rating: No

Spinks

Percent of map unit: 1 percent
Landform: Nearshore zones (relict)
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, head slope, nose slope, side slope

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Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F097XA004MI - Dry Sandy Lake Plain
Hydric soil rating: No

PpsaaA—Pipestone-Covert-Saugatuck sands, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2rfgv
Elevation: 580 to 780 feet
Mean annual precipitation: 33 to 36 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 129 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Pipestone and similar soils: 50 percent
Covert and similar soils: 20 percent
Saugatuck and similar soils: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pipestone

Setting

Landform: Outwash plains, nearshore zones (relict)
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciolacustrine deposits

Typical profile

A - 0 to 2 inches: sand
E - 2 to 4 inches: sand
Bs1 - 4 to 13 inches: sand
Bs2 - 13 to 19 inches: sand
BC - 19 to 28 inches: fine sand
C - 28 to 80 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.56 to 14.17 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

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Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: A/D

Ecological site: F097XA006MI - Moist Acidic Sandy Flatwoods

Hydric soil rating: No

Description of Covert

Setting

Landform: Outwash plains, nearshore zones (relict)

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Talf, rise

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy glaciolacustrine deposits

Typical profile

A - 0 to 8 inches: sand

E - 8 to 13 inches: sand

Bs1 - 13 to 18 inches: fine sand

Bs2 - 18 to 29 inches: sand

BC - 29 to 47 inches: fine sand

C - 47 to 80 inches: sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.56 to 14.17 in/hr)

Depth to water table: About 18 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: A/D

Ecological site: F097XA006MI - Moist Acidic Sandy Flatwoods

Hydric soil rating: No

Description of Saugatuck

Setting

Landform: Nearshore zones (relict), outwash plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy glaciolacustrine deposits

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

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A - 1 to 8 inches: sand
E - 8 to 13 inches: fine sand
Bhsm - 13 to 17 inches: sand
Bs - 17 to 20 inches: fine sand
BC - 20 to 32 inches: fine sand
C - 32 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 6 to 21 inches to ortstein
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.14 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F097XA006MI - Moist Acidic Sandy Flatwoods
Hydric soil rating: No

Minor Components

Kingsville

Percent of map unit: 10 percent
Landform: Nearshore zones (relict), outwash plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F097XA008MI - Wet Sandy Flatwoods
Hydric soil rating: Yes

Antung

Percent of map unit: 2 percent
Landform: Outwash plains, nearshore zones (relict)
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F097XA030MI - Mucky Depression
Hydric soil rating: Yes

Jebavy

Percent of map unit: 2 percent
Landform: Outwash plains, nearshore zones (relict)
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F097XA007MI - Wet Acidic Sandy Flatwoods
Hydric soil rating: Yes

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Plainfield, high ecological site

Percent of map unit: 1 percent

Landform: Dunes, outwash plains, beach ridges

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: F097XA004MI - Dry Sandy Lake Plain

Hydric soil rating: No

References

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FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

	Without Base Flood Elevation (BFE) Zone A, V, A99
	With BFE or Depth Zone AE, AO, AH, VE, AR
	Regulatory Floodway
	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	Future Conditions 1% Annual Chance Flood Hazard Zone X
	Area with Reduced Flood Risk due to Levee See Notes Zone X
	Area with Flood Risk due to Levee Zone D
	NO SCREEN Area of Minimal Flood Hazard Zone X
	Effective LOMRs
	Area of Undetermined Flood Hazard Zone D
	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
	20.2 Cross Sections with 1% Annual Chance
	17.5 Water Surface Elevation
	8 Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-6627) or visit the FEMA Flood Map Service Center website at <https://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

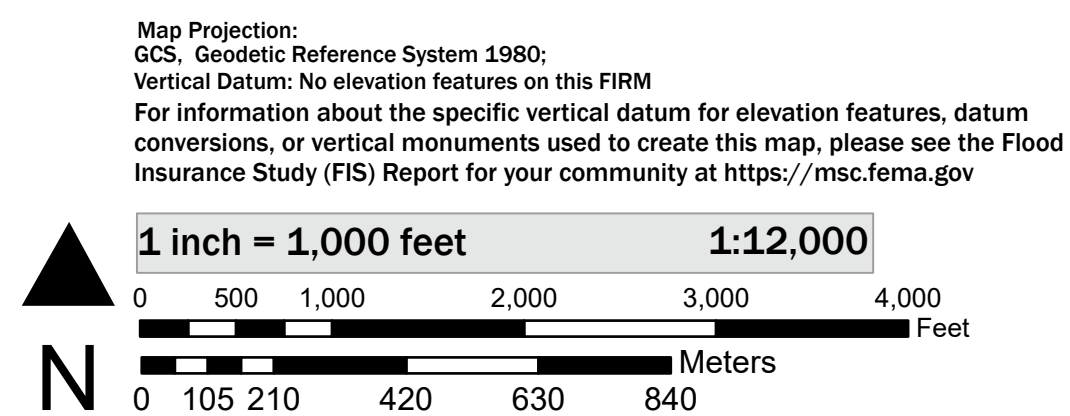
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by USDA, Farm Service Agency (FSA). This information was derived from NAIP, dated April 11, 2018.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 11/21/2025 2:19 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at <https://www.fema.gov/media-library/assets/documents/118418>

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE



NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP

PANEL 240 OF 356

Panel Contains:	NUMBER	PANEL
COMMUNITY	261005	0240
TOWNSHIP OF BLENDON		

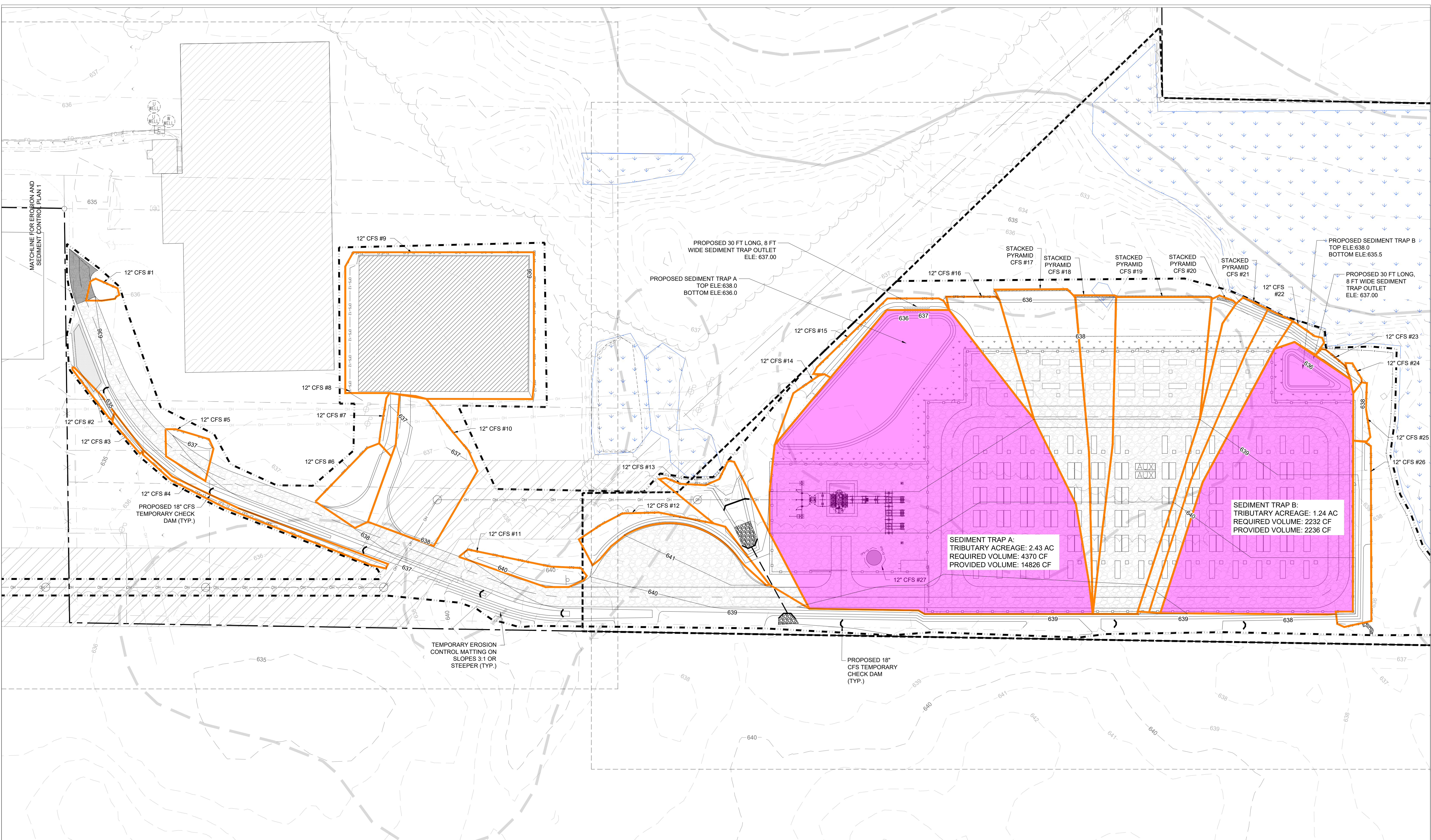




APPENDIX C

CALCULATIONS AND SUPPORTING
DOCUMENTATION

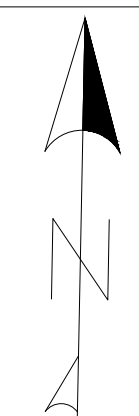
FILE PATH: C:\Users\carla.johnson\Documents\OneDrive - ERM\Key Capture Energy\KCE - KCE MI 4 (0701043)\Project Work\Engineering\CAD\Working Files\30% Plans\19-21 KCE MI 4 ESC Plan_moving CFS DMS - PRINTED ON 7/20/2025 BY Carla Johnson



LEGEND
 CFS DRAINAGE AREA
 SEDIMENT TRAP DRAINAGE AREA

**30% CIVIL PLANS:
NOT FOR CONSTRUCTION**

- HYDROLOGIC SOIL GROUP:**
- AmB (A/D)
 - CaradA (A/D)
 - CrB (A)
 - Gm (A/D)
 - PflabB (A)
 - PpsaaA (A/D)



NOTE: CONTRACTOR TO UTILIZE OPEN SPACE DURING CONSTRUCTION FOR SOIL STOCKPILES. LOCAL CONTROLS TO BE PLACED AROUND STOCKPILES.

SCALE 1"=50'

Rev.	Date	Description	By	Chk

PREPARED FOR:

 KCE MI 4, LLC
 25 MONROE STREET, SUITE 300
 ALBANY, NY 12210
 TEL: 518-903-4187



EROSION AND SEDIMENT CONTROL DRAINAGE AREAS			
DISCIPLINE NO.	EX	REV.	0
KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN			
SCALE	1" = 50'	DESIGNED BY	CJ, LF
DATE DRAWN	11/26/2025	DRAWN BY	LF
PROJECT NUMBER		0780143	
Environmental Resources Management, Inc.			

KCE MI 4				
CFS #	CFS Diameter (in.)	CFS Length (ft)	Slope (%)	Slope Length(ft)
1	12	41	0.5	25
2	12	80	1	10
3	12	56	1	10
4	12	327	1	10
5	12	63	2	42
6	12	107	2	45
7	12	55	3	18
8	12	176	1	100
9	12	415	0.5	184
10	12	120	0.8	150
11	12	165	2	25
12	12	187	0.8	26
13	12	104	3	197
14	12	50	4	25
15	12	197	5	10
16	12	72	1.5	166
17	12*	95	1.5	395
18	12*	52	1	386
19	24*	125	1	395
20	12*	25	2	150
21	12*	80	2	394
22	12	48	9	45
23	12	40	25	11
24	12	34	9	32
25	12	79	6	17
26	12	257	15	20
*Pyramid sock due to drainage area size				



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