Michigan
Sensitive Areas
Identification System

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Soil Water Conservation Society Workshop

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SAIS Overview - Purpose

• Quick vulnerability assessment of risks such as soil erosion by wind or water and leaching of nutrients

• Not intended to replace conservation planning work

• Goal: Connect producers with NRCS and conservation organizations to address sensitive areas through conservation treatments and available assistance programs
System Overview - Development

• Developed by the MSU Institute of Water Research in collaboration with NRCS State Office staff

• Met with farmers
  – Completed user needs assessment
  – Showed users an early version of the tool
SAIS Overview - System Workflow

1. Address search or pan with mouse
2. Click “Draw Field” and outline field with mouse
3. Answer question prompt
4. View Report

*You can also skip the questions, with the system making assumptions
Map Layers

- Waterbodies and Streams
- Concentrated Flow
- Sediment Delivery
- Nitrate Leaching
- Soil Erosion by Wind
- Sheet/Rill Erosion by Water
Manure Application Risk Index (MARI)

Uses 12 specific field features to obtain an overall rating for each site:

- Soil Hydrologic Group (A)
- Soil Management Group (A)
- Percent Slope (A)
- Nitrogen Leaching Index for Soil Hydrologic Group (A)
- Surface Water Setback (A)
- Concentrated Water Flow or Surface Inlet Discharge (A/Q)
- Soil Test P Value (Q)
- Residue/Cover Crops or Perennial Cover (Q)
- Vegetative Buffer Width (Q)
- Manure P₂O₅ Application Rate (Q)
- Manure N Application Rate (Q)
- Manure Application Method (Q)

A = automatically gathered data
Q = user supplied data
Michigan Phosphorus Risk Assessment (MPRA)

Uses 9 specific field features to obtain an overall rating for each site:

- Water Erosion (A)
- Runoff Curve Number (A)
- Distance to surface water and/or surface inlets (A)
- Subsurface drainage (Q)
- Buffers (Q)
- Soil Test P (Q)
- P fertilizer method (Q)
- Manure method (Q)
- \(P_2O_5\) rate all sources (Q)

A = automatically gathered data
Q = user supplied data
Demo

http://sais.iwr.msu.edu
Accessing SAIS Menu
Creating an Account

Instructions:
1. Find your field of interest using the map search bar.
2. Select "Draw Field" and outline your field boundary.
3. Select an option:
   - Continue exploring the map
   - Generate a basic report
   - Answer questions to generate a detailed report
4. Review and save your report.

Layer Toggle:
- Waterbodies
- Streams
- Concentrated Flow
- Sediment Delivery
- Sheet and Rill Erosion by Water
- Nitrate Leaching
- Soil Erosion by Wind

Legend:
- Waterbodies
  - Lake/Pond
  - Reservoir
- Streams
  - Canal/Ditch
  - Stream/River

Account Management Options:
- Create Account
- Reset Password
- Delete Account
Creating an Account
Logging in
Step 1: Locate field
Step 1: Locate field
Step 2: Draw Field
Step 2: Draw Field
Step 2: Draw Field
Step 3: Answer questions (optional)
Step 3: Answer questions

Is there subsurface drainage (tile drainage) in the area?

Yes

No

Back
Step 3: Answer questions

1. Is there subsurface drainage (tile drainage) in the area?

2. Are there any surface inlets, catch basins, risers in the field(s)?

3. Are there any vegetated buffers between the field(s) and nearby surface water (ditch, drain, stream, lake, etc.)?
   • Describe your vegetative buffer.

4. Do you have recent (less than 3 years old) soil test results for the field(s)?
   • What phosphorus levels were found?

5. Was fertilizer being applied to the selected farm field(s)?
   • How and when was fertilizer applied to the farm field(s)?
   • What amount of fertilizer was applied to the farm field(s)?

6. Was manure applied to the selected farm field(s)?
   • What was the rate of phosphorus \( (P^2O^5) \) applied with manure?
   • What was the rate of nitrogen (N) applied with manure?

7. Do you leave any crop residue on the soil surface after all pre-plant tillage operations have been completed?
Step 4: Generate Report – Field Name
Step 4: Generate Report – Save Results
Step 4: Generate Report
Step 4: Generate Report
Step 4: Generate Report - Summary

Michigan Sensitive Areas Identification System

Report Name: New Field

Report Summary
The Michigan Sensitive Areas Identification System has conducted an analysis of the field you selected. Results are based upon the field's physical characteristics (e.g., soils, slope) and any answers you provided in the questionnaire. After reviewing this report, it is recommended that you contact your local NRCS Field Office and further pursue the recommended practices presented to you in this report.

Location Summary
County Name: Grant
Township, Range, & Section: 16N 03W 25
Watershed Name: Brady Creek/Elad River

Township Name: Newark
Area: 216.6 acres

Identified Risks
Water Erosion, Concentrated Flow, Wind Erosion, Manure Runoff, Phosphorus Runoff

Michigan Phosphorus Risk Assessment
Assessed value: 39

Explanation:
Risk of phosphorus leaving the field is HIGH. There is a “high” potential risk of effuse phosphorus movement, and no manure or fertilizer phosphorus should be applied to the field. (An exception to fertilizer phosphorus application when receiving a “high” risk is allowed under MSU Extension Bulletin E2994, when starter phosphorus is applied to field corn.)

Manure Application Risk Index
Assessed value: 43

Explanation:
MEDIUM potential for manure movement from the field. The chance of organic material and nutrients getting to surface water is likely. Buffers, setbacks, lower manure rates, cover crops, crop residues, etc. in combination may reduce impact. These fields have limited potential for winter spreading and only a partial area of the field may be acceptable.

Hydrologic Soil Groups Breakdown
C: 79.0%  B: 2.2%  BD: 18.7%

Explanation:
Soils are classified into hydrologic soils groups (HSG’s) to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. An “A” HSG indicates sand, loamy sand, or sandy loam. A “B” HSG indicates silt loam or loam. A “C” HSG indicates sandy clay loam. Finally, a “D” HSG indicates clay loam, silty clay loam, sandy clay, silty clay, or clay. If there is a slash between two HSG, this represents “drained”/“undrained”.
Step 4: Generate Report – Recommended Practices

<table>
<thead>
<tr>
<th>Water Erosion</th>
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<tbody>
<tr>
<td>Conservation Crop Rotation</td>
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<tr>
<td>Residue and Tillage Management, No-Till</td>
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<tr>
<td>Cover Crop</td>
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<tr>
<td>Critical Area Planting</td>
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<tr>
<td>Residue and Tillage Management, Reduced Till</td>
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<tr>
<td>Filter Strip</td>
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<tr>
<td>Vegetated Treatment Area</td>
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<tr>
<td>Water and Sediment Control Basin</td>
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</tbody>
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<tr>
<th>Concentrated Flow</th>
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<tr>
<td>Residue and Tillage Management, No-Till</td>
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<tr>
<td>Critical Area Planting</td>
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<tr>
<td>Residue and Tillage Management, Reduced Till</td>
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<tr>
<td>Grasped Waterway</td>
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<th>Wind Erosion</th>
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<td>Residue and Tillage Management, No-Till</td>
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<td>Critical Area Planting</td>
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<td>Residue and Tillage Management, Reduced Till</td>
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<tr>
<th>Manure Runoff</th>
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<td>Agrichemical Handling Facility *</td>
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<td>Waste Storage Facility *</td>
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<td>Filter Strip</td>
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<td>Nutrient Management</td>
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<td>Vegetated Treatment Area</td>
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<th>Phosphorus Runoff</th>
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</tbody>
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NRCS Service Center Contact Information

Recommended Service Center:

Ithaca NRCS Service Center
301 Commerce Road
Ithaca, Michigan 48847
989-975-3900

Alternative Service Center:

St. Johns NRCS Service Center
2343 N. Highway US-27
St. Johns, Michigan 48879
989-224-3720

Client Gateway:

Conservation Client Gateway is a secure online web application that gives landowners and land managers the ability to track their payments, report completed practices, request conservation assistance, and electronically sign documents anytime, anywhere. Conservation Client Gateway provides users the flexibility to determine when they want to engage with NRCS online and when they prefer in-person conservation planning assistance.

Please visit www.nrcs.usda.gov/clientgateway for more information.
Step 4: Generate Report - Maps

Wind Erosion Sensitivity

USGS Topographic Map

SSURGO Soil Map Units
Step 4: Generate Report - Maps
Step 4: Generate Report – Practice Descriptions

Practice Descriptions

Water and Sediment Control Basin: This practice improves the porosity of sloping land, reduces erosion, traps sediment, reduces and manages runoff, and improves water quality. Water and sediment control basins are constructed across small drainageways where they intercept runoff. The runoff is detained in the basin where sediment is allowed to settle out. The runoff is slowly released through an outlet. Generally, the structure uses an underdrain outlet to carry the runoff in a pipe to a receiving stream or ditch. This practice is applied where the topography is generally irregular or undulating, and water concentrates and causes gullies to form. Therefore, contour farming, strip cropping, terraces, and other practices that involve farming on the contour may not be suitable on fields where this practice is used. Operation and maintenance includes conducting periodic inspections, prompt repair or replacement of any damaged components, removal of accumulated sediment, and regular maintenance of inlets and outlets.

Vegetated Treatment Area: This practice consists of an area of permanent vegetation used for agricultural wastewater treatment from livestock holding areas. Vegetated treatment areas are designed to improve water quality by reducing the loading of nutrients, organics, pathogens, and other contaminants associated with animal manure, other wastes, and wastewater. More than one treatment strip may be needed. Permanent herbaceous vegetation, consisting of a single species or a mixture of grasses, legumes, and/or other forbs adapted to the soil and climate, is established in the treatment strip. The vegetated treatment area must receive regular maintenance for it to operate as planned.
Step 4: Generate Report – Responses to Questions

**Question and Answer Summary:**

1. Is there subsurface drainage (tile drainage) in the area?
   - Answer: Yes
2. Are there any surface inlets, catch basins, risers in the field?
   - Answer: Yes
3. Are there any vegetated buffers between the field and nearby surface water (ditch, drain, stream, lake, etc.)?
   - Answer: No
4. Do you have recent (less than 3 years old) soil test results for the field?
   - Answer: Yes
   - 75 - 149 ppm (150 - 298 lbs/acre)
5. Is fertilizer being applied to the selected farm field?
   - Answer: Yes
   - Surface applied and incorporated 8 - 15 days before planting
   - 3 year phosphorus crop removal application
6. Was manure applied to the selected farm field?
   - Answer: Yes
   - Incorporate manure 8 - 30 days after application
   - 61 - 99 lbs/acre of phosphorus
   - 61- to 130 lbs/acre of nitrogen
7. Do you leave any crop residue on the soil surface after all pre-plant tillage operations have been completed?
   - Answer: No
Accessing Reports and Data from the Menu
Accessing Reports – From “Saved Reports”
Updating Field Information
Concentrated Flow from the Field
Stay Connected

Try it out and learn more at http://sais.iwr.msu.edu

Questions? Contact:

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