CREP Prioritization: Mapping Sediment Loading Risk in the Western Lake Erie Basin

Background

Michigan State University Extension (MSUE) is collaborating with the State of Michigan and local stakeholders to re-establish the Conservation Reserve Enhancement Program (CREP) in Michigan. To aid in prioritizing lands eligible for CREP enrollment, the Institute of Water Research (IWR) at MSU developed township-scale maps of sediment loading risk for the Michigan portion of the western Lake Erie basin. This book organizes those maps at the township scale.

Data -

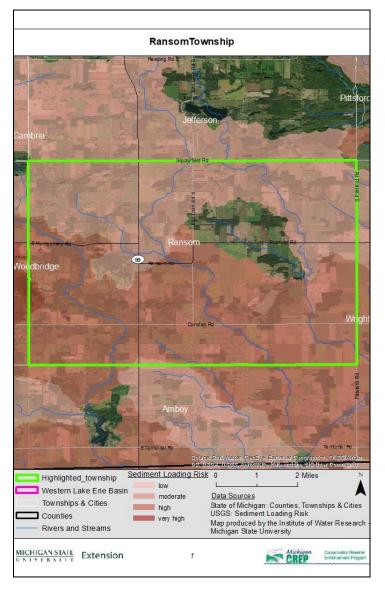
The maps are based upon data from the United States Geological Survey's (USGS) SPAtially Referenced Regression On Watershed attributes (SPARROW) model*. The model uses observations, land use characteristics, and statistical relationships, among other variables, to estimate pollutant loads to streams and rivers. The data in this map book represents incremental sediment load contribution for each small catchment in the basin (see image at right), i.e. the amount of sediment load that originated in a particular area (not the total, accumulated amount moving through the stream in that area).

Contacts

Please direct questions about MSUE's project to: **Sarah Fronczak**Environmental Management Educator
Michigan State University Extension
froncza3@msu.edu

Please use the URL below to learn more about the SPARROW model, and direct questions about the maps to: **Glenn O'Neil**

Environmental Scientist Institute of Water Research - Michigan State University oneilg@msu.edu



^{*} https://www.sciencebase.gov/catalog/item/5cbf5150e4b09b8c0b700df3



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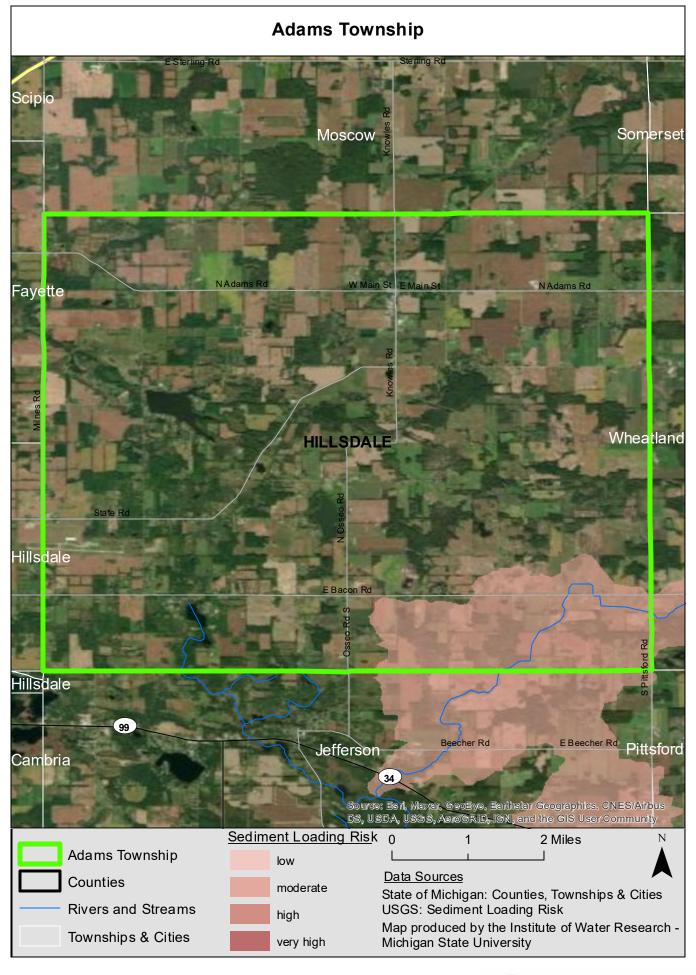
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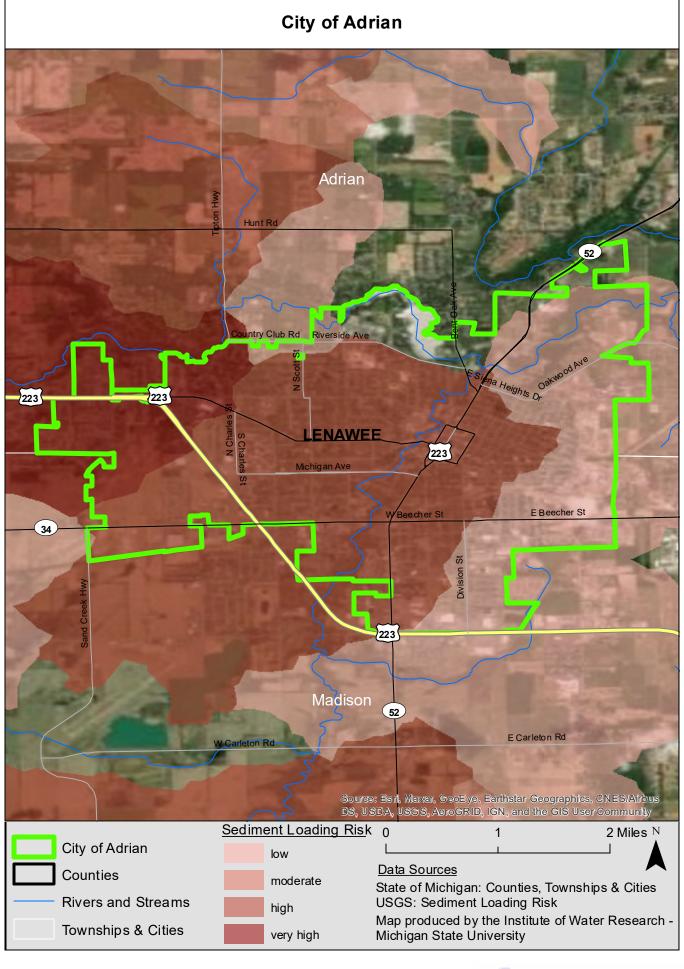
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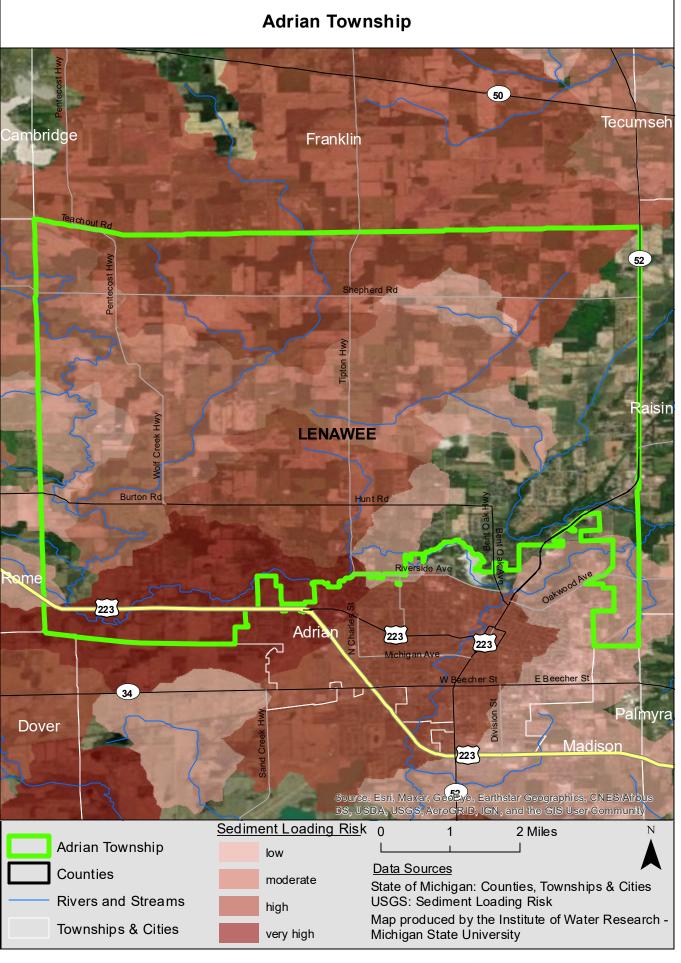
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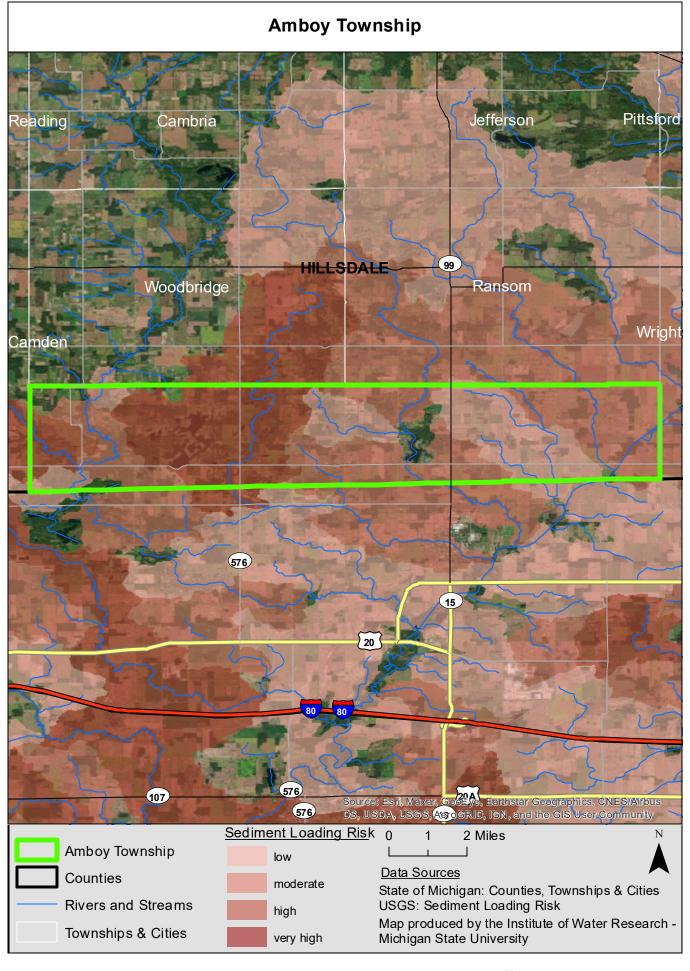


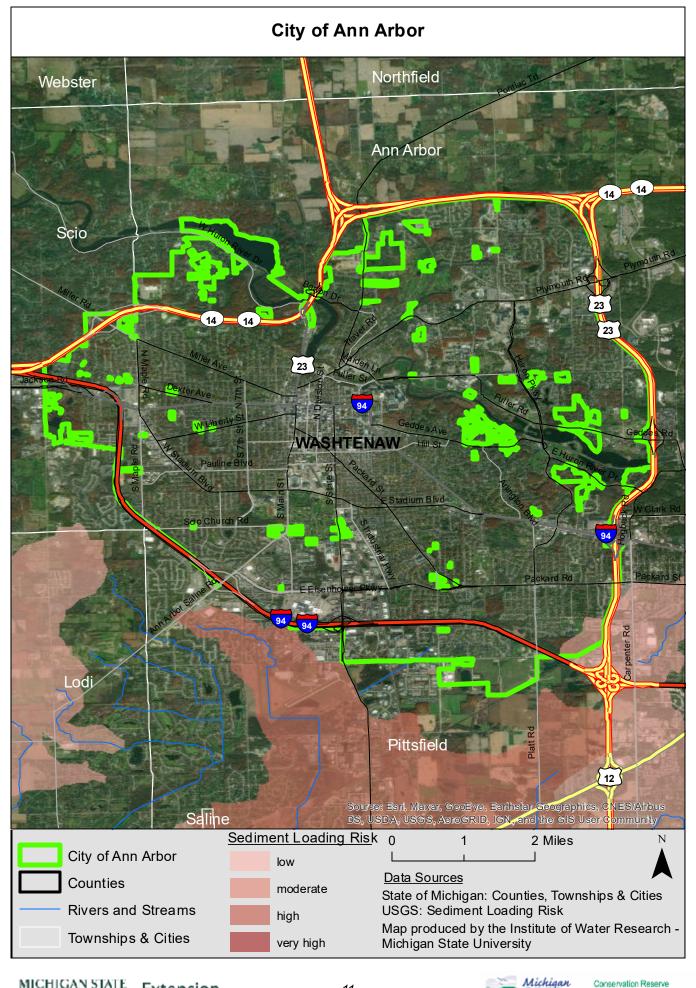
Algansee Township Quincy Coldwater Allen E Central Rd BRANCH Ovic HILLSDALE California Kinderhook Camden Source: Esri, Maxar, Geozye, Zarihstar Geographtcs, GN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles Algansee Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

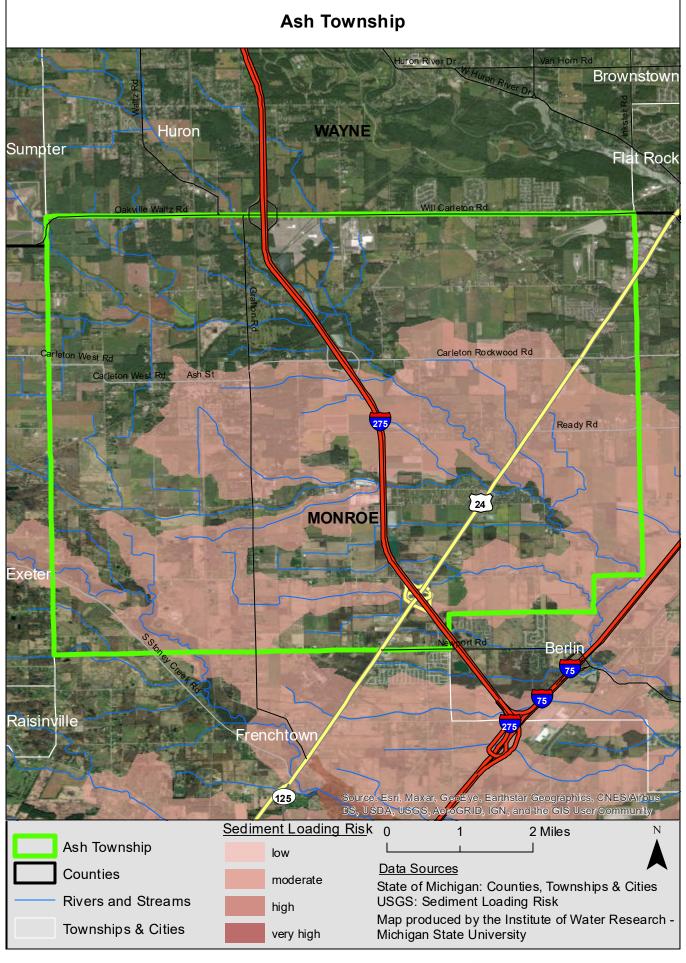


Allen Township Scipio Litchfi 49 Butler Fayette 12 HILLSDALE BRANCH Bacon Rd Hillsdale Bankers Rd Algansee Cambria Reading Source: Esrl, Maxar, Geoeye, Earlinstar Geographics, CN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles Allen Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

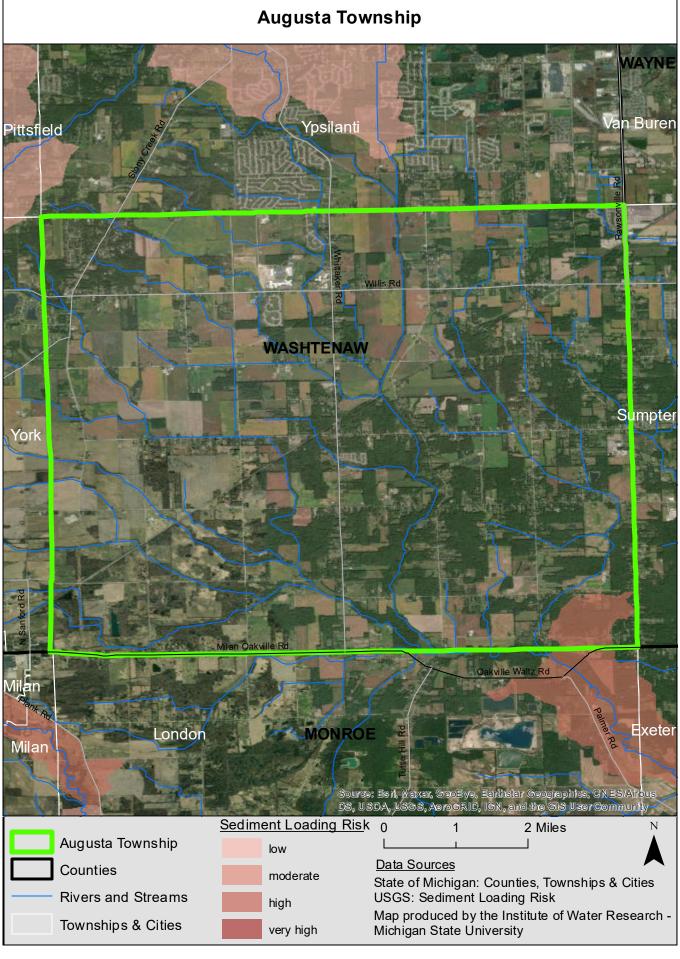








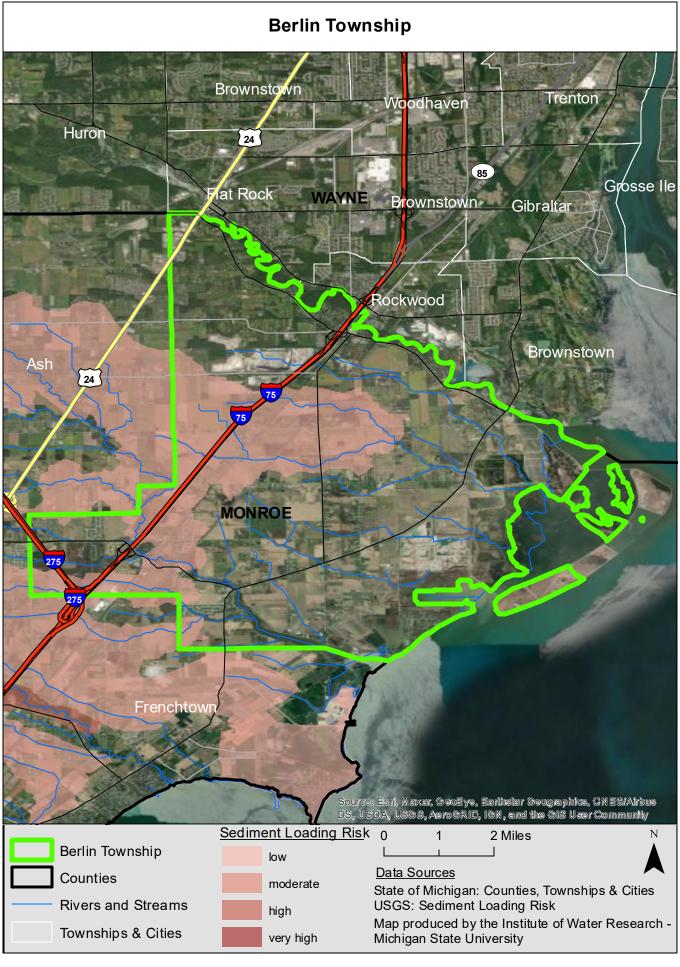






Bedford Township Summerfie<u>ld</u> MONRO Whitef<mark>o</mark>rd E Sterns Rd 24 (125) Source: Esri, Mawan Geo Eye, Earthstar Geographics, CN Estables, CN Es Ariel Ave Source: Esri, Mawan, GeoEye, Earthstar Geographics, CN ES/Airbus 223 Oak Grove Pl Quinton Ave Sediment Loading Risk 0 **Bedford Township** low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University



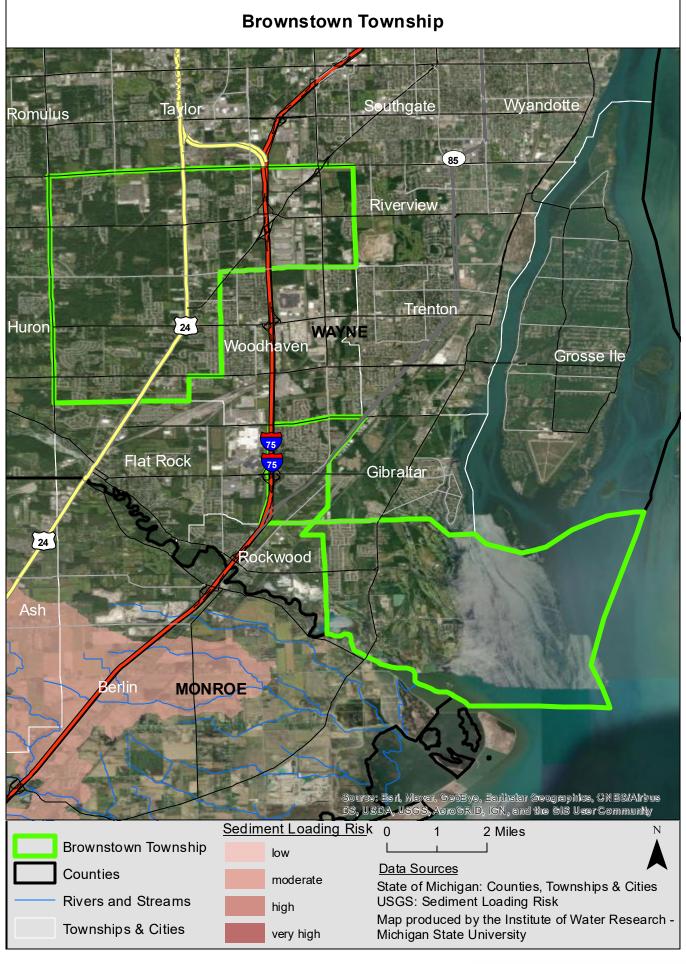


Blissfield Township Ridgeway Raisin Deerfield Deerfield Rd LENAWEE Palmyra 223 Source: Est, Maxar, Geozye, Zathstar Geographtss, CN 53/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Ogden Sediment Loading Risk 0 2 Miles Blissfield Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University



Bridgewater Township Lodi (Freedom Austin Rd E Austin Rd WASHTENAW Manc<mark>h</mark>ester 52 12 Clinton Macon Rd Macon Clinton LENAWEE Franklin Source: Esrl, Maxar, Geoleye, Earthstar Geographics, GNES/Airbur, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles Bridgewater Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

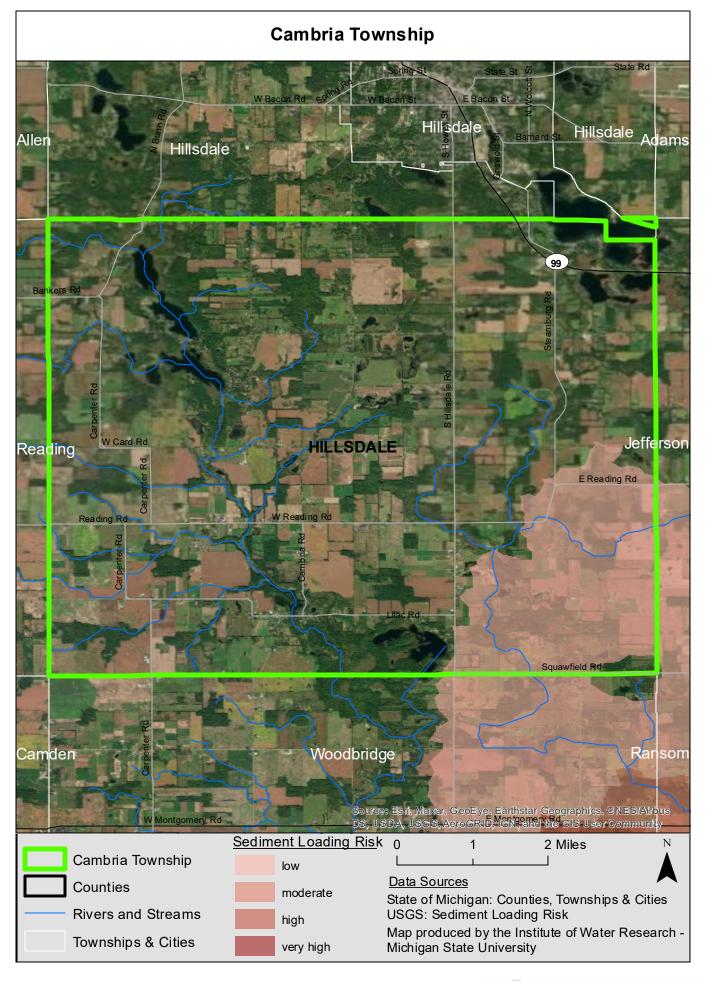




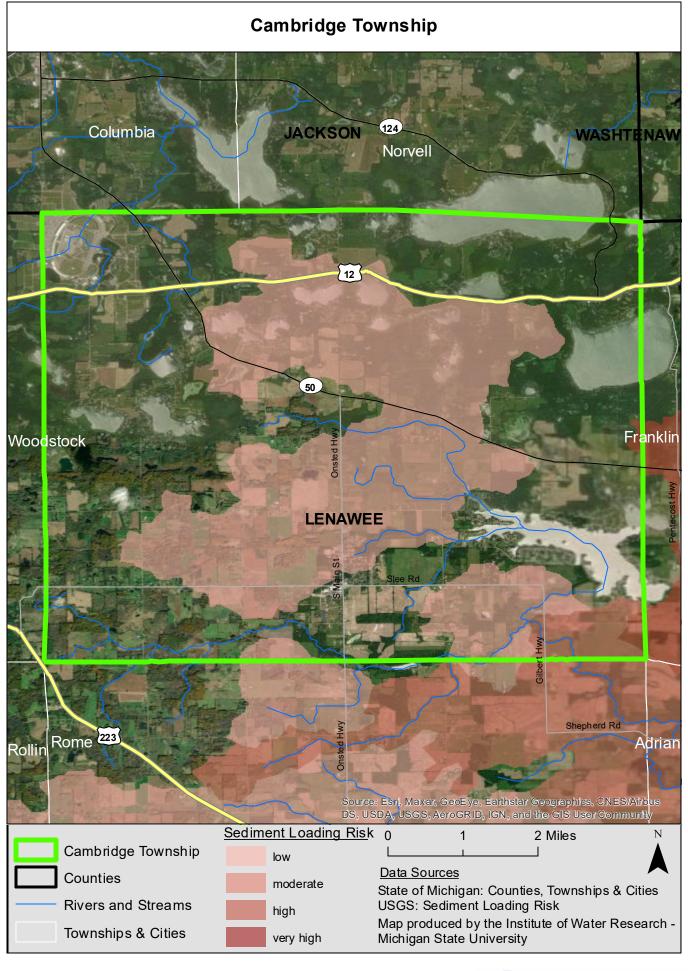


California Township Ovid Algansee Reading Grove Rd HILLSDALE **BRANCH** Kin<mark>d</mark>erhook Camden 120 Source: Es.1, Maxar, Geoeye, Earthstar Geographics, CN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles California Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

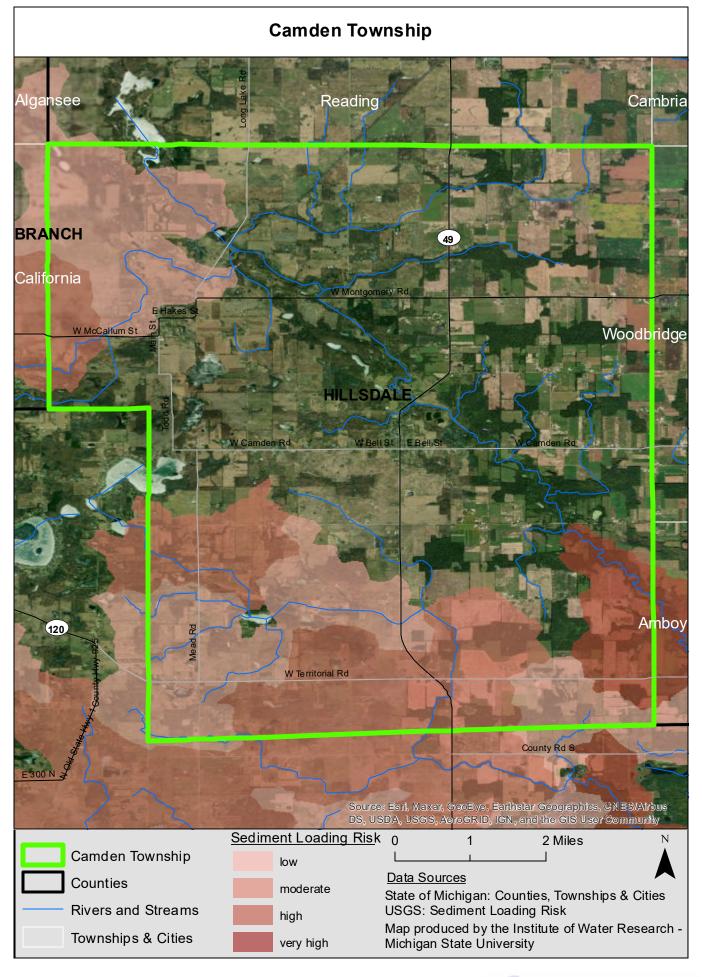








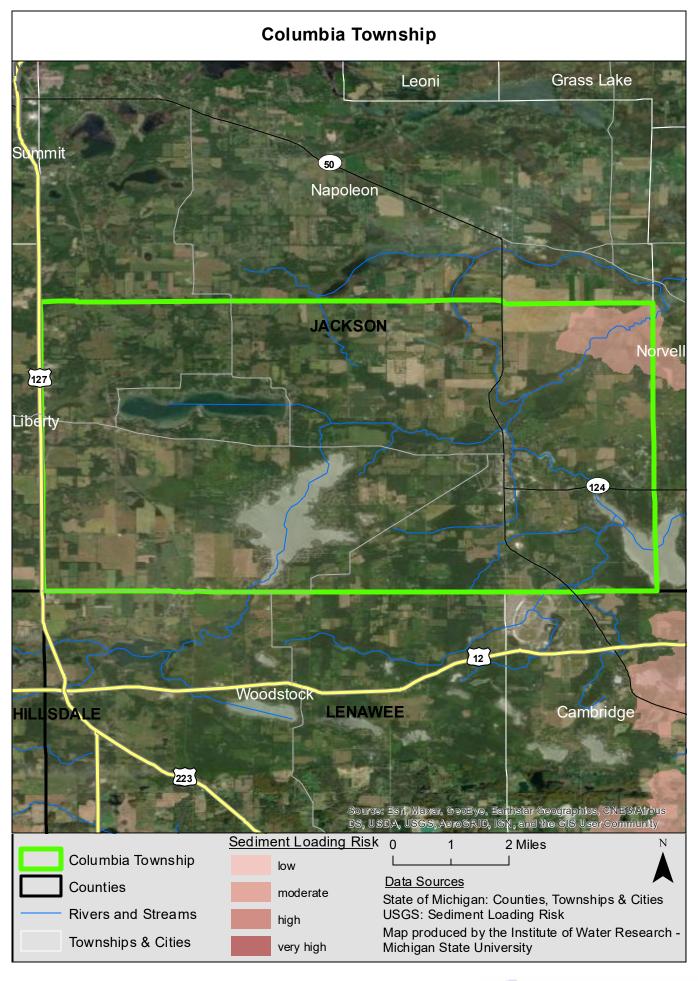


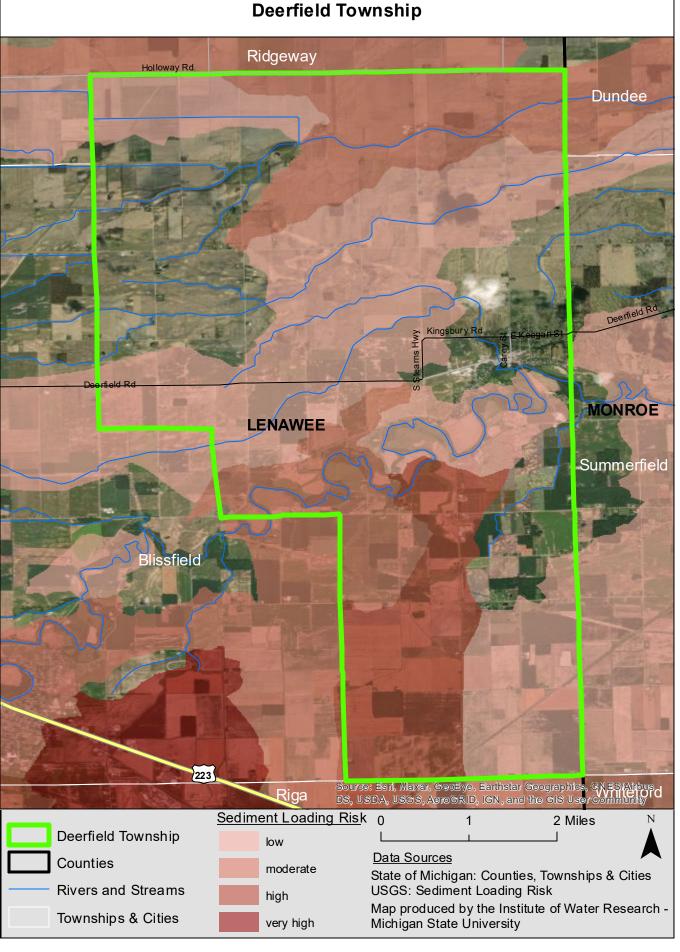




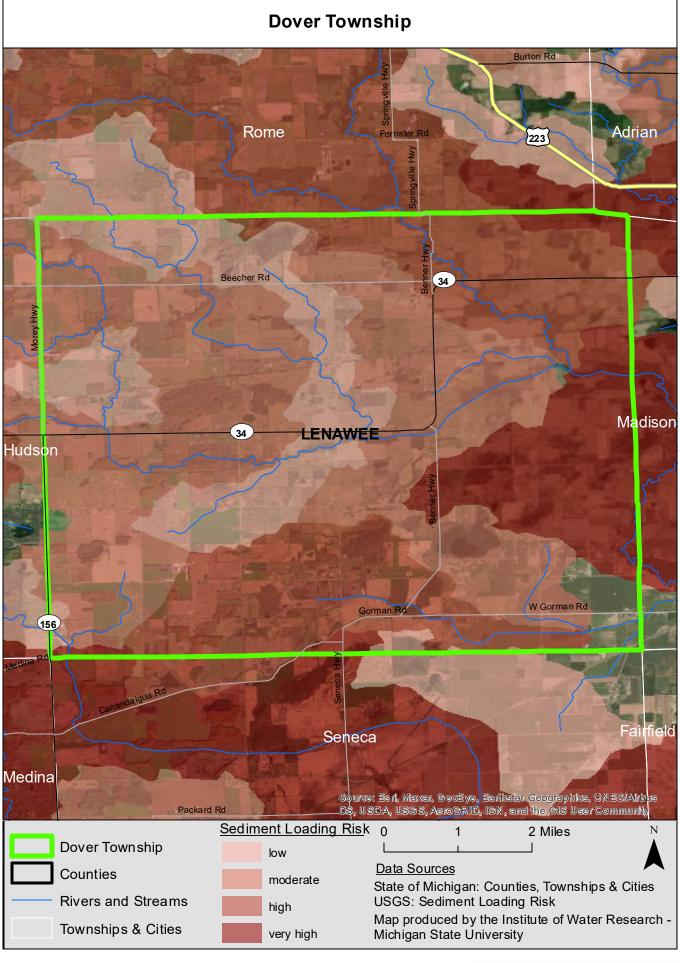
Clinton Township aline Bridgewater **WASHTENAW** Manchester 12 Clinton Macon Rd Macon LENAWEE ranklin 52 **Tecumseh** Tecumseh V Russell Rd E Russell Rd Ridgew Source: Esri, Maxar, GeoEye, Earthstar Geographics, CN ES/Airbu DS, USDA, USGS, AeroGRIC, IGN, and the GIS User Community star Geographics, CN ES/Airbus Adriar Sediment Loading Risk 0 2 Miles Clinton Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University



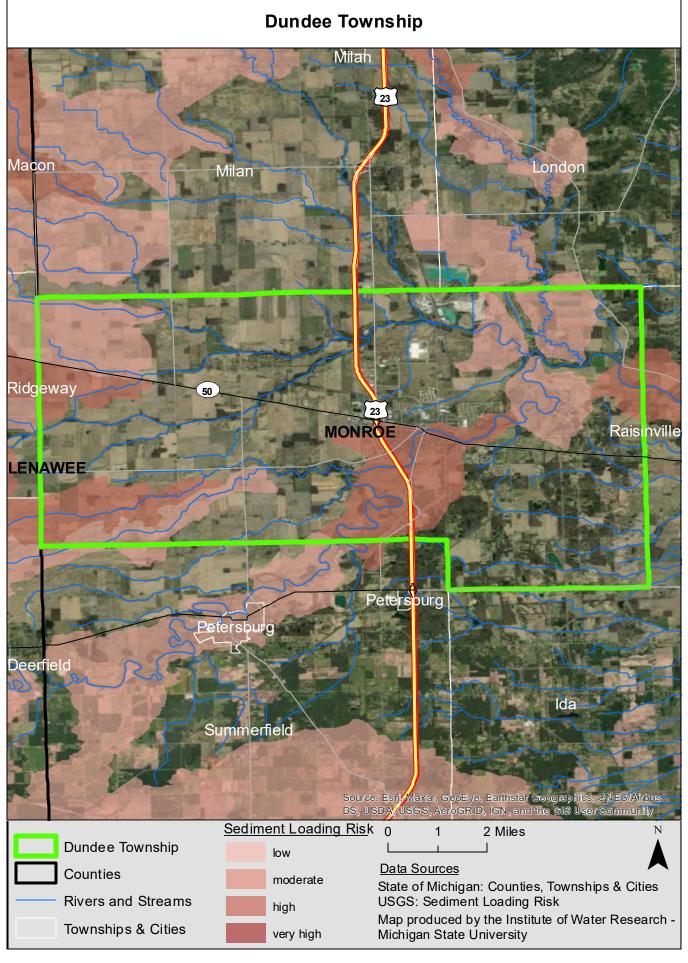




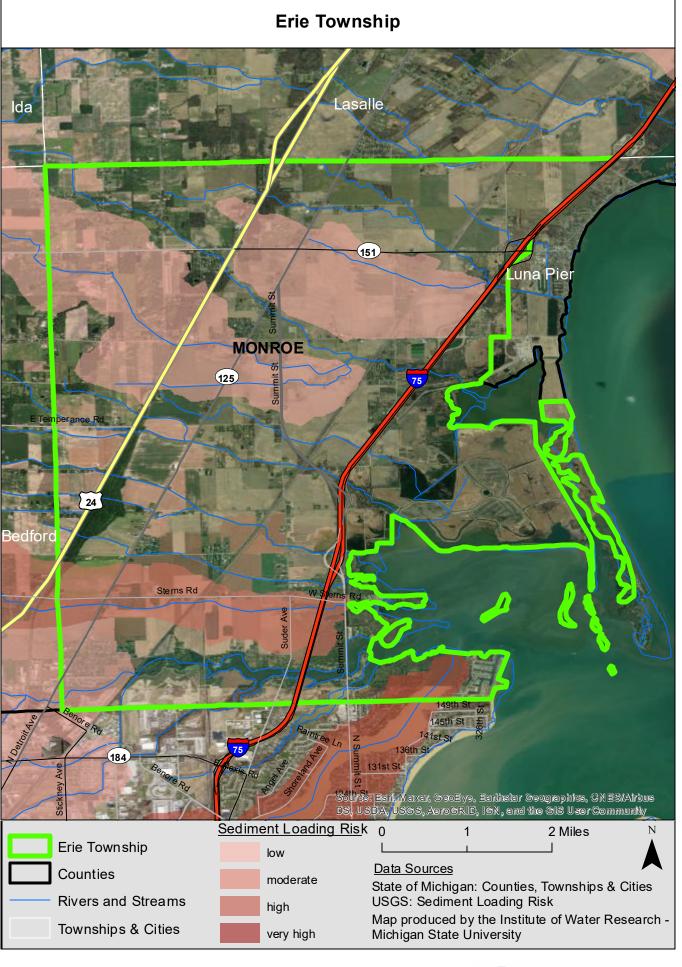




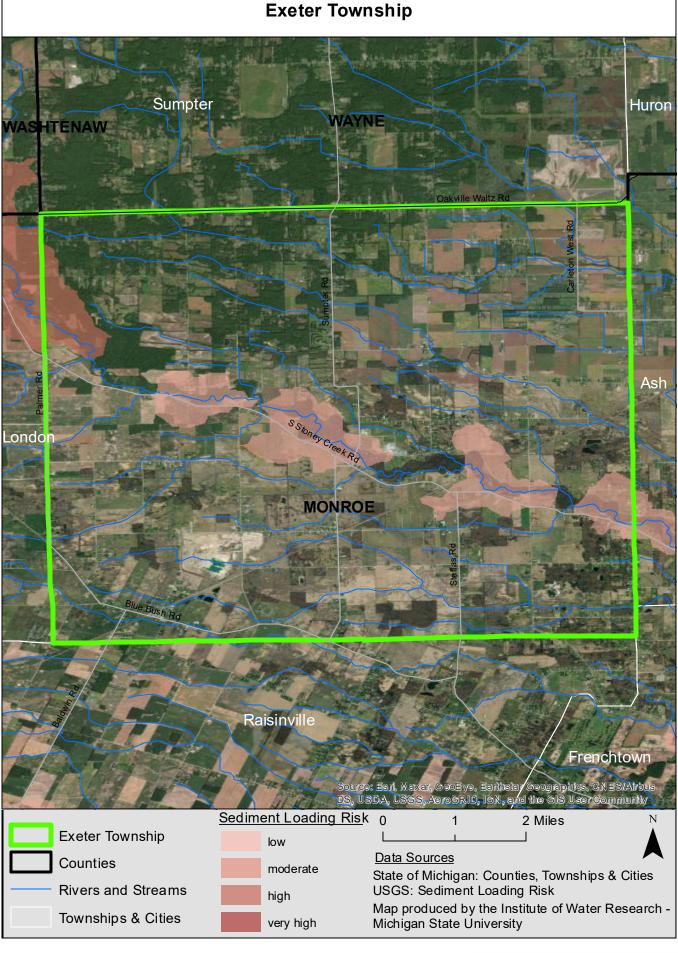


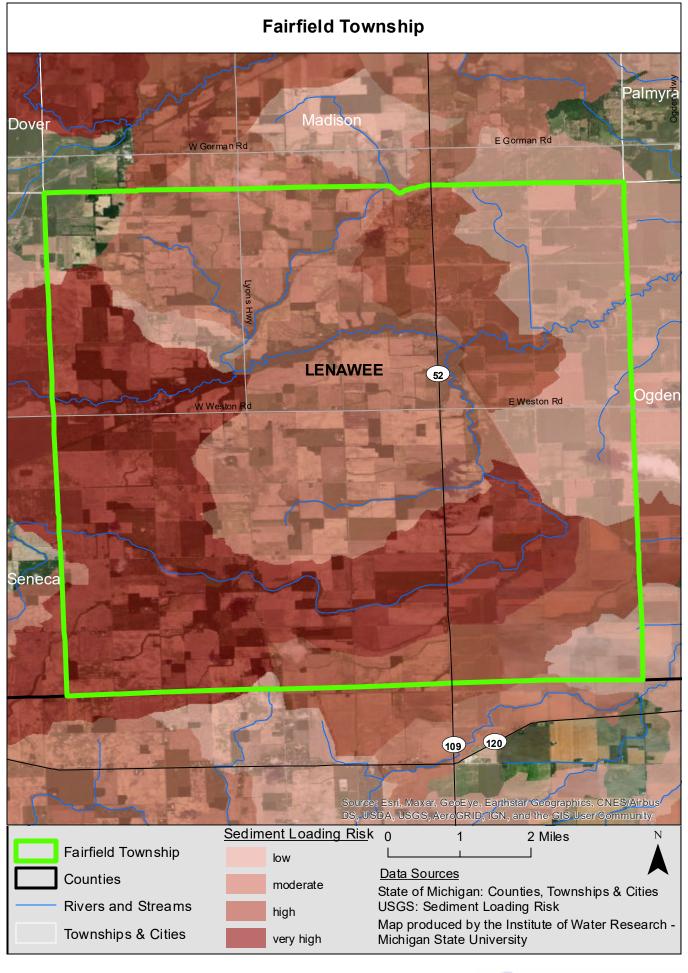




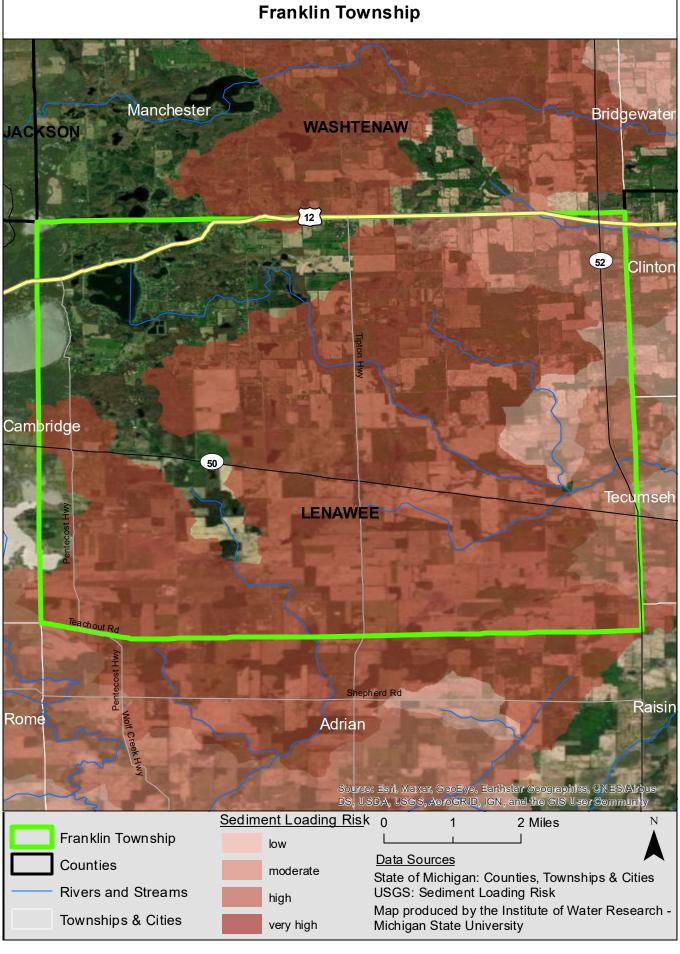




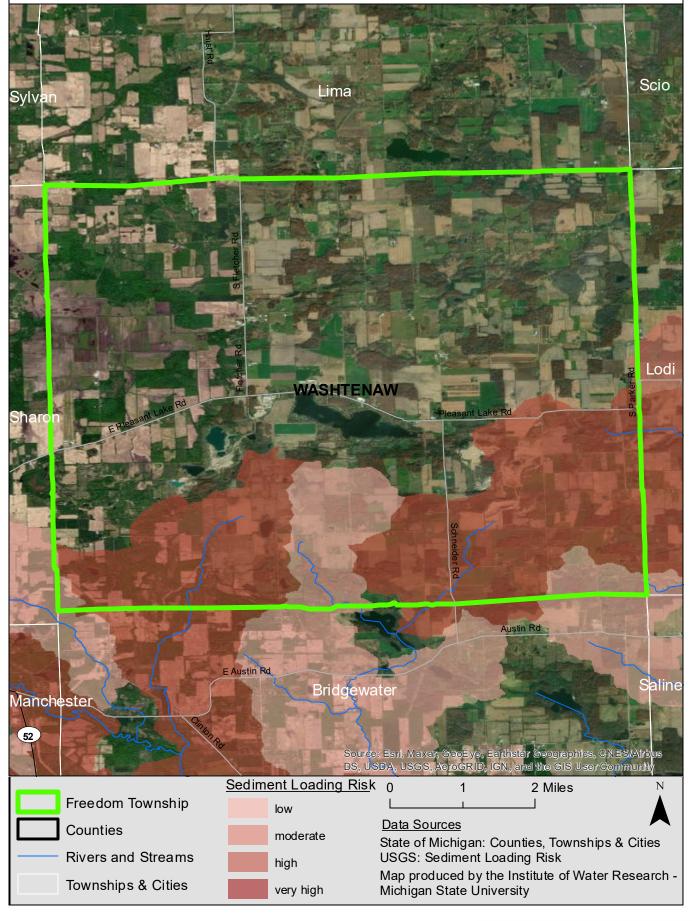




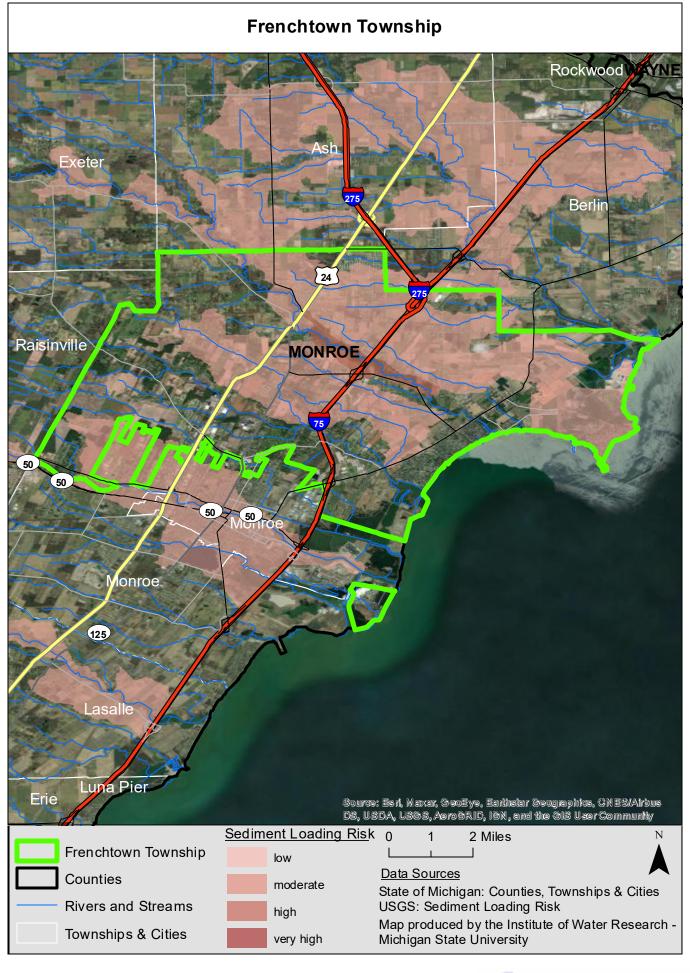




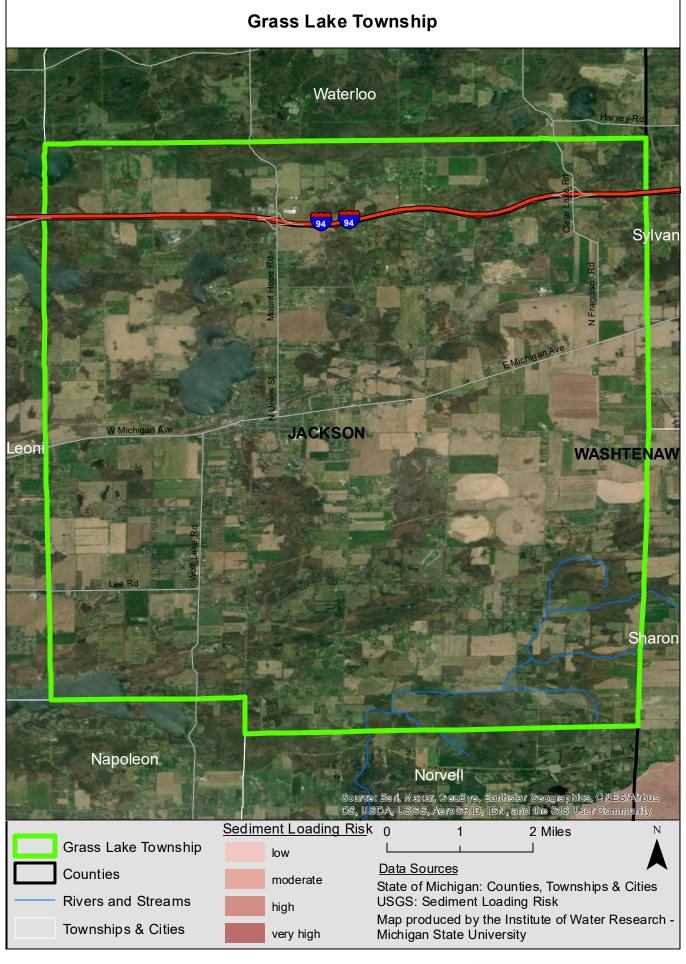
Freedom Township



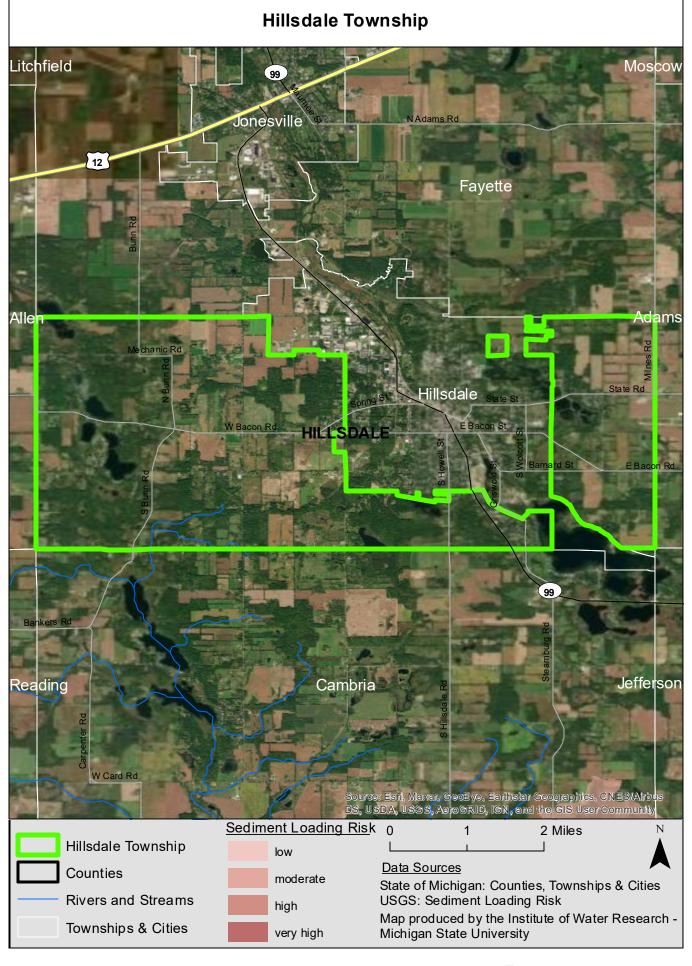




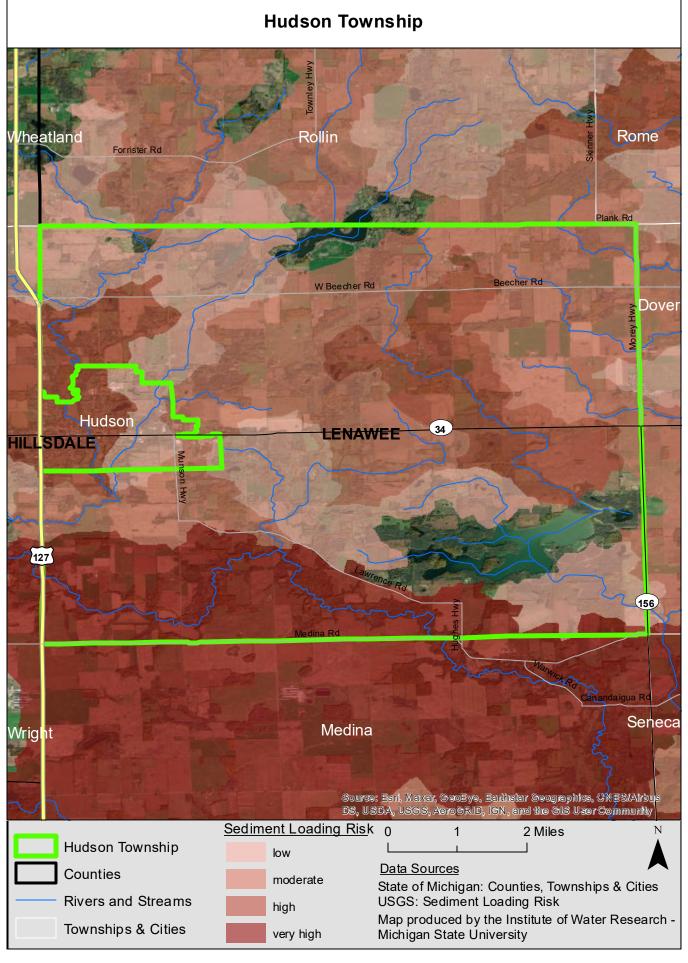




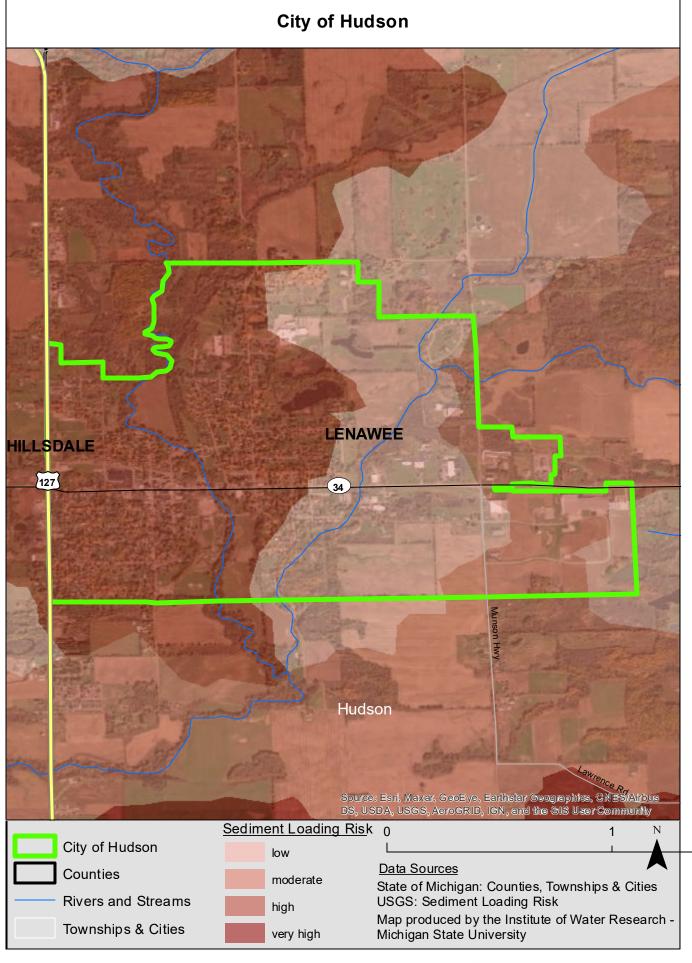




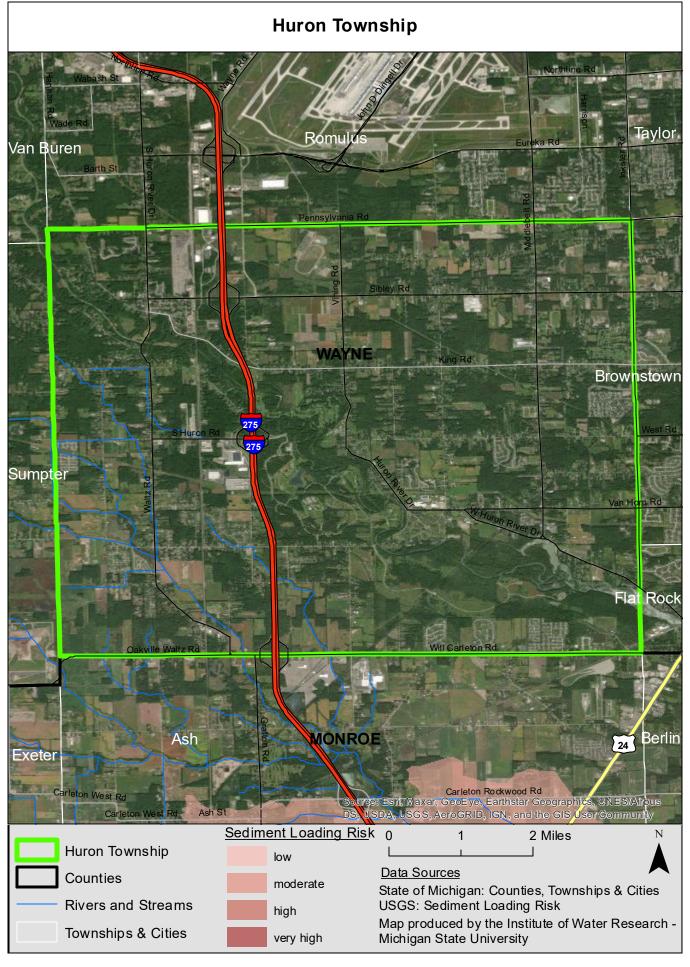




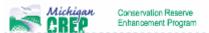


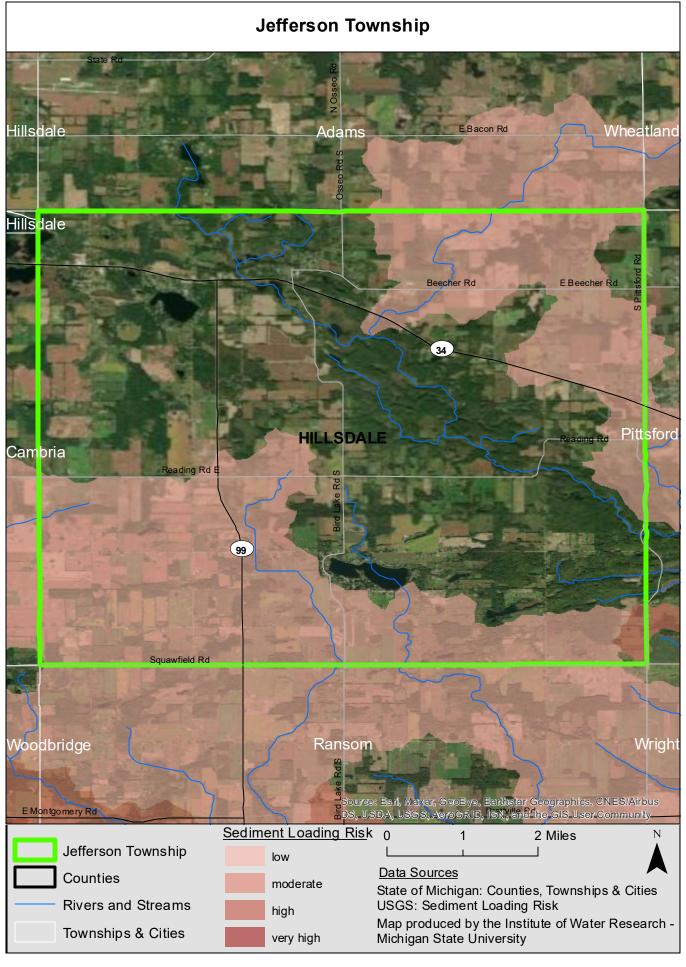


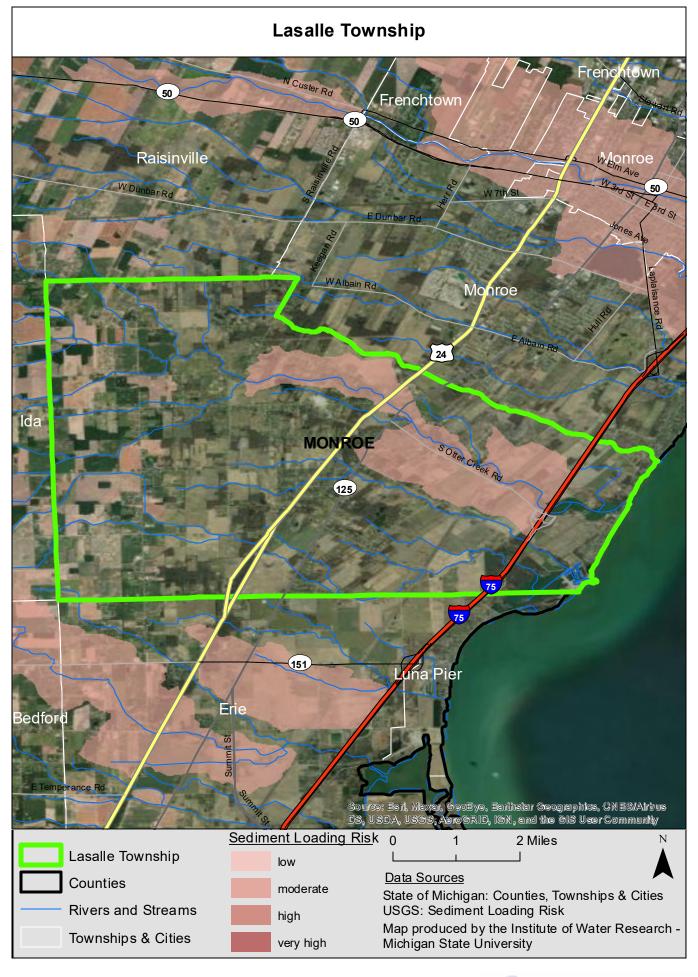




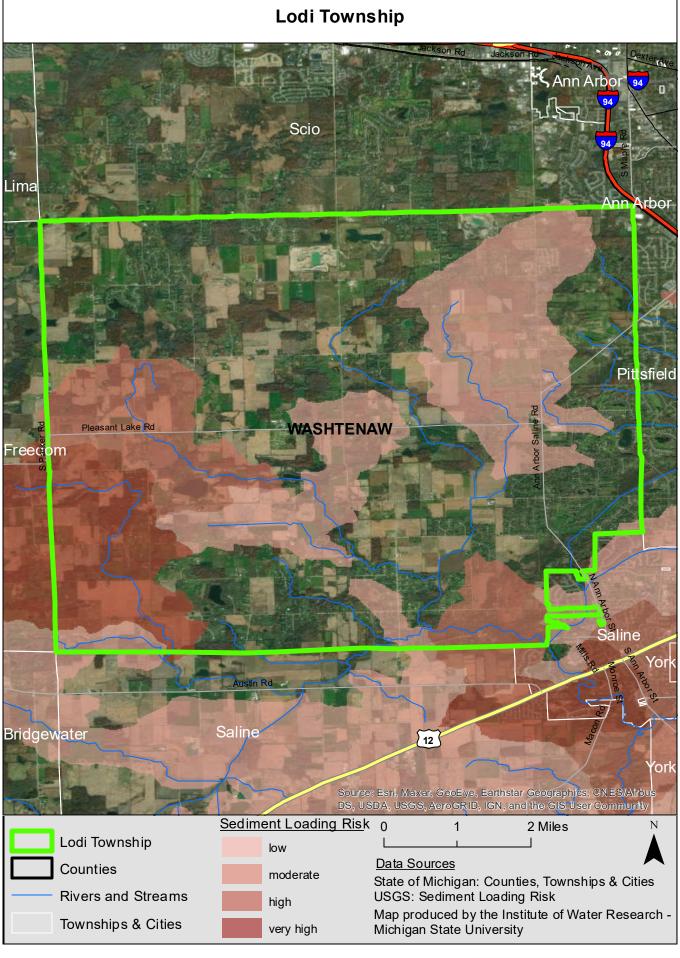
Ida Township Raisinville Summerfield MONROE (151) Erie Bedford Whiteford Source: Esri, Maxar, Geollye, Earthstar Geographics, GN ES/Air DS, USDA, USOS, AeroGRID, IGN, and the GIS User Communi Sediment Loading Risk 0 2 Miles Ida Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University







Liberty Township Summit ng Arbor Napoleon **JACKSON** 127 Hano<mark>v</mark>er Columbia W Liberty Rd Somerset Moscow 12 Source: Es 1, Naxar, Geoeye, Earthstar Geographics, CN ES/Airbus DS, USDA, USGS, AeroGRIC, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles Liberty Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

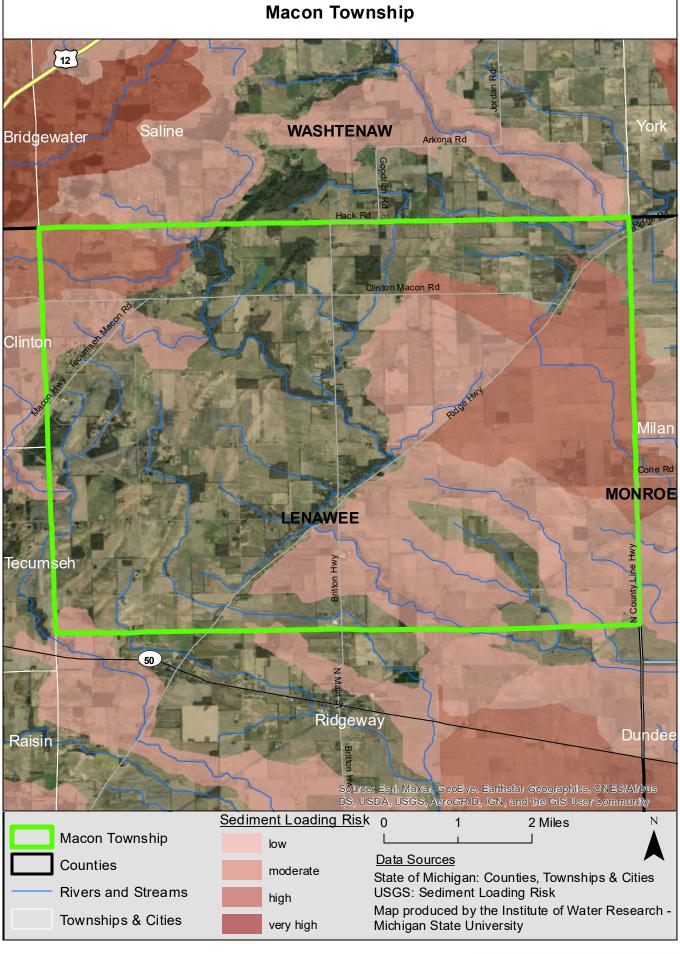


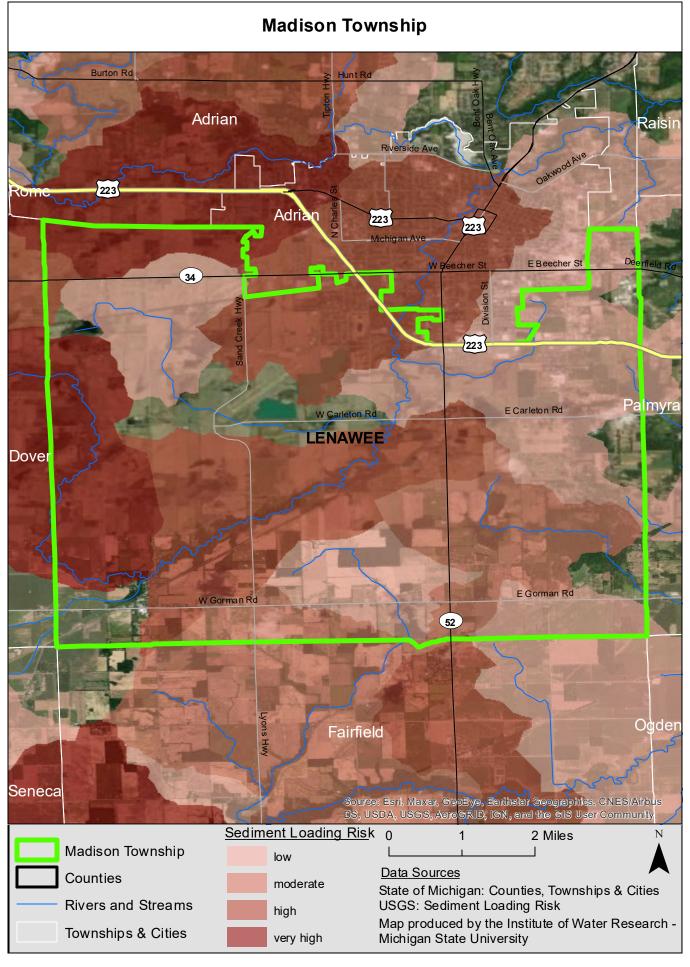


London Township WASHTENAW ⁄ork Augusta Milan Exeter Milan MÓNROE Ostrander Rd Raisinville Dundee Source: Esri, Maxar, GeoEye, Earthstar Geographics, GNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles London Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

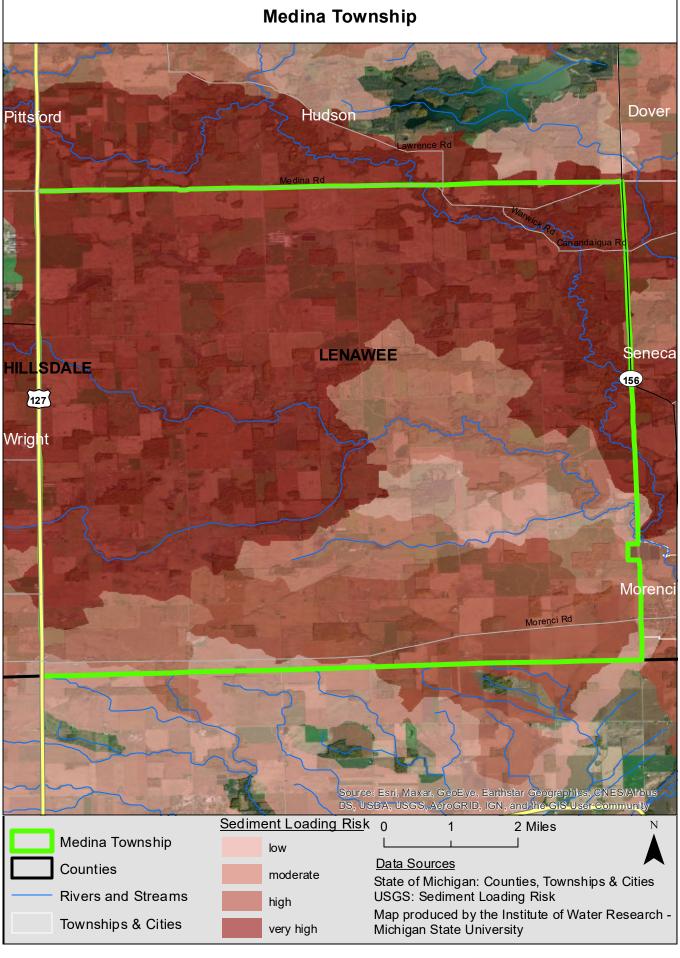




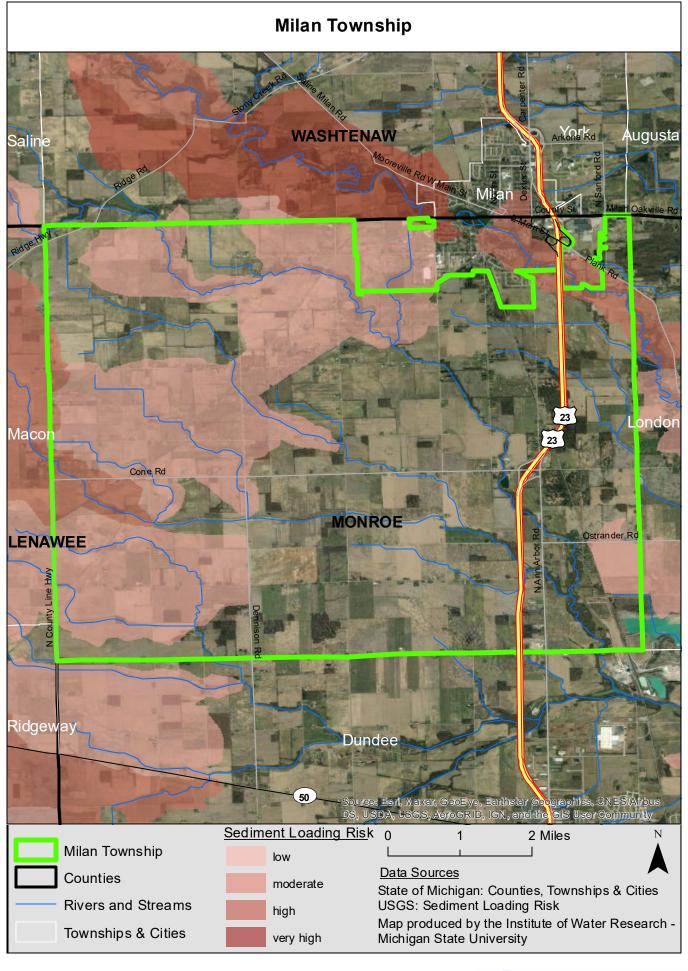




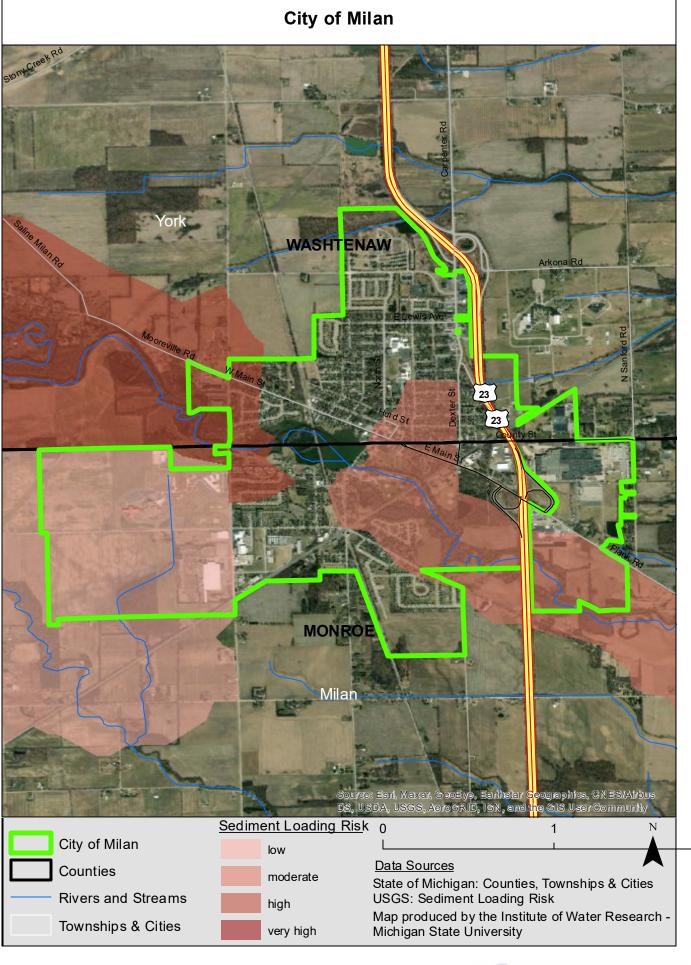
Manchester Township Grass Lake Sharon Sharon Valley Rd W Austin Rd WASHTENAW IACKSON **Bridgewater (52)** 12 124 Clinton Franklin VAWEE Cambridge Source: Esri, Maxar, Geollye, Earthstar Geolgraphies, GN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles Manchester Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University



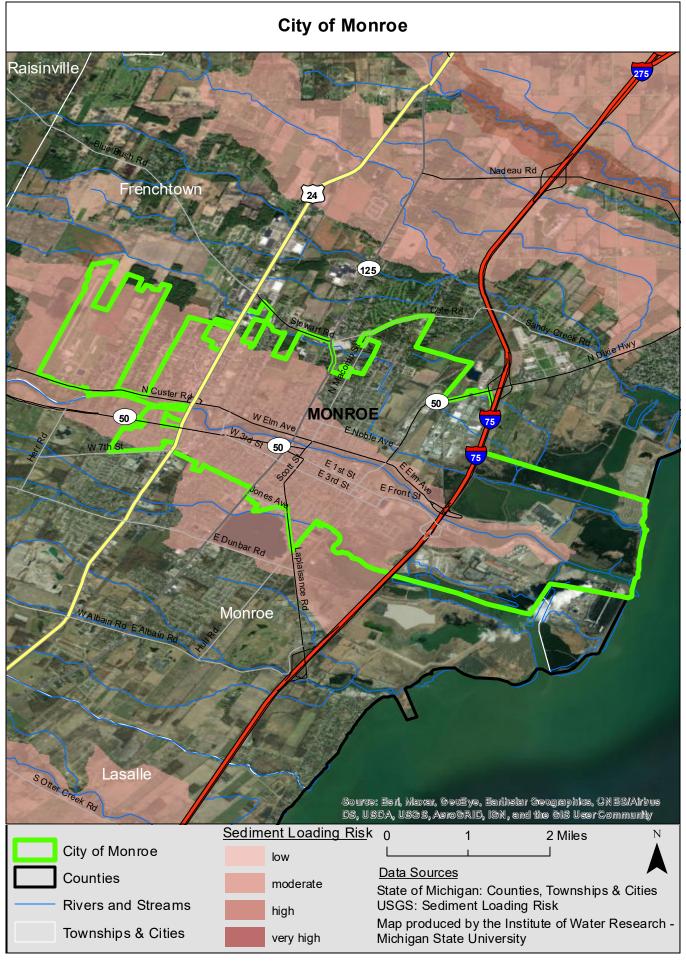








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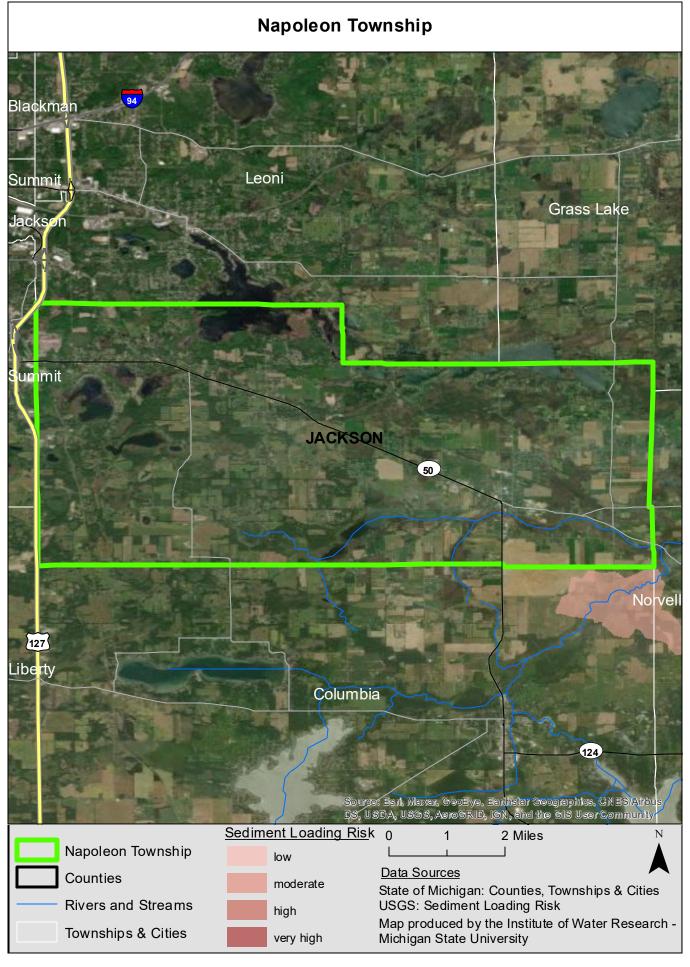


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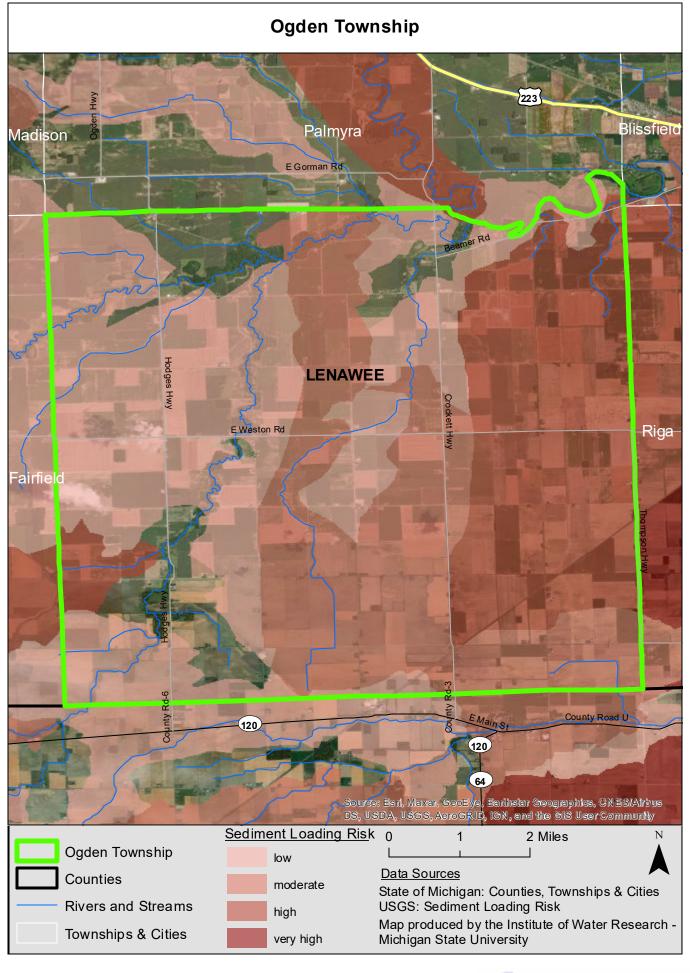


City of Morenci Seneca 156 LENAWEE Medina Morenci Rd Seneca 108 Source: Esrl, Maxar, Geoegye, Earlhstar Geographts, CN ES/Alrbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 City of Morenci low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

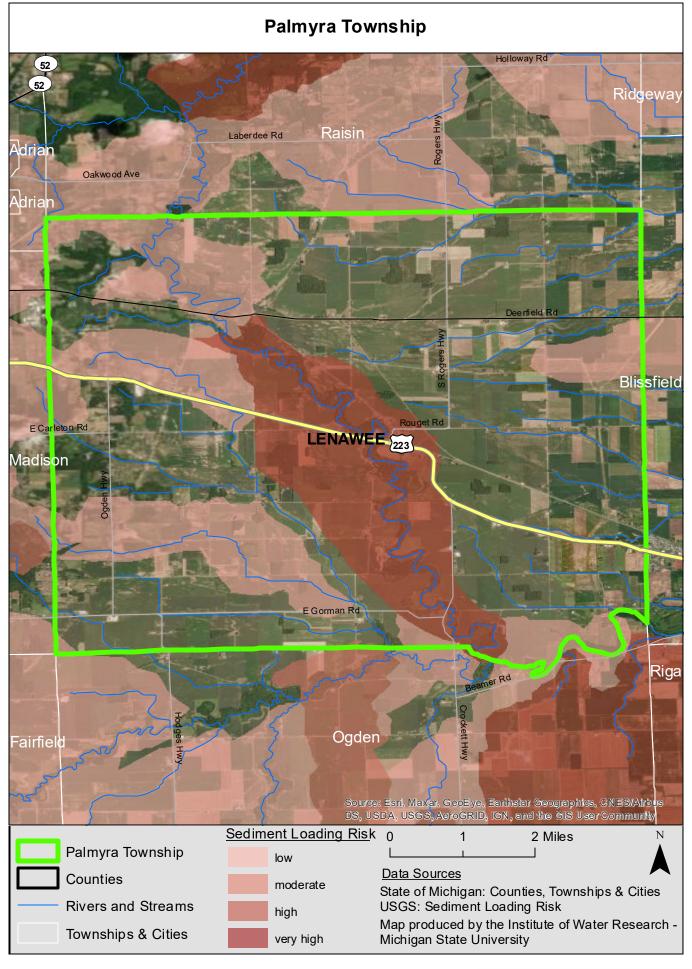












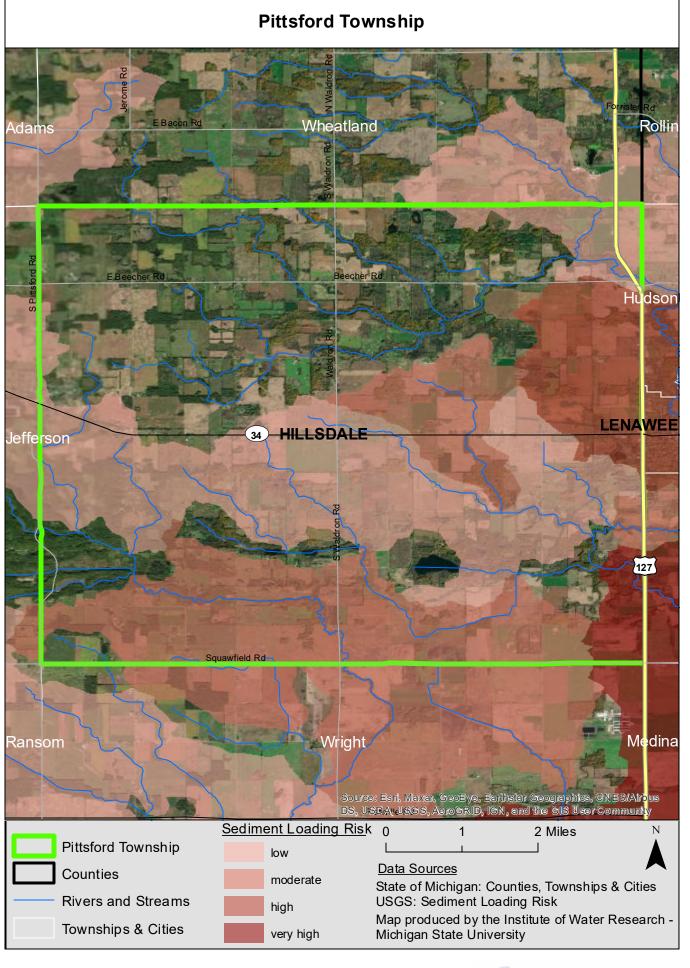


City of Petersburg Dundee W Railroad St 23 Summerfield 23 (Source: Es ri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, Aero GRID, IGN, and the GIS User Community Sediment Loading Risk 0 N 2 Miles City of Petersburg low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

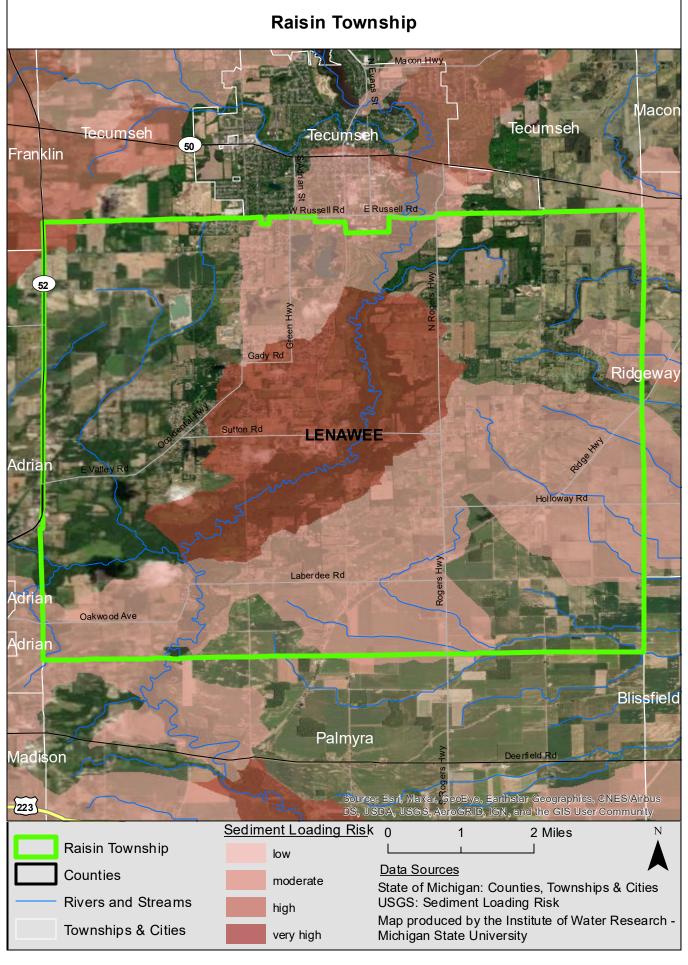


Pittsfield Township Ann Airbor 1 Ann Arbor Ann Arbor Lodi 23 Yp<mark>silanti</mark> WASHTENA 23 (12 Saline E Willis Rd v Willis Rd Augusta York Saline Sourse: Esri, Naxar, Geoeye, Earlist<mark>e</mark>r Geographics, GNES/Alrus DS, USDA, USGS, Aeroerle, IGN, a<mark>nd the</mark> GIS User Community Sediment Loading Risk 0 2 Miles Pittsfield Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

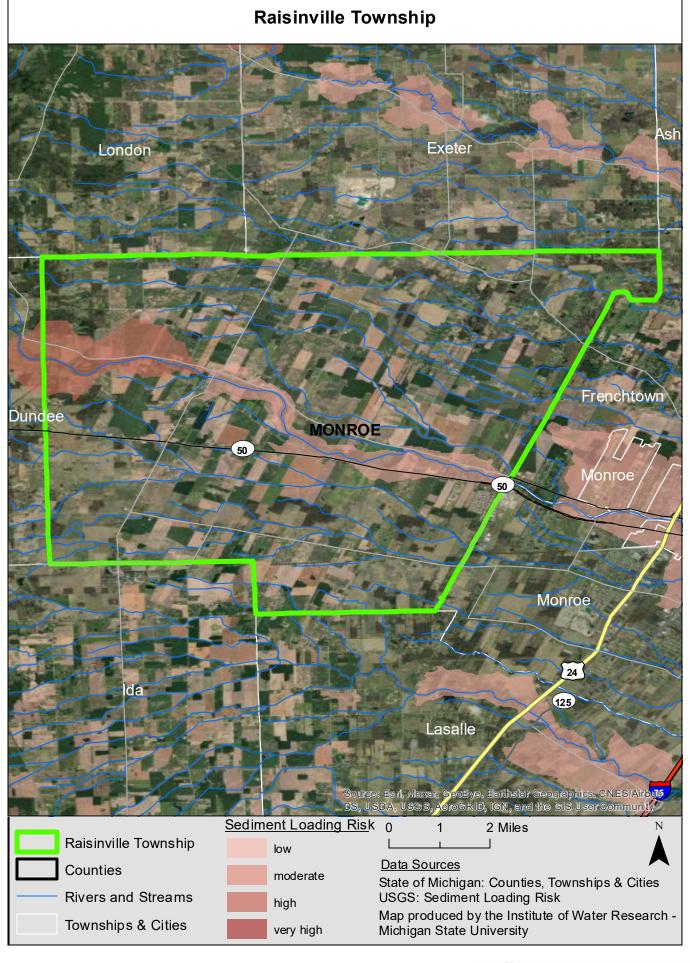


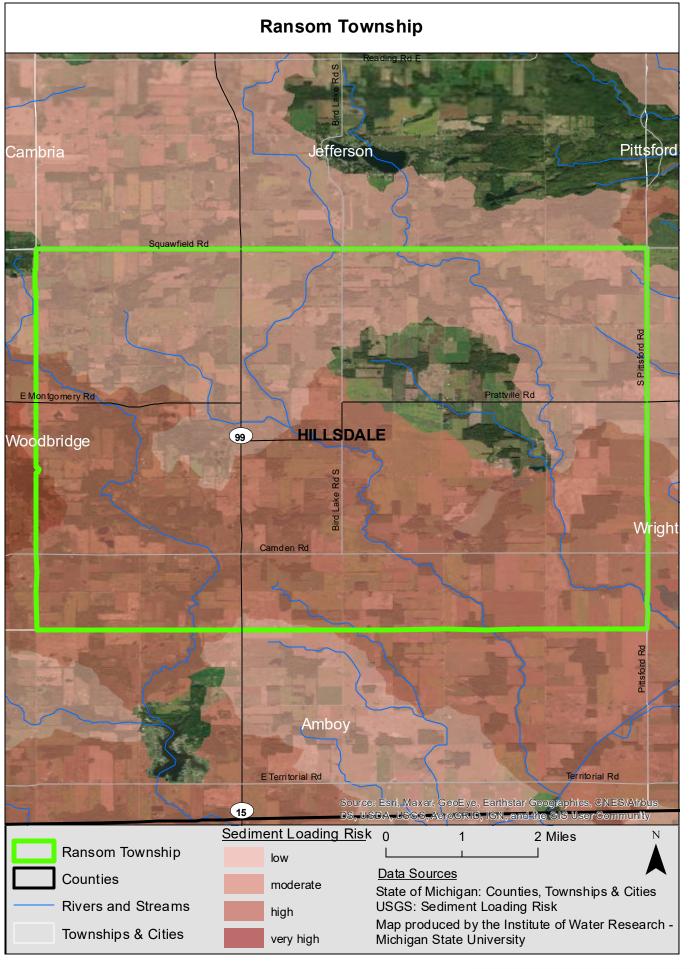








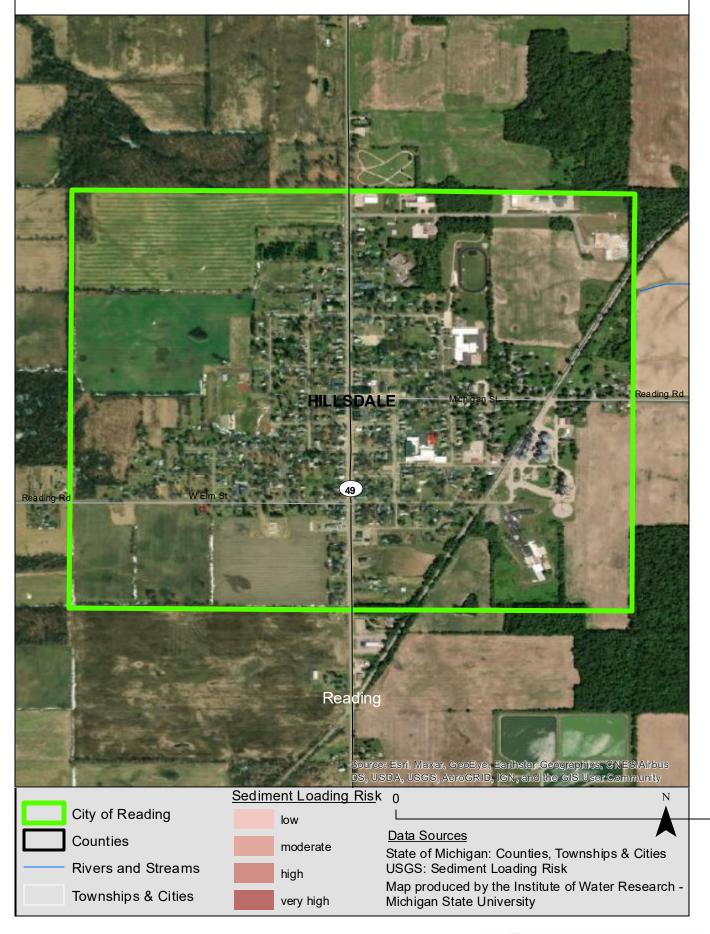




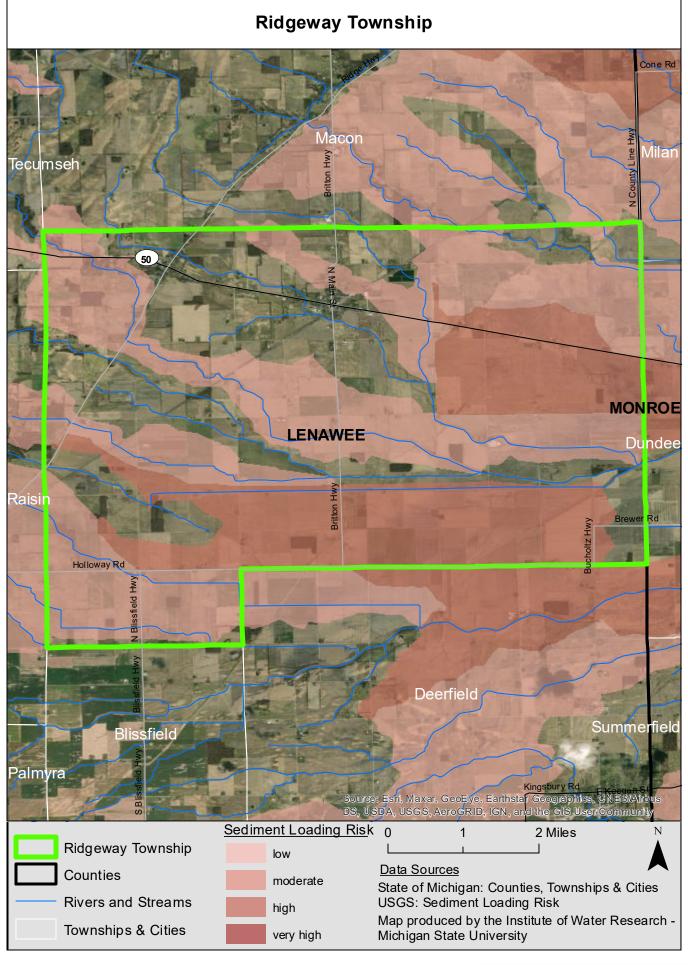
Reading Township Arkansaw Rd Hillsdale Quincy Bankers Rd HILLSDALE BRANCH Cambria Reading Camden California Woodbridge Source: Esri, Maxar, GeoEye, Earthstar Geographics, CN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles Reading Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University



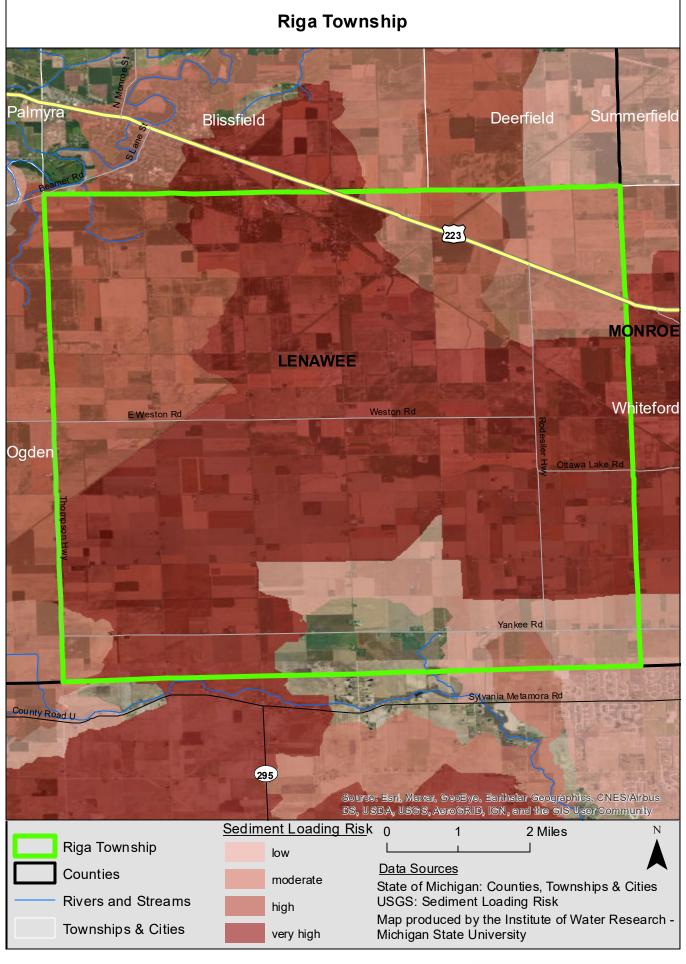
City of Reading









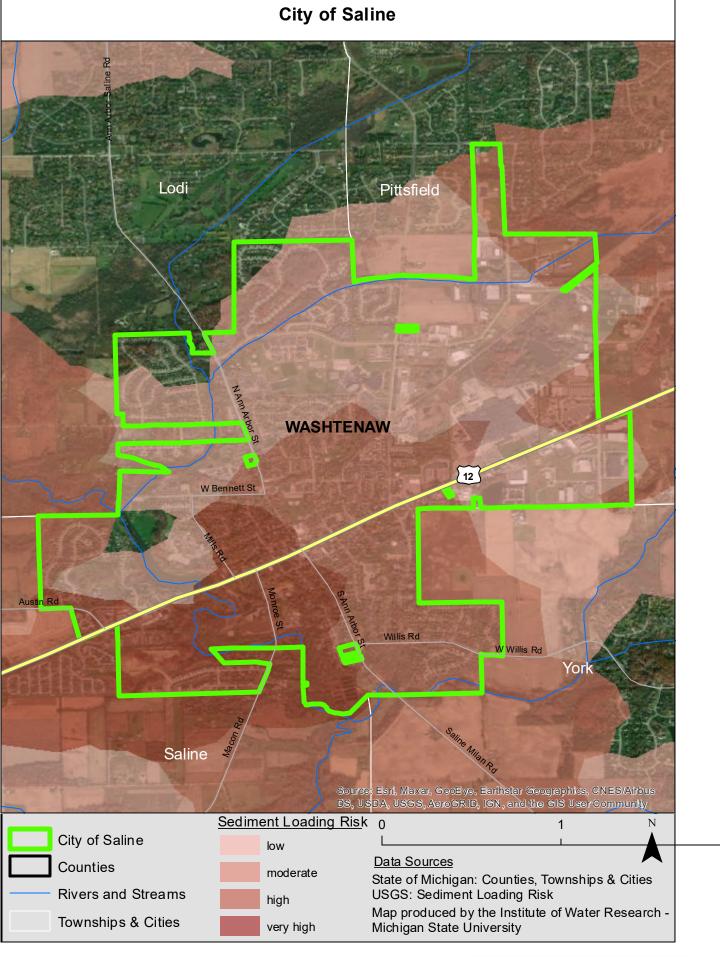




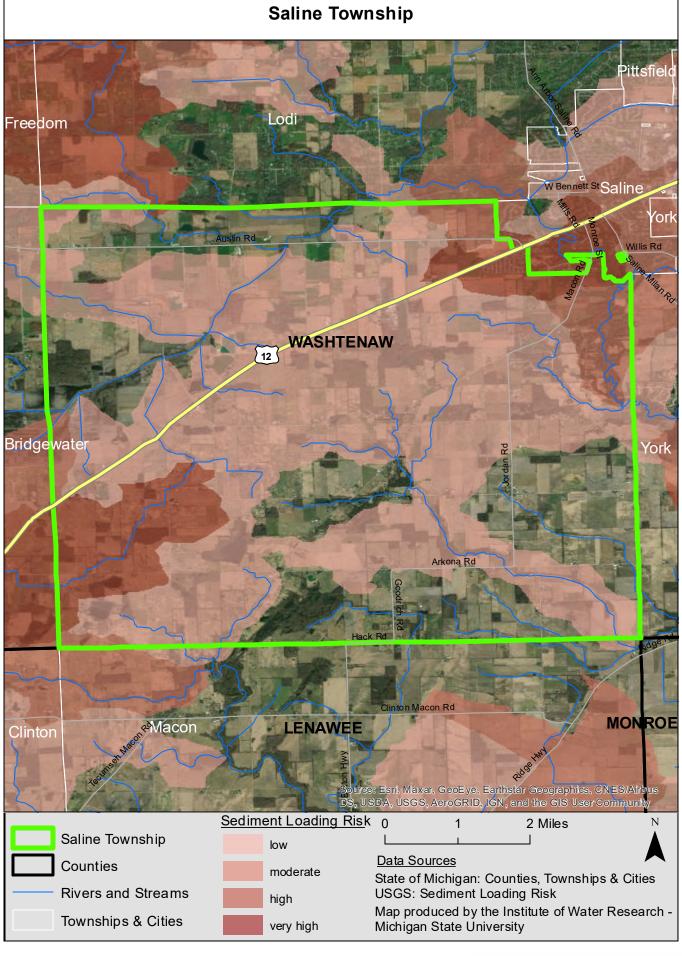
Rollin Township Woodstock Cambridge Somerse N Adams Rd Rome HILLSDAL Forrister Rd Beecher Rd 127 W Beecher Rd Hudson Source: Esrl, Maxar, GeoEye, Earthstar Geographies, GN ES/Atrbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Hudson Sediment Loading Risk 0 2 Miles Rollin Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University



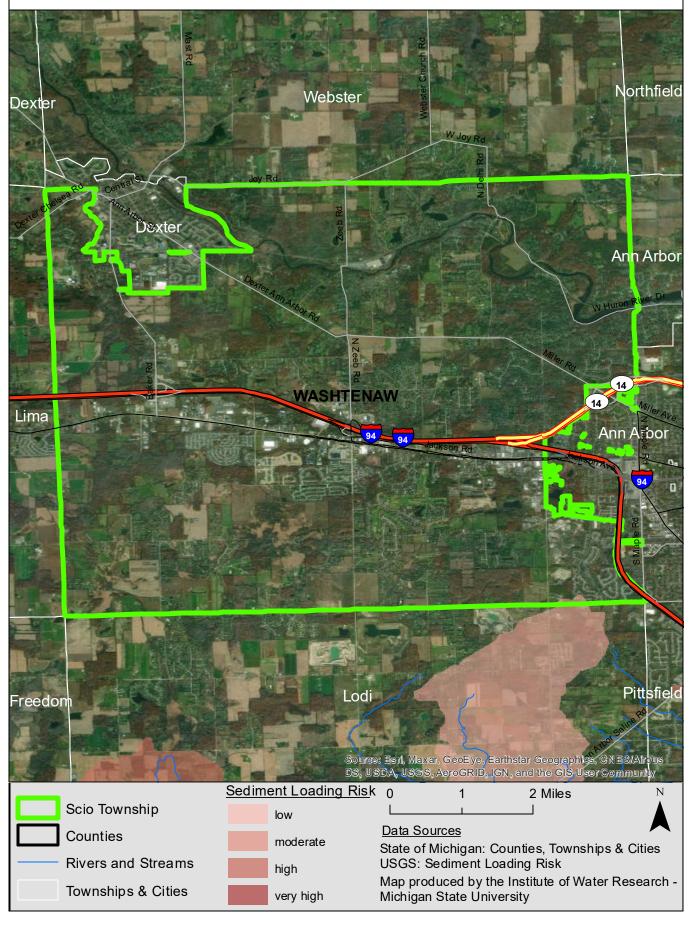
Rome Township Cambridge Woodstock anklin Shepherd Rd 223 \drian Rome Rd LENAWEE Rollin Burton Ro Plank Rd Madison 34 Beecher Rd Dover Hudson Source: Esri, Maxar, GeoEye, Earthstar Geographtss, GN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles Rome Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

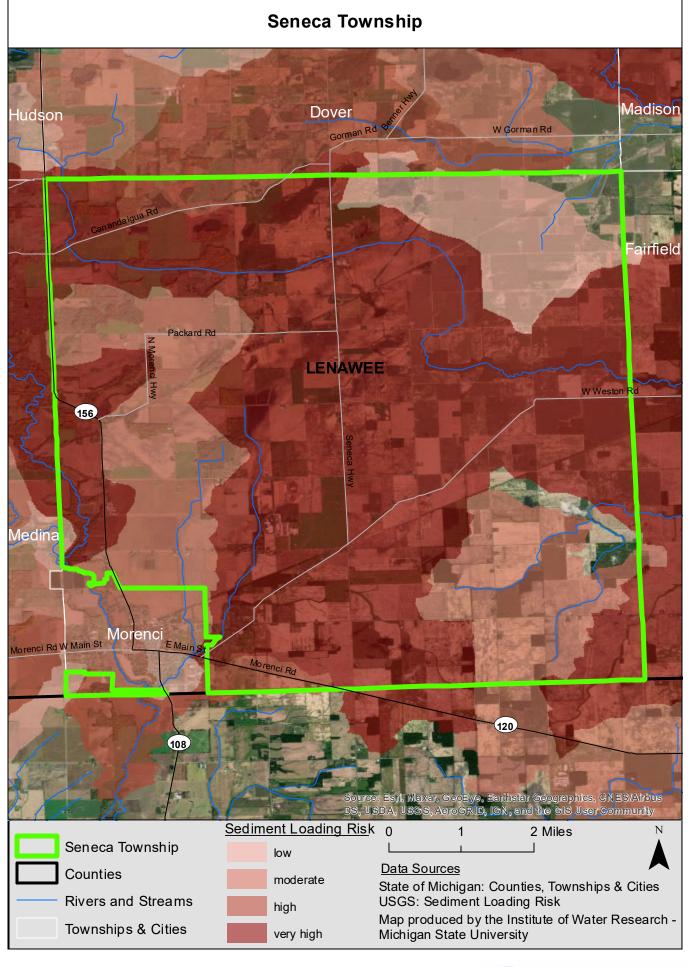


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Scio Township



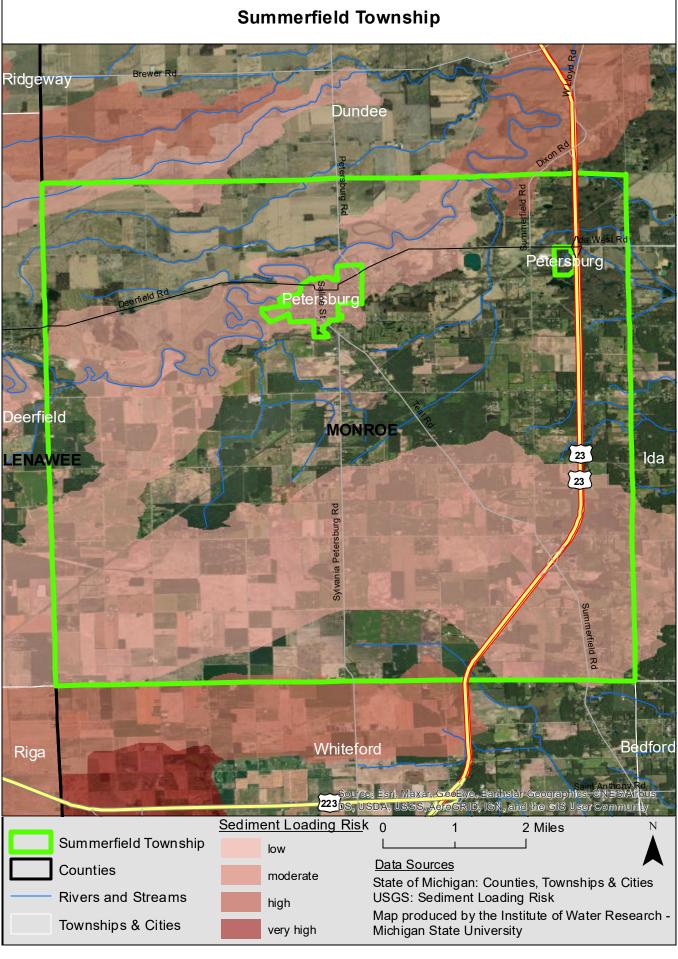




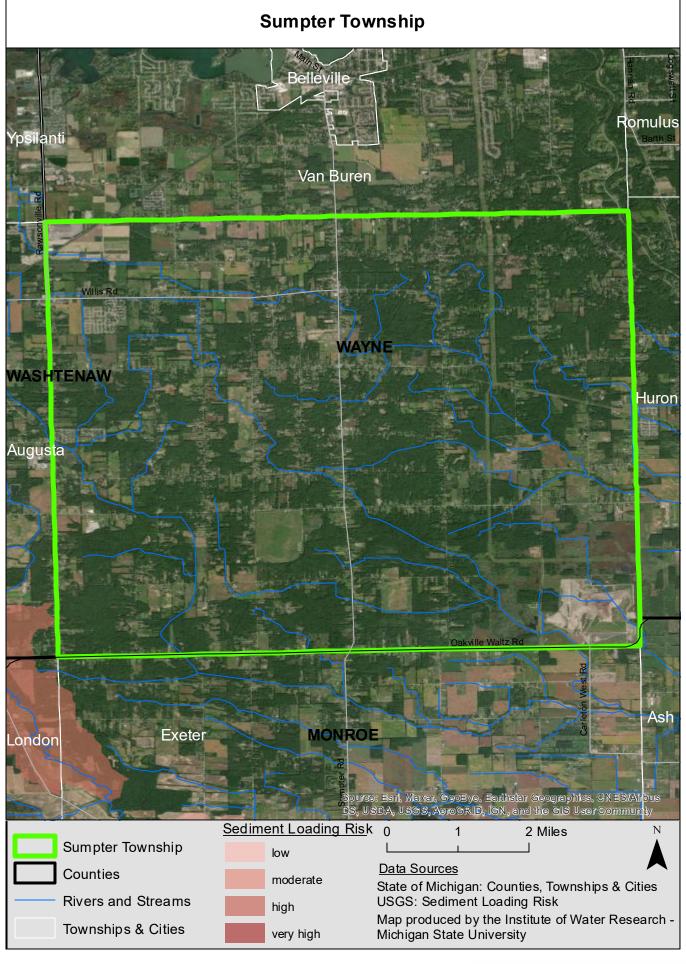
Sharon Township Old US Hwy Sylvan Gras<mark>s</mark> Lake JACKSON Freedom WASHTENAV Sharon Valley Rd Norvell Bridgewater WAustin Rd Manchester Source: Esri, Maxar, Geoeye, Earlistar Geographics, GN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles Sharon Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University



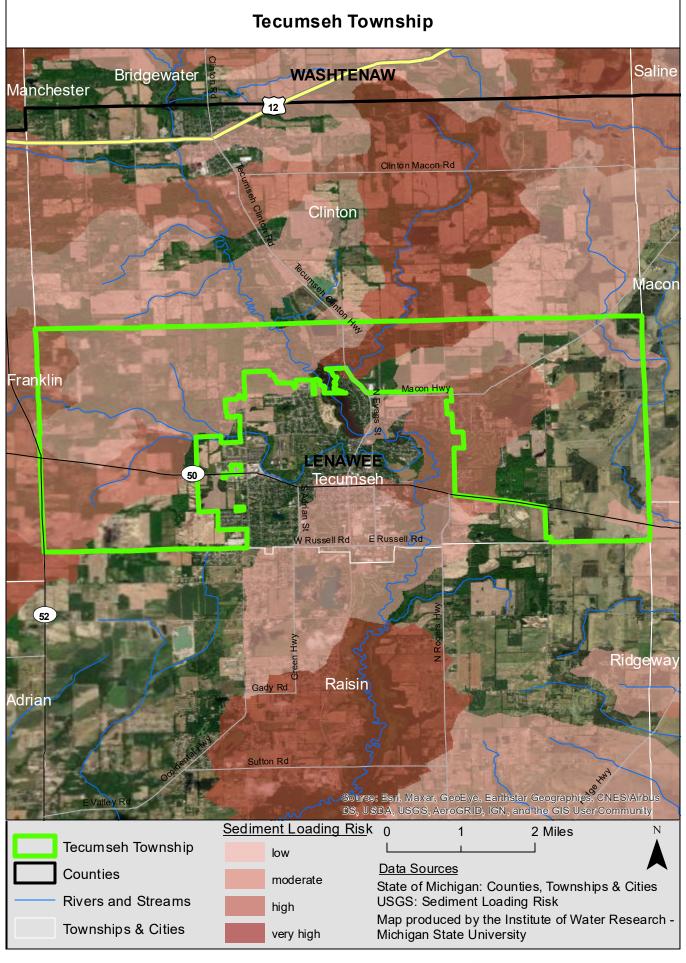
Somerset Township Liberty **JACKSON** Columbia lanover 127 12 Woodstock Moscow LENAWEE terli<mark>n</mark>g Rd Wheatland Adams 127 Source: Es 1, Maxar, Geoeye, Earthstar Geographiss, GN E<mark>s</mark> Airbus DS, USDA, USGS, Aero GRID, 16N, and the GIS User Community Sediment Loading Risk 0 2 Miles Somerset Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University







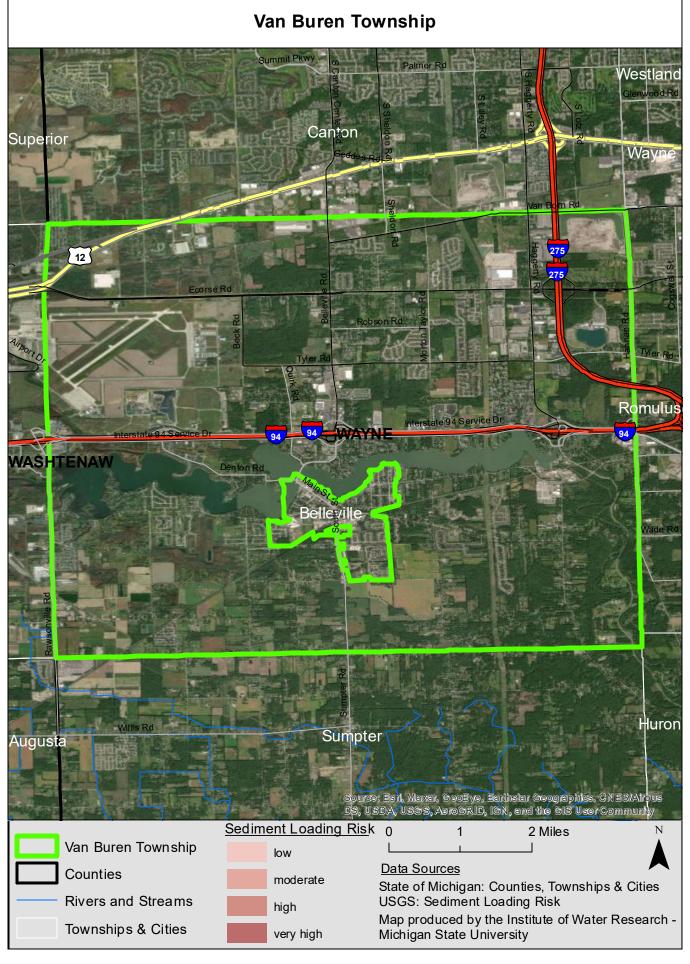






City of Tecumseh Clinton Tecumseh ENAWE 50 S Maumee St W Russell Rd E Russell Rd Raisin Source: Est, Maxar, Geozye, Zathstar Geographts, GN 58/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles City of Tecumseh low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University







Wheatland Township Woodstock Moscow Somerset N Adams Rd LENAWEE HILLSDALE Adams Church Rd idson Jefferson Pittsford Source: Esrl, Maxar, Geoeye, Earlhstar Geographics, CN ES/Air<mark>bus</mark> DS, USDA, USGS, AeroGR ID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles Wheatland Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities USGS: Sediment Loading Risk Rivers and Streams high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

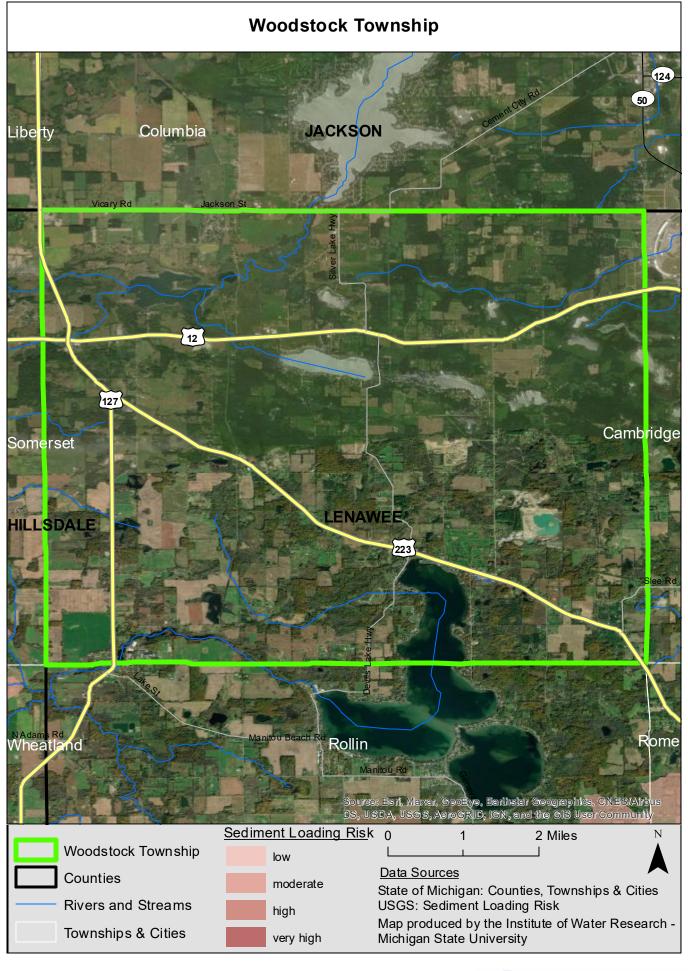


Whiteford Township lda Deerfield Summerfield Bedford 23 MONROE LENAWEE Riga Ottawa Lake Rd Yankee Rd Sylvania Metamora Rd ≥ (184) 51 McGregor Ln 23 (W Laskey Rd 223 Maxar, GeoEye, Earthstar Geographies, CNES/Airbus AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles Whiteford Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

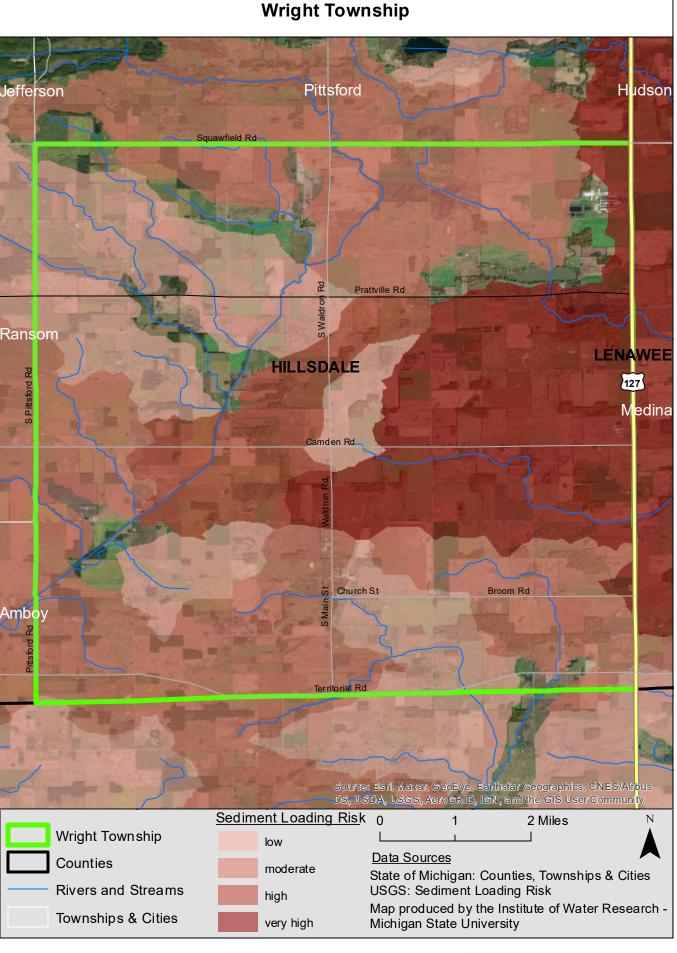


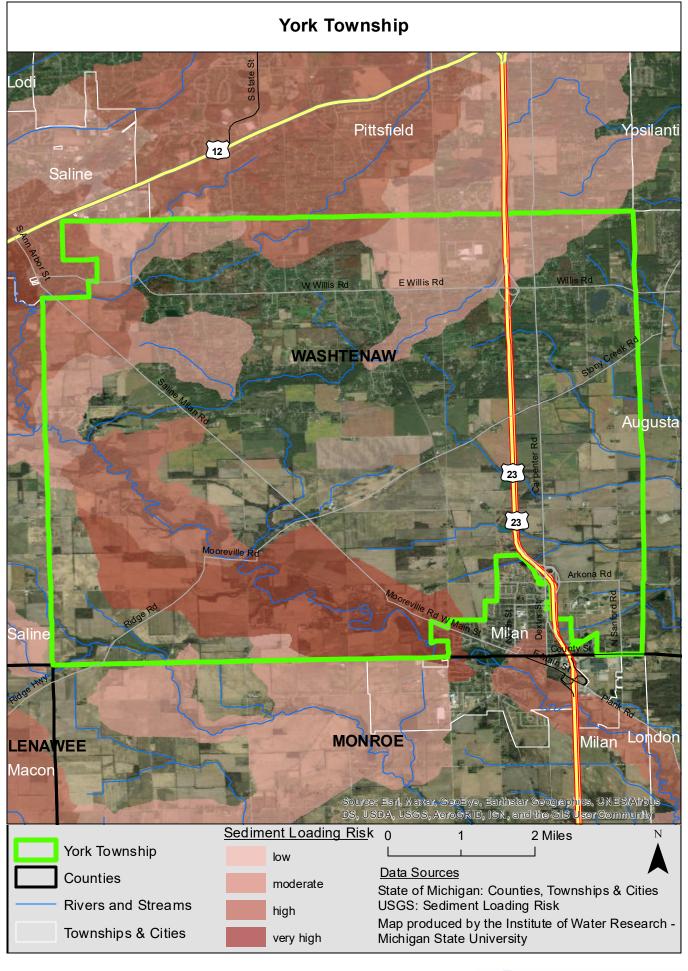
Woodbridge Township W Reading Rd E Reading Rd Reading Rd Reading Cambria Jeffersor Squawfield Rd W Montgomery Rd E Montgomery Rd HILLSDALE Ransom Camden Sampson Rd Amboy E Territorial Rd W Territorial Rd Source: Esrl, Maxar, CeoEye, Earlister Geographies, CNES/Atrous DS, USDA, USGS, AeroGRID, 16N, and the GIS User Community Sediment Loading Risk 0 2 Miles Woodbridge Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities USGS: Sediment Loading Risk Rivers and Streams high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University













City of Ypsilanti Superior WASHTENAW S Congress St & 12 ⁄psilanti Source: Esri, Marair, GeoEye, Earthstar Geographtes, GN ES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Sediment Loading Risk 0 2 Miles City of Ypsilanti low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

Ypsilanti Township Canton Superior Ann Arbor s Congress St. 12 12 12 **WASHTENAW** Pittsfield Sumpter Augusta York Source: Esrl, Maxar, Geosye, Sarihstar Geographics, CN S3/Airbus DS, USCA, USGS, AeroGRID, IGN , and the GIS User Community Sediment Loading Risk 0 2 Miles Ypsilanti Township low **Data Sources** Counties moderate State of Michigan: Counties, Townships & Cities Rivers and Streams USGS: Sediment Loading Risk high Map produced by the Institute of Water Research -Townships & Cities very high Michigan State University

