Wolf Lands Forest Carbon Project

Greenhouse Gas Plan, Version 2.4
April 14, 2023
ACR Project ID #628

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A. PROJECT OVERVIEW

A1. PROJECT TITLE

The project title is "Wolf Lands Forest Carbon Project"

A2. PROJECT TYPE

This project is to be registered under the American Carbon Registry Standard (ACR 2020, Version 7.0) as an Improved Forest Management (IFM) project. It has been developed in compliance with the ACR Project Standard, Version 7.0 (December 2020) and follows the approved ACR Improved Forest Management Methodology Version 1.3 (April 2018).

This project will be implemented as a Programmatic Development Approach (PDA) in compliance with American Carbon Registry Aggregation and Programmatic Development Approach Project Guidance, Version 1.0, to allow new Sites to be added after the initial Validation of an Aggregated Project.

A3. PROOF OF PROJECT ELIGIBILITY

Eligibility for this Improved Forest Management project has been determined with reference to the ACR Standard Version 7.0 (December 2020) and the Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands, Version 1.3.

The Wolf Lands Forest Carbon Project meets all relevant eligibility requirements as described in Table A3.1 below.

Table A3.1 Project eligibility requirements.

Eligibility Requirements	Proof of Eligibility	GHG Plan Reference
Ownership Type	Private ownership	Section G1 - Proof of Titles
Project proponent has third-party certification or no commercial timber harvesting	The property is certified by the American Tree Farm System.	Section A5.1 - Background Information
Project area meets the definition of 'forestland condition' as per USFS FIA program definition.	Per the ACR Standard (Version 7.0), the project meets the definition of forestland through a minimum of 10% forest cover (or equivalent stocking) by live trees of any size.	Section A4 - Location
Project Start Date	The project start date of May 20, 2020 coincides with the signing of the contract between Wolf Lands, Inc. and Green Timber, provided separately for verification purposes. This complies with Start Date requirements of the ACR Standard Version 7.0, that any project listed subsequent to January 1, 2021, must follow all	Section H1 - Start Date

	requirements of and be validated against the ACR Standard Version 7.0.	
Project Term	The Project Proponent commits to maintain the carbon project scenario stocking levels on the project area at least for the required Project Term of 40 years.	Section H2 – Project Timeline
Crediting Period	In compliance with ACR Standard Version 7.0 (December 2020) and the Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands, Version 1.3, the crediting period for the project is 20 years	Section H2 - Project Timeline
Real	GHG removals are quantified based on inventory of the standing stock in the project area at the time of verification.	See also Section D. Monitoring Plan and Section E. Quantification
Land Title	For all areas included in the project, long term land titles have been issued and ownership is thus clear, unique, and uncontested.	See also Appendix A: Ownership Docs
Direct Emissions/Offset Title	GHG emission reductions and removals generated by the project activity are generated from forest carbon sources and sinks over which Wolf Lands, Inc. has all management and ownership rights. Wolf Lands, Inc. holds offset title to all lands in the project area (see Section G. Ownership and Title) and all rights to carbon credits/offsets produced through management of forests in the project area (attestation provided separately for verification purposes).	Section G2. Chain of Custody
Additionality	Additionality for the project has been shown through a regulatory surplus test, a common practice test, and an implementation barrier test.	Section C. Additionality
Permanent	The long-term setup, risk analysis, and buffer establishment assure permanence of the project benefits	Section B8. Permanence
Net of Leakage	Possible leakage effects due to activity shifts are quantified and deducted from the GHG benefits.	Section E3. Leakage
Independently Validated and Verified	In accordance with ACR standard Version 7.0 and IFM methodology Version 1.3, the project benefits have been validated and verified independently by Aster Global.	
Community and Environmental Impacts	Impacts on community and environment were analyzed in accordance with the ACR Standard Version 7.0, and net positive impacts were confirmed.	Section F. Community & Environmental Impacts

A4. LOCATION

A GIS shapefile of the project area, “DevelopmentData_20210628_V2.gdb” was provided separately for verification. This shapefile gives unique identification and delineation of the specific extent of the project. Figures on the following pages provide additional details.

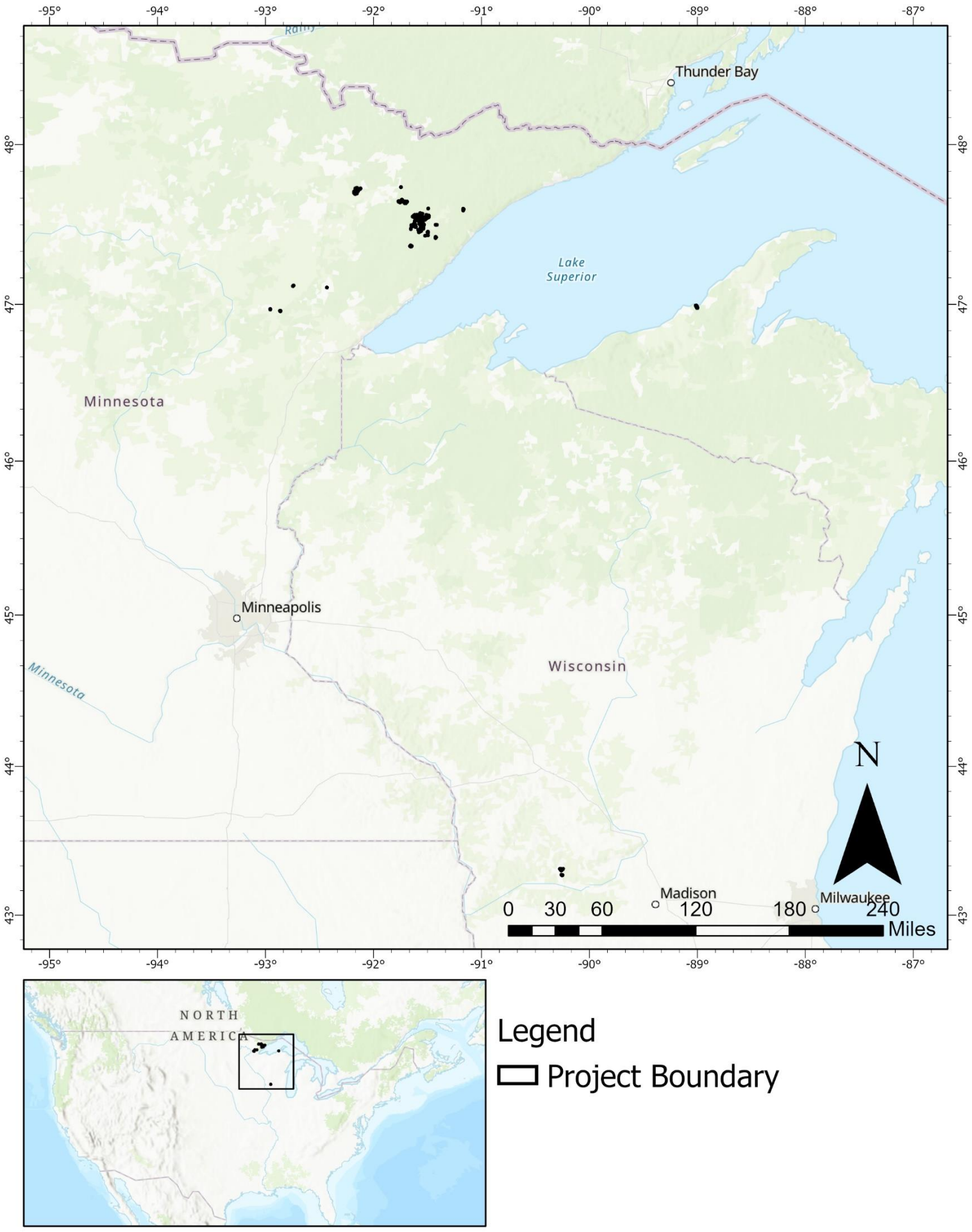


Figure A4-1. Vicinity Map that shows project location, including latitude/longitude coordinates

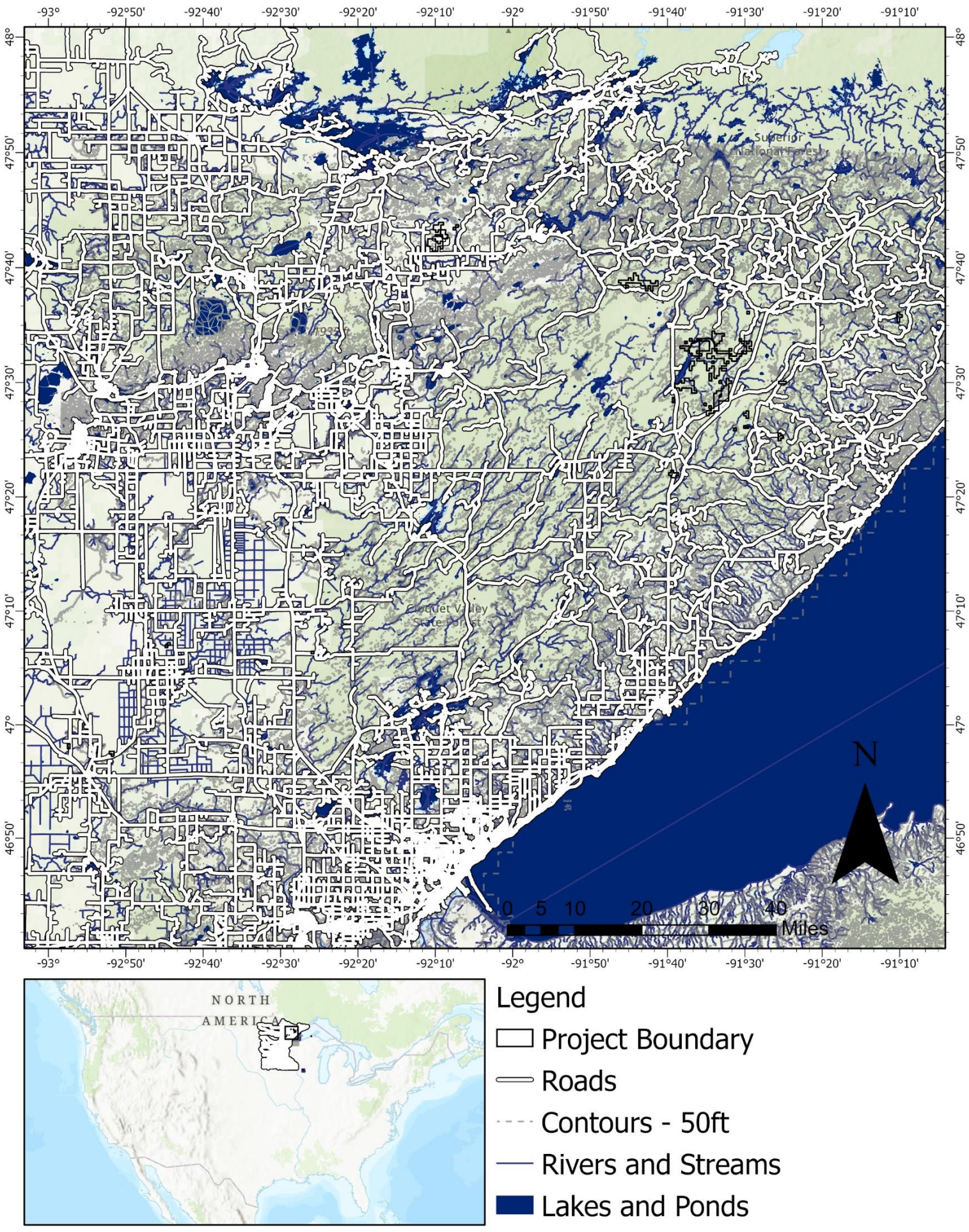
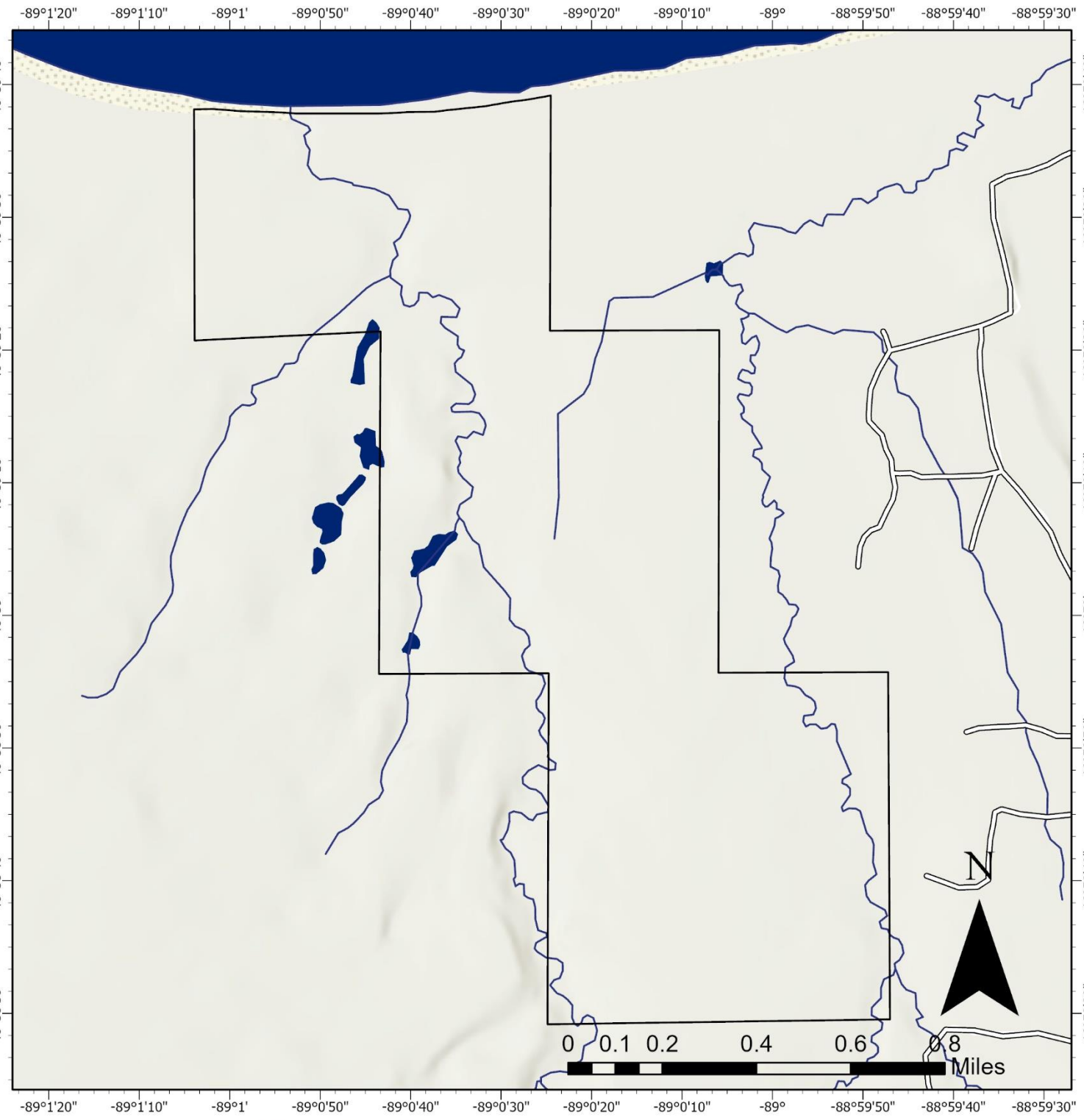


Figure A4-2.1 Hydrology, topography and roads relative to Minnesota project area



Legend

- Project Boundary
- Contours - 50ft
- Roads
- Rivers and Streams
- Lakes and Ponds

Figure A4-2.2 Hydrology, topography and roads relative to Michigan project area

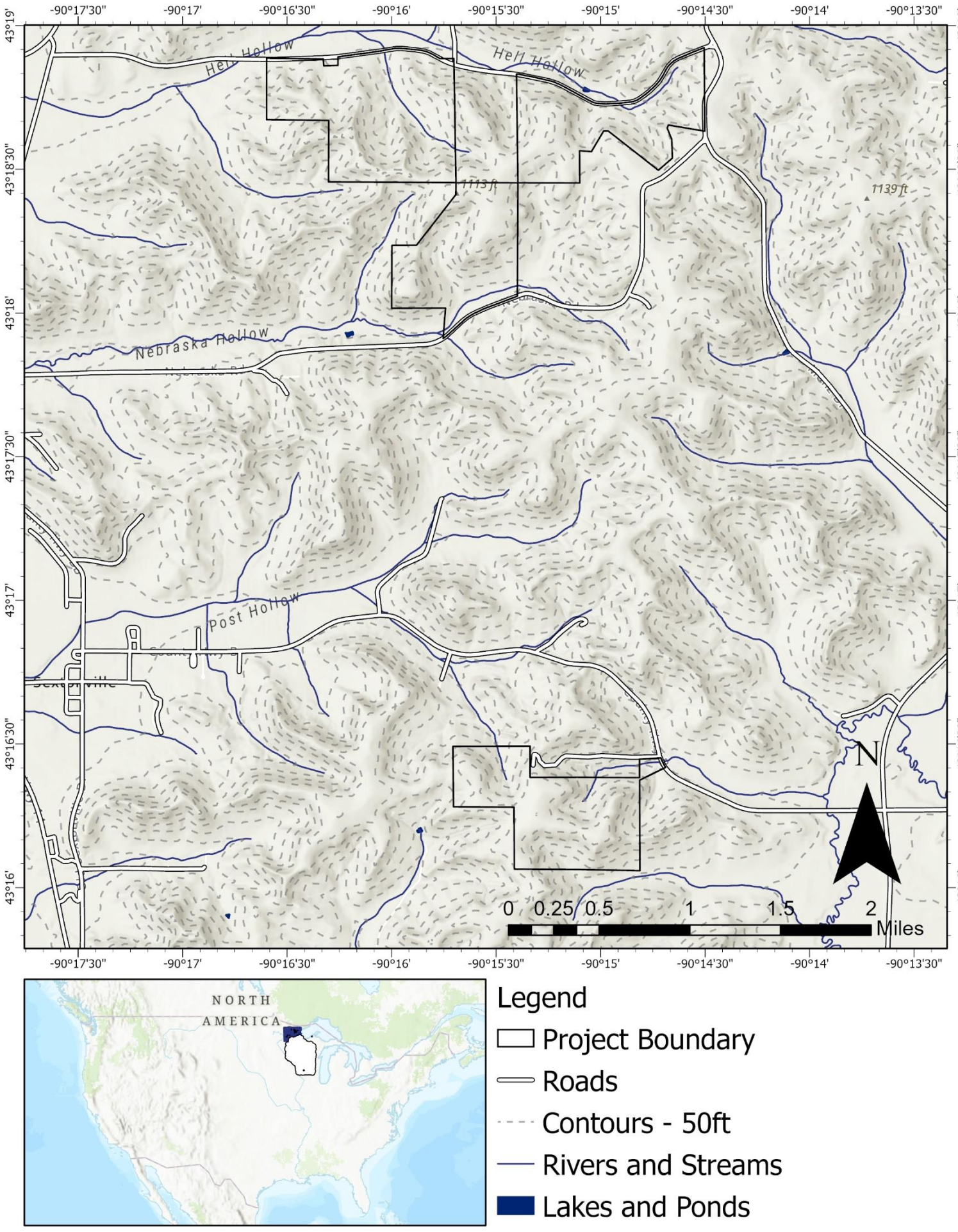
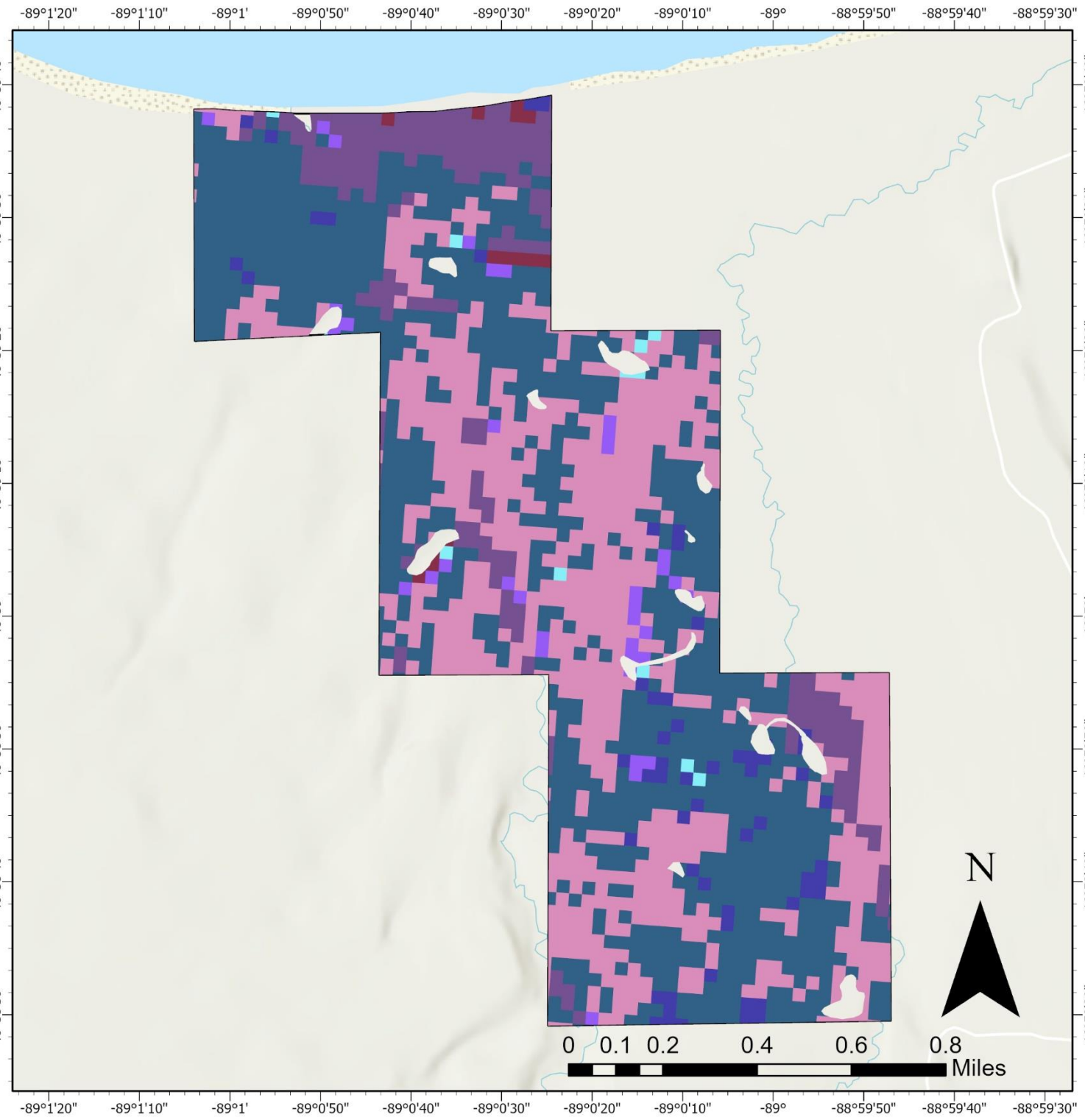


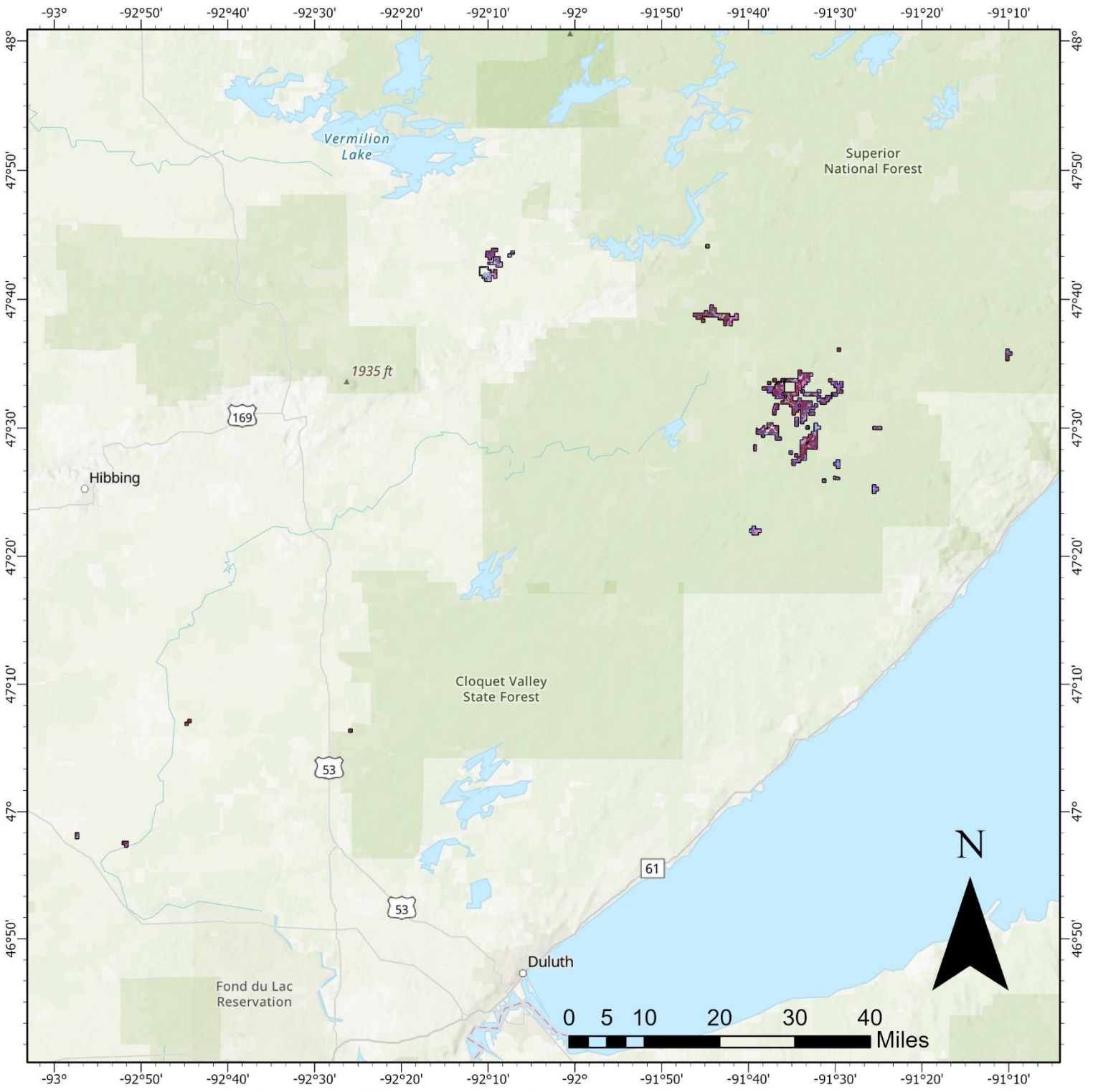
Figure A4-2.3 Hydrology, topography and roads relative to Wisconsin project area



Legend
- Project Boundary

Land Fire SAF SRM Class
- LF 61: Managed Tree Plantation
- LF 62: Recently Logged - Herbaceous
- LF 63: Recently Logged - Shrub
- LF 64: Recently Logged - Tree
- SAF 110: Black Oak
- SAF 13: Black Spruce-Tamarack
- SAF 14: Northern Pin Oak
- SAF 15: Red Pine
- SAF 16: Aspen
- SAF 1: Jack Pine
- SAF 24: Hemlock-Yellow Birch
- SAF 26: Sugar Maple-Basswood
- SAF 27: Sugar Maple
- SAF 39: Black Ash-American Elm-Red Maple
- SAF 52: White Oak-Black Oak-Northern Red Oak
- SAF 5: Balsam Fir

Figure A4-3.1 Land cover type relative to Michigan project area



Legend

- Project Boundary

Land Fire SAF SRM Class

- LF 61: Managed Tree Plantation
- LF 62: Recently Logged - Herbaceous
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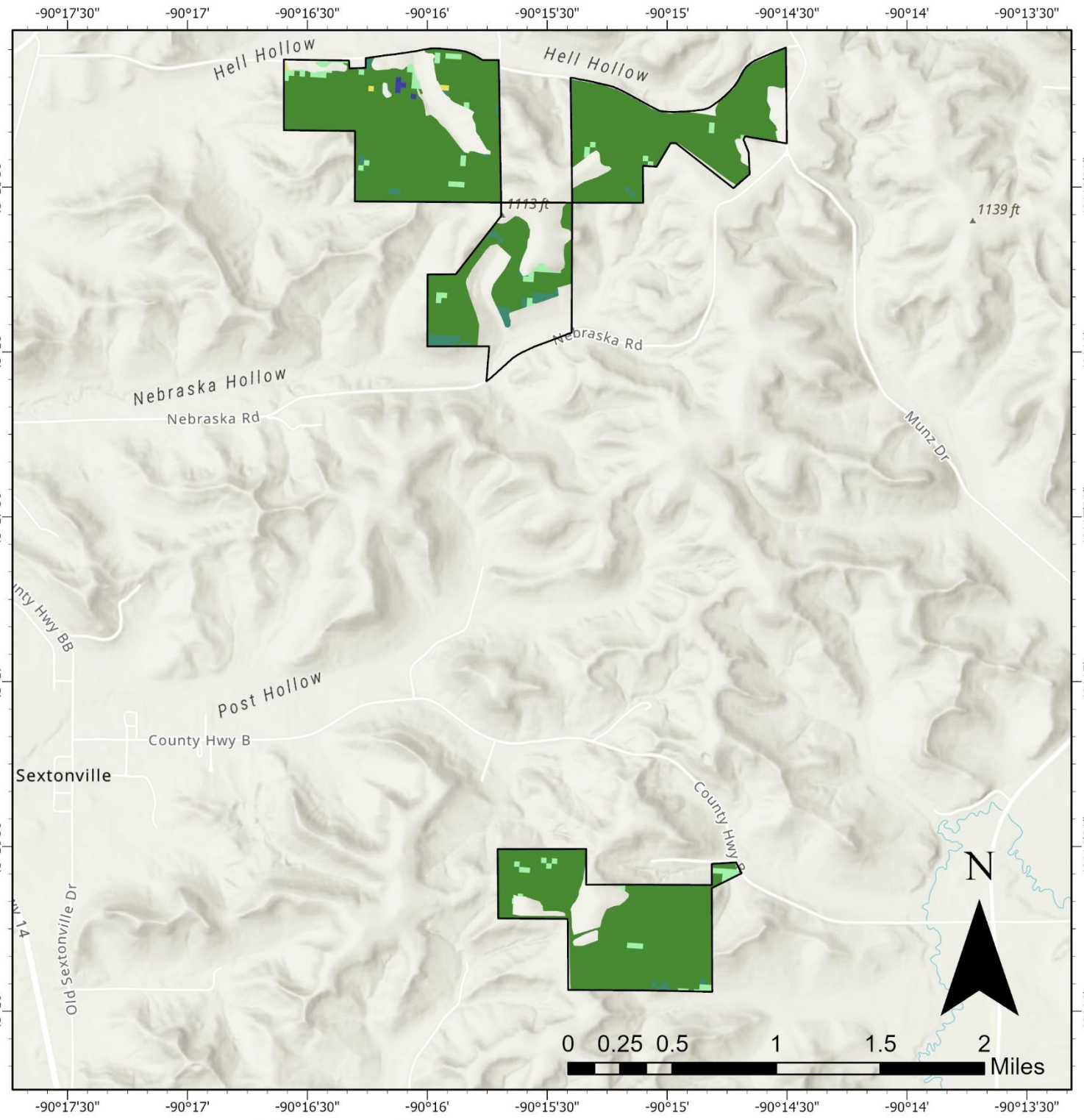
- SAF 39: Black Ash-American Elm-Red Maple
- SAF 52: White Oak-Black Oak-Northern Red Oak
- SAF 5: Balsam Fir

Figure A4-3.2 Land cover type relative to Minnesota project area



Legend

- Project Boundary

Land Fire SAF SRM Class

- LF 61: Managed Tree Plantation
- LF 62: Recently Logged - Herbaceous
- LF 63: Recently Logged - Shrub
- LF 64: Recently Logged - Tree
- SAF 110: Black Oak
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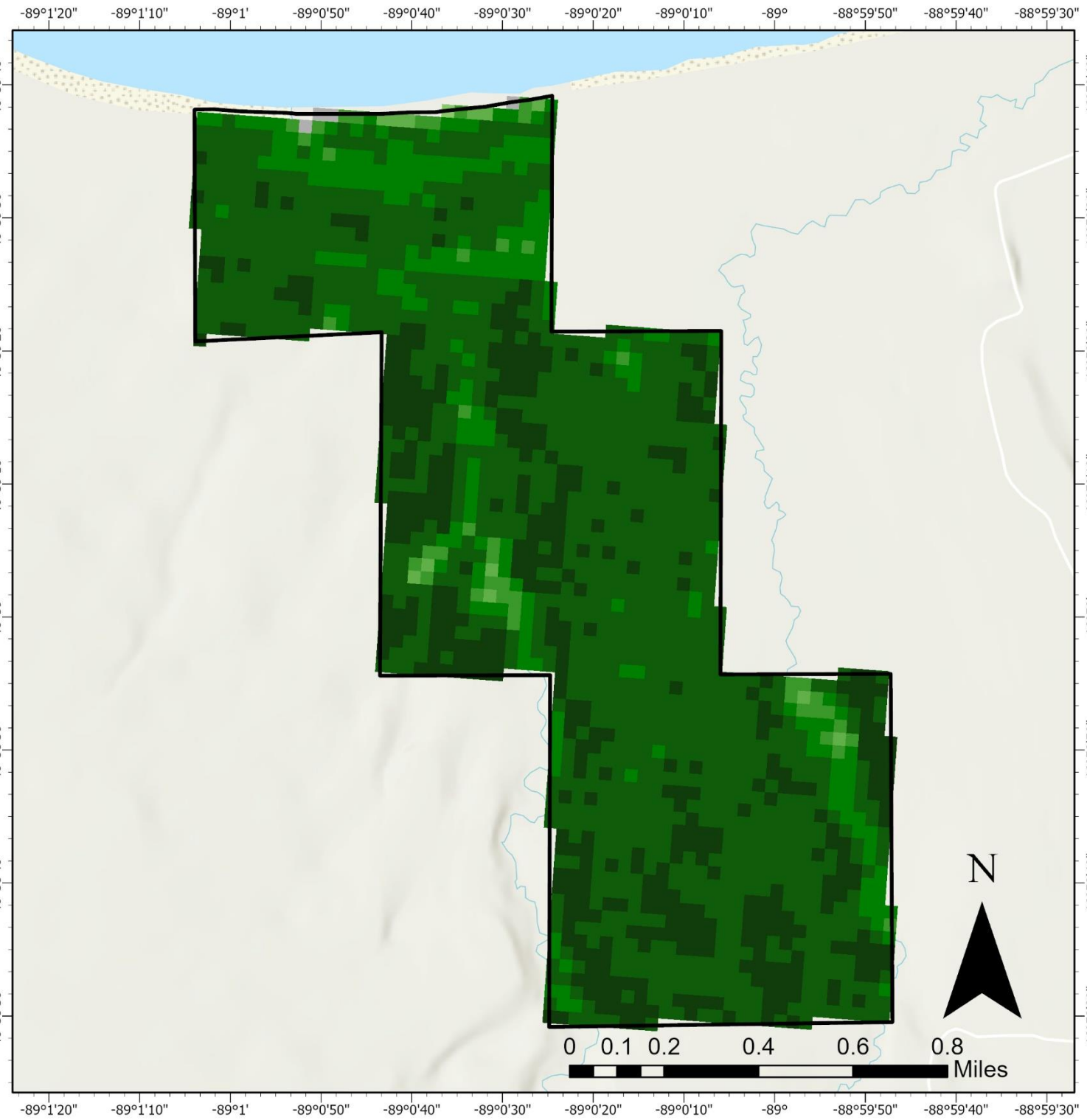
- SAF 5: Balsam Fir

Figure A4-3.3 Land cover relative to Wisconsin project area



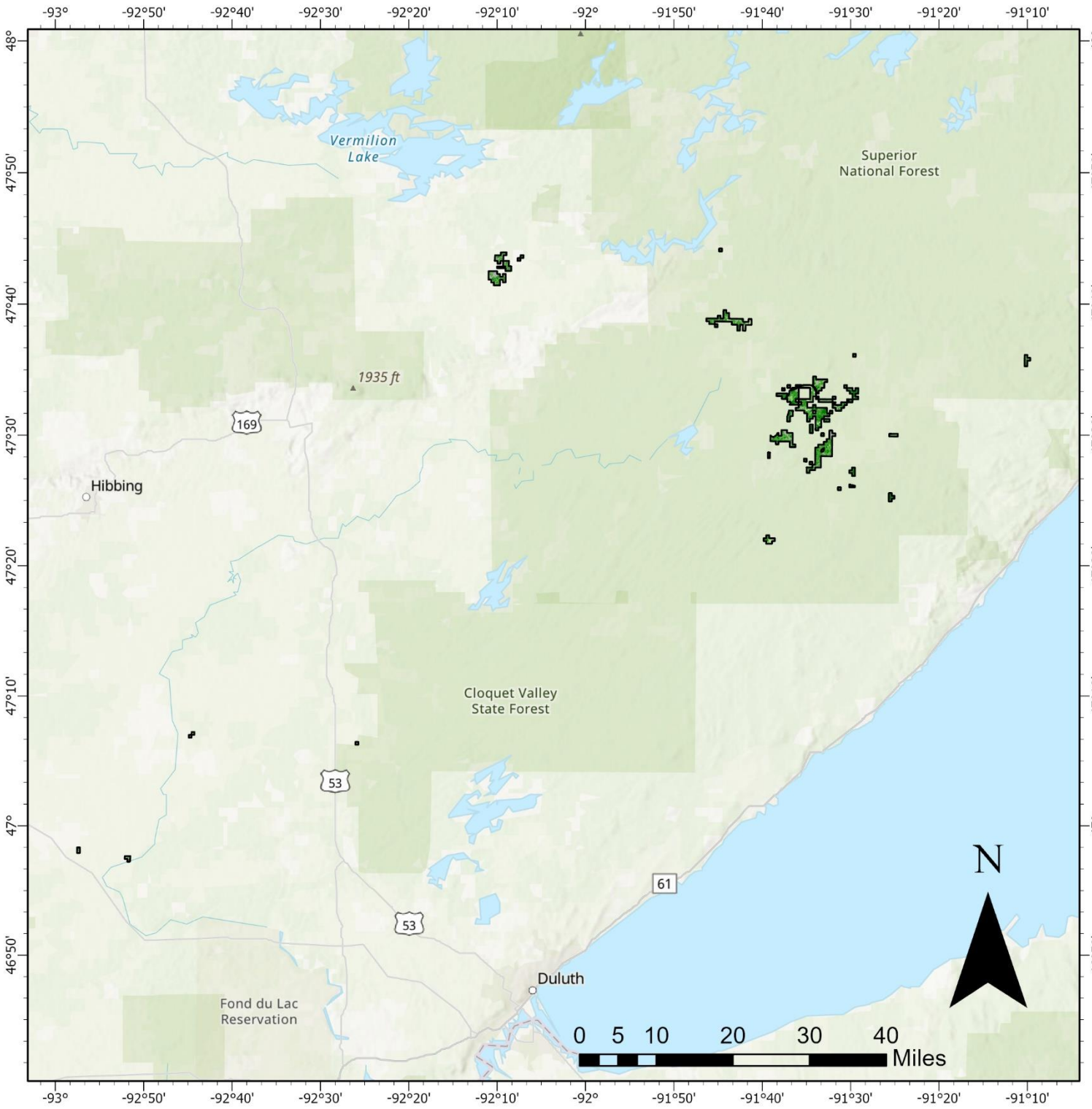
Legend

- Project Boundary

Land Fire Percent Canopy Cover

- Non-Forested
- Tree Cover >= 10 and < 20%
- Tree Cover >= 20 and < 30%
- Tree Cover >= 30 and < 40%
- Tree Cover >= 40 and < 50%
- Tree Cover >= 50 and < 60%
- Tree Cover >= 60 and < 70%
- Tree Cover >= 70 and < 80%
- Tree Cover >= 80 and < 90%
- Tree Cover >= 90 and <= 100%

Figure A4-4.1 Percent canopy cover relative to Michigan project area



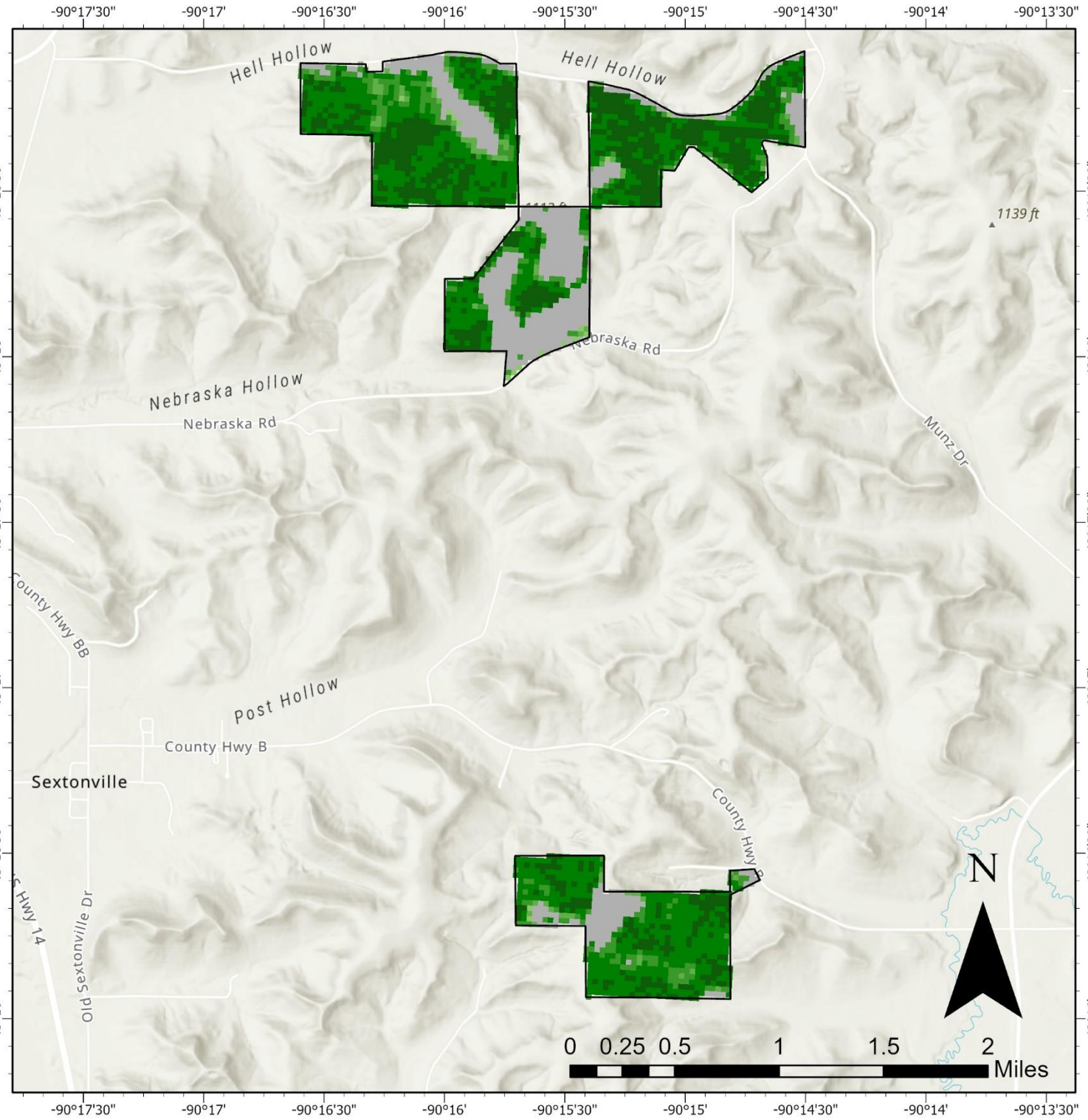
Legend

- Project Boundary

Land Fire Percent Canopy Cover

- Non-Forested
- Tree Cover >= 10 and < 20%
- Tree Cover >= 20 and < 30%
- Tree Cover >= 30 and < 40%
- Tree Cover >= 40 and < 50%
- Tree Cover >= 50 and < 60%
- Tree Cover >= 60 and < 70%
- Tree Cover >= 70 and < 80%
- Tree Cover >= 80 and < 90%
- Tree Cover >= 90 and <= 100%

Figure A4-4.2 Percent canopy cover relative to Minnesota project area



Legend

- Project Boundary

Land Fire Percent Canopy Cover

- Non-Forested
- Tree Cover >= 10 and < 20%
- Tree Cover >= 20 and < 30%
- Tree Cover >= 30 and < 40%
- Tree Cover >= 40 and < 50%
- Tree Cover >= 50 and < 60%
- Tree Cover >= 60 and < 70%
- Tree Cover >= 70 and < 80%
- Tree Cover >= 80 and < 90%
- Tree Cover >= 90 and <= 100%

Figure A4-4.3 Percent canopy cover relative to Wisconsin project area

A5. BRIEF SUMMARY OF PROJECT

A5.1 Background Information

The Wolf Lands Forest Carbon Project area is located on approximately 11,275 acres of privately owned forestland in Richland County in Wisconsin, Ontonagon County in Michigan, and Lake and St. Louis Counties in Minnesota. By committing to maintain forest CO2 stocks above the regional baseline, the project will provide significant climate benefits through carbon sequestration.

The forest stands within this project consist of 27 different hardwood and softwood species, primarily black spruce (23%), balsam fir (20%), and northern white cedar (14%).

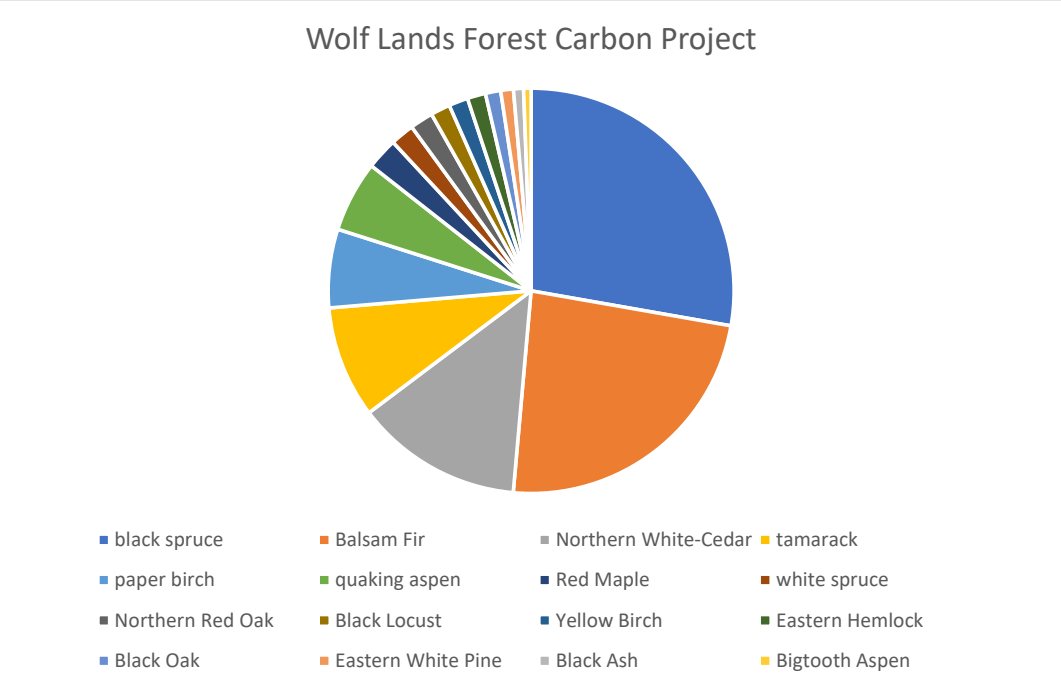


Figure A5.1.1 Species Distribution by Percent Basal Area

A5.2 Description of Project Activities

The project activity is Improved Forest Management, with Wolf Lands, Inc.'s forest management practices representing a significant improvement in the carbon storage and conservation value over higher return, more aggressive management regimes of industrial private lands in the region, which are characterized by shorter, even-aged rotations. The project ensures long-term sustainable management of the forests, which could otherwise undergo significant commercial timber harvesting.

A5.3 Project Purpose and Objectives

By committing to maintain forest CO2 stocks above the regional baseline level, the project will provide significant climate benefits through carbon sequestration. The purpose of this project is also to ensure long-term continuance of all environmental benefits provided by the conservation of this forestland.

A6. PROJECT ACTION

A.6.1 Description of prior physical conditions

Climactic Zone

The project is located in Minnesota, Wisconsin, and Michigan, which falls within zone 3a mean annual extreme minimum temperatures between –40 to -35 F), 3b (mean annual extreme minimum temperatures between -35 to -30 F, 4a (mean annual extreme minimum temperatures between --30 to -25 F, and 4b (mean annual extreme minimum temperatures between -25 to -20 F) (USDA-ARS Plant Hardiness Zones, 2012).

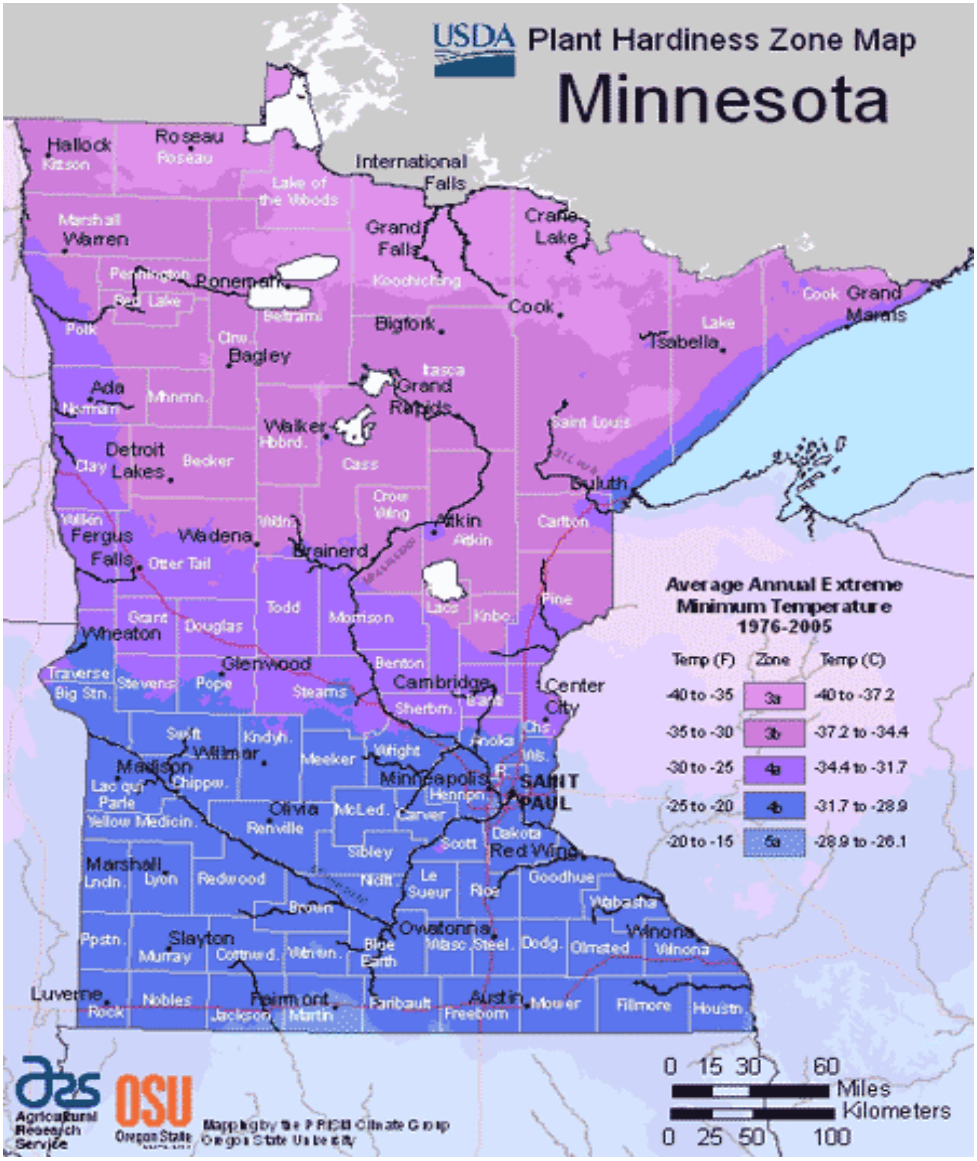


Figure A6.1.1 USDA plant hardiness Minnesota (https://planthardiness.ars.usda.gov/PHZMWeb/)

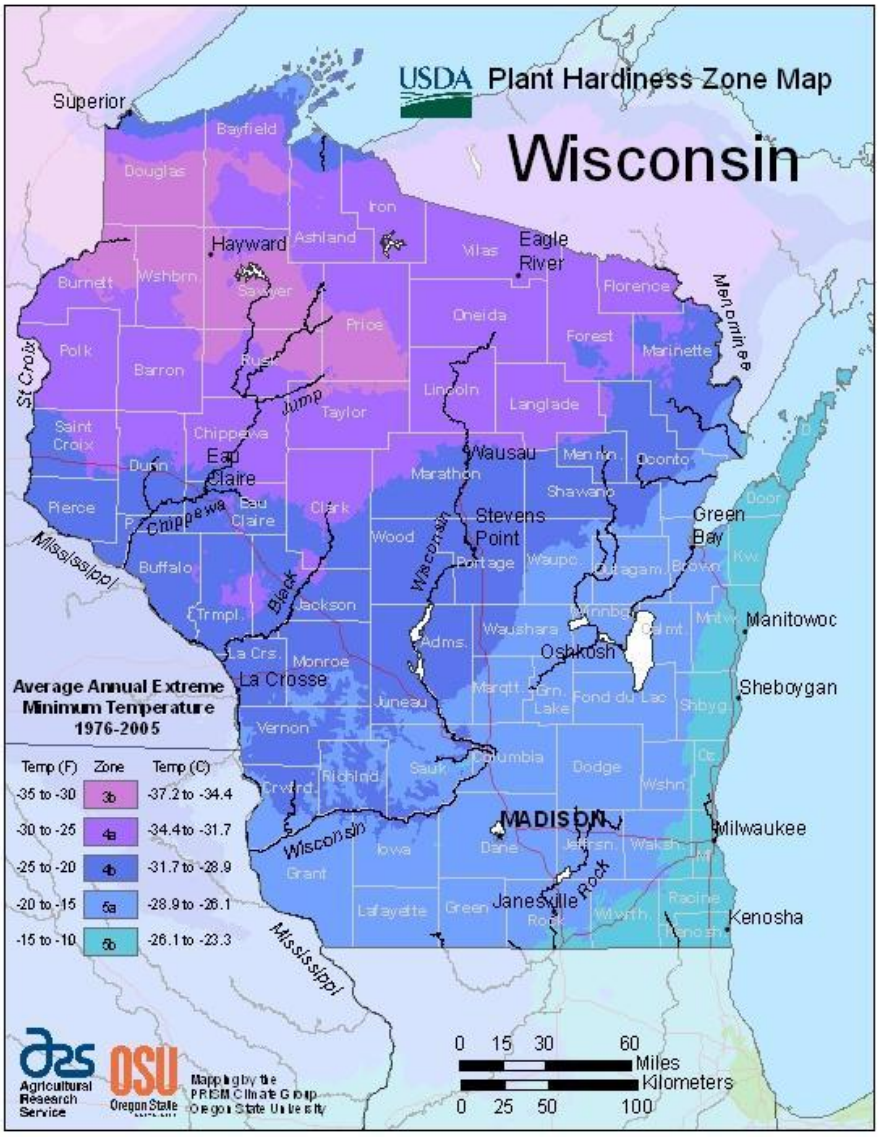


Figure A6.1.2 USDA plant hardiness Wisconsin (https://planthardiness.ars.usda.gov/PHZMWeb/)

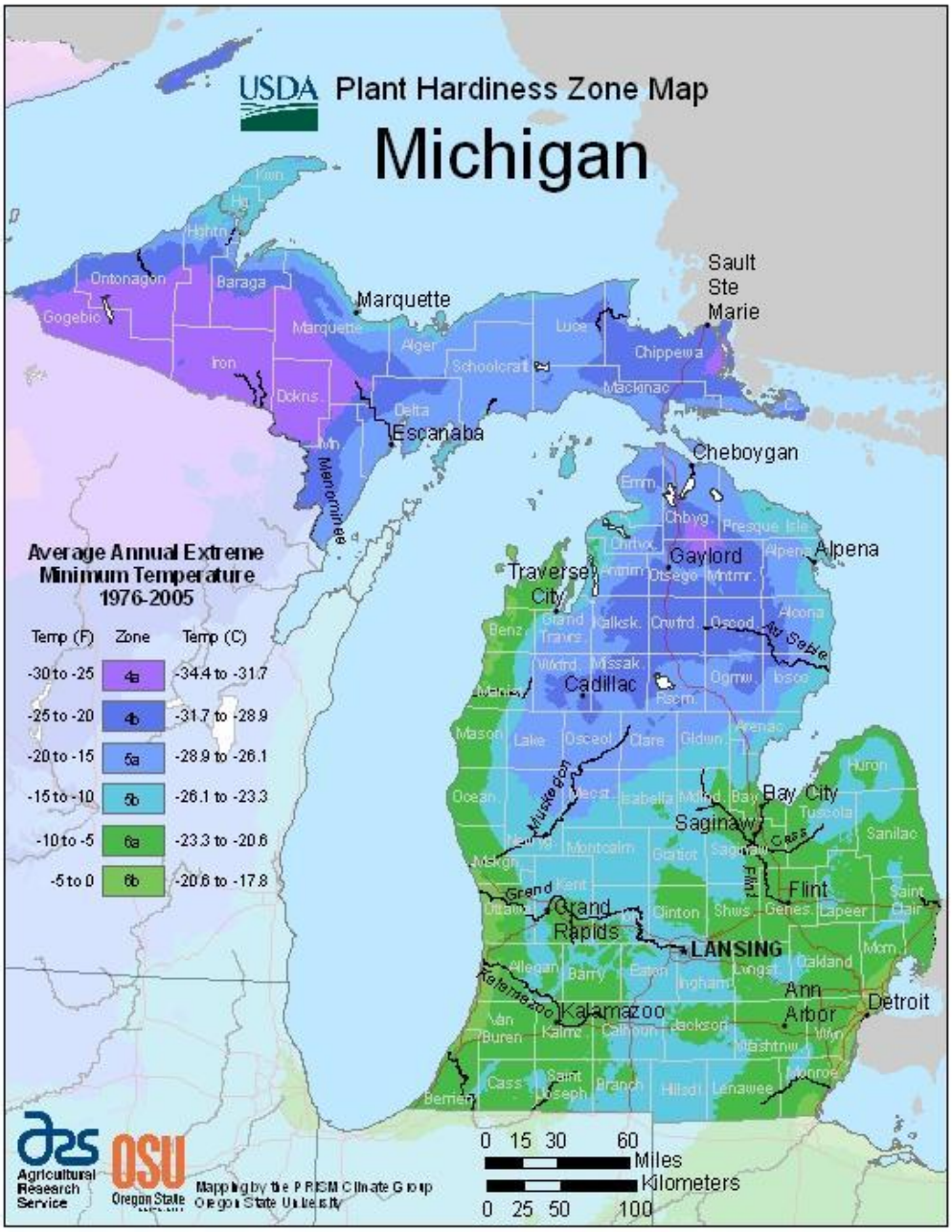


Figure A6.1.3 USDA plant hardiness Michigan (https://planthardiness.ars.usda.gov/PHZMWeb/)

Ecosystem/Vegetation

The landscape within the project area and surrounding area is predominately managed forest.

Vegetation Communities: Using 2014 USGS LANDFIRE layers six primary SAF vegetation types were identified in the project area: SAF 13: Black Spruce-Tamarack, SAF 39: Black Ash-American Elm-Red Maple, SAF 5: Balsam Fir, SAF 27: Sugar Maple, SAF 16: Aspen, and SAF 52: White Oak-Black Oak-Northern Red Oak.

See file PC378_WL01_GIS_Plot_Attrs_2022_06_14.xlsb for details.

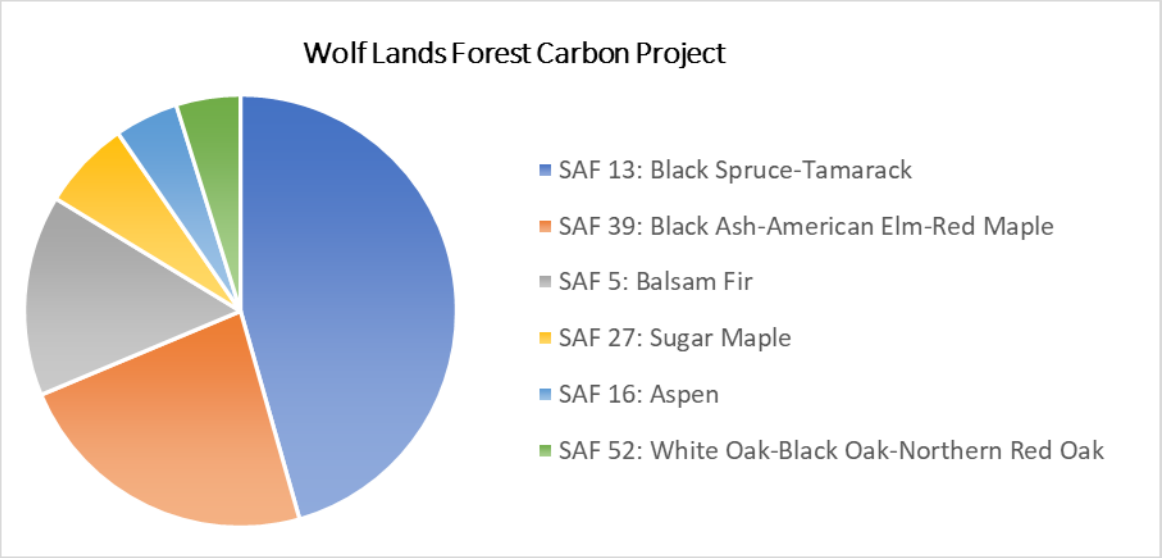


Figure A6.2: Acreage Distribution by LandFire Class

Land Use

The current use is as a managed forest. Historic land use has been industrial timber harvesting.

A.6.2 Description of project technologies, products, services and expected level of activity

There will be forest management within the project area. This management activity will increase carbon stocking by extending rotation lengths, reducing harvest levels in order to create healthy, resilient, forest stands.

A.6.3 Project Action

By committing to maintain forest CO2 stocks above the baseline level, the project will provide climate benefits through carbon sequestration. The Wolf Lands Forest Carbon Project will achieve GHG removals by sequestering more CO2 than the baseline scenario.

A7. EX ANTE OFFSET PROJECTION

Total projected GHG reductions and removals is 804,559 $mtCO_2e$ (without risk buffer deductions) over the first crediting period of 20 years (including GHG removal from long-term wood products). Table A7.1 lists the estimates of net GHG emissions reductions and removals achieved, and the Project's increase in CO_2e; both metrics are for the end of the listed year. Figure A7.1 shows the GHG differences between the baseline scenario and the Project's conservative/management scenario (in metric tonnes of CO_2e).

Table A7.1. Estimate of net ERTs and gross additional CO_2e, by Year.

Project Year	Year	ERTs	Estimates of GHG emission reductions and removals ($mtCO_2e$)
1	2020	56,774	134,052
2	2021	44,874	239,408
3	2022	59,428	379,402
4	2023	30,027	448,980
5	2024	8,029	468,307
6	2025	7,699	486,842
7	2026	7,989	506,077
8	2027	8,266	525,981
9	2028	8,640	546,786
10	2029	8,956	568,353
11	2030	9,808	591,973
12	2031	9,808	615,594
13	2032	9,807	639,214
14	2033	9,806	662,835
15	2034	9,805	686,456
16	2035	9,804	710,076
17	2036	9,803	733,697
18	2037	9,803	757,317
19	2038	9,803	780,938
20	2039	9,802	804,559

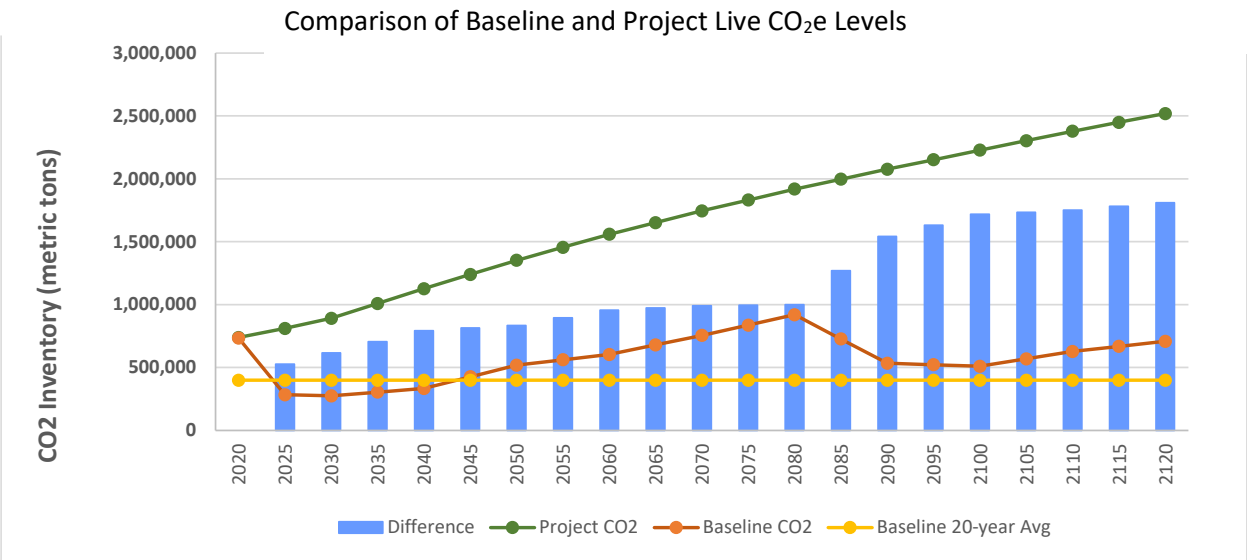


Figure A7.1. – Graph showing the CO_2e relationship between the Baseline scenario (with an objective to maximize net present value), versus the Project's conservation management scenario (with an objective to conserve CO_2e), and the difference (in metric tonnes) therein (from 2025 to 2120).

A8. PARTIES

The project was implemented by Wolf Lands, Inc. Spatial Informatics Group, LLC, is the carbon offsets project developer and technical modeler. Project verification was completed by Aster Global and the forest carbon inventory was conducted by Green Timber Forestry.

Table A8.1. Project Parties and Responsibilities

Project Party	Point of Contact	Role/Responsibility	Contact Information
Wolf Lands, Inc.	Lloyd Purnell	Project Proponent – implementation of long-term project management, landowner, and title holder	Wolf Lands, Inc. PO Box 247 Butler, WI 53007 Phone: (262)695-1624
Spatial Informatics Group, LLC	Tim Kramer Carbon Domain Manager	Offset Developer, coordination of project implementation, modeling, credit sales	Spatial Informatics Group, LLC. 2529 Yolanda Ct. Pleasanton, CA 94566 Phone: (563)581-8973
Aster Global	Janice McMahon	Initial Verifier	Aster Global Janice McMahon, President North Lawrence, Ohio Phone: 330-294-1242 ext. 102
Green Timber Forestry	Justin Miller Forester	Forest Carbon Inventory	Green Timber Forestry 11511 US Highway 41

			Pelkie, MI 49958 Phone: 906-353-8584

A9. PROGRAMMATIC DEVELOPMENT APPROACH – GENERAL REQUIREMENTS

Wolf Lands Forest Carbon Project will employ the programmatic development approach (PDA) outlined in ACR's Aggregation and Programmatic Development Approach Guidance for Improved Forest Management (Version 1.0). Additional sites may be added as additional acreage is acquired by the project proponent.

A9.1 PDA Eligibility Criteria

New sites must meet all eligibility criteria for IFM projects outlined in ACR methodology (Version 1.3) and must not have been enrolled in another carbon project. Wolf Lands, Inc. will lead the recruitment and screening of new sites. Priority sites will have similar forest characteristics, productivity, carbon stocking, soil types, ownership class, and legal and management constraints of the initial project. However, sites that are sufficiently different from the initial project characteristics may be grouped into cohorts of similar properties and added to the project with a cohort-level inventory and baseline.

PDA Geographic Scope

Additional sites to be enrolled in the project will be within three adjacent ecosystem provinces of the initial cohort.

PDA Temporal Scope

All sites will have a start date of May 20, 2020. Additional sites will have a site-specific implementation date and will be enrolled within the project by May 20, 2025, 5 years from start date. All sites within cohorts will be on the same validation and verification schedule.

PDA Recruitment Schedule

The recruitment schedule for additional future sites is rolling. Additional sites will have a site-specific implementation date and will be enrolled within the project by May 20, 2025, 5 years from start date.

A9.2 PDA GHG Assessment Boundary

All sites enrolled in the project will have the same GHG sources and sinks. Reference section B4 for details.

A9.3 PDA Baseline Scenario

The ACR Aggregation and Programmatic Development Approach Guidance for IFM (Version 1.0) allows baseline quantification at either the cohort or PDA level.

If the cohort level baseline quantification is used, each cohort implements its own stand-alone inventory for project and baseline stock quantification. Baseline modeling of subsequent cohorts will consider relevant legal and management constraints of each site and use the appropriate NPV discount rates, according to ownership class. Cohort-level inventories and baselines will weight carbon stocks and statistical confidence according to the proportional stocking of each respective cohort and report the respective values at a PDA-level. The cohort specific baseline model will be updated if a site within the distinct cohort discontinues participation or upon crediting period renewal.

If a PDA level baseline is used, there is a single baseline for the project. The baseline will be remodeled and revalidated each time a site is added (or exits) from the project.

The Project Design Document will include detailed methodology on inventory and baseline approach for each additional site.

A9.4 PDA Monitoring Reporting and Verification Schedules

All sites will have a start date for May 20, 2020. Additional sites will be enrolled within the project by May 20, 2025, 5 years from start date.

All sites within each cohort will have the same quantification approach and be on the same validation and verification schedule. Monitoring of additional sites will follow procedures for the initial project area outlined in section D2.

The Project Design Document will include detailed schedules for reporting and verification for each additional site.

A9.5 PDA Roles and Responsibilities

Wolf Lands, Inc. is responsible for recruiting and screening new sites for potential enrollment in the project. Roles and responsibilities of initial project are outlined in section A8. Roles and responsibilities for additional sites will be included in the Project Design Document.

A9.6 Procedures to avoid double counting

To avoid double counting, Wolf Lands, Inc. will screen potential sites for prior application and participation in a carbon project. No sites will be added to the project that has been or will be registered on ACR as part of another project.

The Project Design Document will include details on how each new site is screened to avoid double counting.

A9.7 Site-level QA/QC

The process for record and documentation control for new sites will be made available to the VVB at the time of Validation. The QAQC process for the initial project area is detailed in Section D2. The Project Design Document will include details on site-level QAQC for additional sites.

B. METHODOLOGY

B1. APPROVED METHODOLOGY

The methodology used for the Wolf Lands Forest Carbon Project is the American Carbon Registry - Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands, Version 1.3. (April 2018).

B2. METHODOLOGY JUSTIFICATION

All applicability criteria of the selected methodology are fulfilled by the Wolf Lands Forest Carbon Project:

1. *This methodology is applicable only on non-federally owned forestland within the United States.*
   - Lands that are included in this project are not federally owned forestland.

2. *The methodology applies to lands that can be legally harvested by entities owning or controlling timber rights on forestland.*
   - Wolf Lands, Inc. controls the timber rights on the forestland and can legally harvest (Appendix I2. Land Owner and Contracts).

3. *Private or non-governmental organization ownerships subject to commercial timber harvesting at the project Start Date in the with-project scenario must be certified by FSC, SFI, or ATFS or become certified within one year of the project Start Date. If there are no ongoing harvests at the project Start Date, but harvests occur later in the project life cycle, the project area must become certified before any commercial timber harvesting can occur.*
   - Project area will be certified before any commercial timber harvest can occur OR within one-year of start date

4. *All Tribal lands in the United States, except those lands that are managed or administered by the Bureau of Indian Affairs, are eligible under this methodology, provided that they meet ACR requirements for Tribal lands*
   - Not Applicable –Wolf Lands Forest Carbon Project is not on tribal lands.

5. *Public non-federal ownerships currently subject to commercial timber harvesting in the with-project scenario must:*
   - be certified by FSC, SFI, or ATFS or become certified within one year of the project Start Date; or
   - have its forest management plan sanctioned by a unit of elected government officials within a state, or a state agency, or a federal agency
     - *Please note that any such forest management plans must be updated at minimum every 10 years*

- If there are no ongoing harvests on a public non-federal ownership at the project Start Date, but harvests occur later in the project life cycle, the project area must become certified by FSC, SFI, or ATFS, or develop a sanctioned management plan before any commercial timber harvesting can occur
- Not Applicable –Wolf Lands Forest Carbon Project is not on public lands.

6. *Use of non-native species is prohibited where adequately stocked native stands were converted for forestry or other land uses after 1997*
   - There is no use of non-native species where adequately stocked native stands were converted for forestry or other land uses after 1997.

7. *Draining or flooding of wetlands is prohibited*
   - No draining or flooding of wetlands will occur after the project start date.

8. *Project proponent must demonstrate its ownership or control of timber rights at the project start date.*
   - See attached Deeds (Appendix A: Ownership Docs)

9. *The project must demonstrate an increase in on-site stocking levels above the baseline condition by the end of the Crediting Period.*
   - Stocking levels increase well above the baseline conditions for the duration of the project and by the end of the Crediting Period (see Section E1. Baseline).

B3. PROJECT BOUNDARIES

The physical project boundaries include 11,275 acres of forestland, shown in the maps and in the shapefile DevelopmentData_20210628_V2.gdb.

See Section H2. Project Timeline for the temporal boundaries of the project.

B4. IDENTIFICATION OF GHG SOURCES AND SINKS

The following tables (Table B4.1, Table B4.2, and Table B4.3) provides a summary of GHG sources and sinks, GHG gases, and potential leakage sources within the project boundary.

Table B4.1. List of GHG sinks within the project boundary and the rationale of whether they were considered in the project analysis.

Carbon Pool/Sink	Included/ Optional/ Excluded	Justification/Explanation
Above-ground biomass carbon	Included	Major carbon pool subjected to the project activity.
Below-ground biomass carbon	Included	Major carbon pool subjected to the project activity.
Standing dead wood	Included	Major carbon pool in unmanaged stands subjected to the project activity. Project Proponents may elect to include the pool in managed stands. Where included, the pool must be estimated in both the baseline and with project cases. For this Project, standing dead wood will be included in all stands.
Lying dead wood	Excluded	Project proponents may elect to include the pool. Where included, the pool must be estimated in both the baseline and with project cases. For this Project, lying dead wood will not be included.
Harvested wood product	Included	Major carbon pool subjected to the project activity
Forest floor litter	Excluded	Changes in the litter pool are considered de minimis as a result of project implementation.
Soil organic carbon	Excluded	Changes in the litter pool are considered de minimis as a result of project implementation.

Table B4.2. GHG gases considered in the project analysis.

Gas	Source	Included / Excluded	Justification / Explanation
CO_2	Burning of biomass	Excluded	Carbon stock decreases due to burning are accounted as a carbon stock change.
CH_4	Burning of biomass	Included	Non-CO_2 gas emitted from biomass burning.
N_2O	Burning of biomass	Excluded	Potential emissions are negligible.

Table B4.3. Potential sources of leakage.

Potential Source of Leakage		Included/ Optional/ Excluded	Justification / Explanation
Activity-shifting	Timber Harvesting	Included	Project Proponent must demonstrate no activity-shifting leakage beyond the *de minimis* threshold will occur because of project implementation.
	Crops	Excluded	Forestland eligible for this methodology does not produce agricultural crops that could cause activity shifting.

	Livestock	Excluded	Forestland eligible for this methodology does not include grazing activities, thus there are no leakage impacts.
Market Effects	Timber	Included	Reductions in project outputs due to project activity may be compensated by other entities in the marketplace. Those emissions are included/considered in the quantification of project benefits.

B5. BASELINE

The Baseline Scenario represents harvest levels that maximize the net present value (NPV) at a 5% (private non-industrial) discount rate (for non-governmental organizations) subject to Wolf Lands, Inc. existing harvest constraints.

Baseline silviculture includes clearcutting only Rxs as allowed under the State Forest Practice Laws in Minnesota, Wisconsin, and Michigan. Derivation and justification for the baseline is detailed in Section E. Quantification.

B6. PROJECT SCENARIO

The project scenario consists of land management with no commercial timber harvests. See Section A6, Project Action for details.

B7. REDUCTIONS AND ENHANCED REMOVALS

The project reduces greenhouse gas emissions through natural forest growth and stand improvement. These management activities will maintain and increase carbon stocks compared to the baseline scenario.

B8. PERMANENCE

Project Proponents must conduct their risk assessment using the ACR Tool for Risk Analysis and Buffer Determination. All Project types must claim a value from risk categories: A) Financial, B) Project Management, and C) Social/Policy. Additional risk values that must be selected by project type include:

Forestry Projects claim one value from each:

D. Conservation Easement (if applicable)
E. Fire
F. Disease/pest
G. Levee failure/water table changes (required only if forested wetlands comprise more than 60% of project area).
H. Other natural disaster risk scores.

1) Financial Risk

Buffer account contribution associated with financial risk come from the risk that the organization overseeing, or financing project implementation will be unable to continue due to financial failure. Wolf Lands, Inc. is private landowner and is not on U.S. public or tribal lands it has a buffer value of 4% (default).

- Financial Risk 4% (default)

2) Project Management Risk

Project management failure is the risk related to the ability of the project management team to effectively manage the project throughout its lifetime. Wolf Lands, Inc. is private landowner and is not on U.S. public or tribal lands it has a buffer value of 4% (default).

- Project Management Risk 4% (default)

3) Social and Political Risk

Social risk is related to changing social, political or legal landscapes that could affect the project. The project location is in the United States and supports the selection of the 2% default value.

- Social Risk 2% (default)

4) Conservation Easement

The project does not have a conservation easement(s) that requires the protection of carbon stocks for the life of the project, which supports the selection of the 0% default value.

- Conservation Easement 0% (default)

5) Fire Risk

2%

The USFS Fire Risk Map (Figures B8.1.1, B8.1.2, B8.1.3) show that 70% of the project area is in the very low risk category, 18% of the project area is in the low risk category, 7% of the project area is in the moderate class, and only 3% of project area acres can be considered as having high fire risk. Since 88% of the project area acres are classified as having low to very low fire risk, the appropriate risk score to apply is 2%.

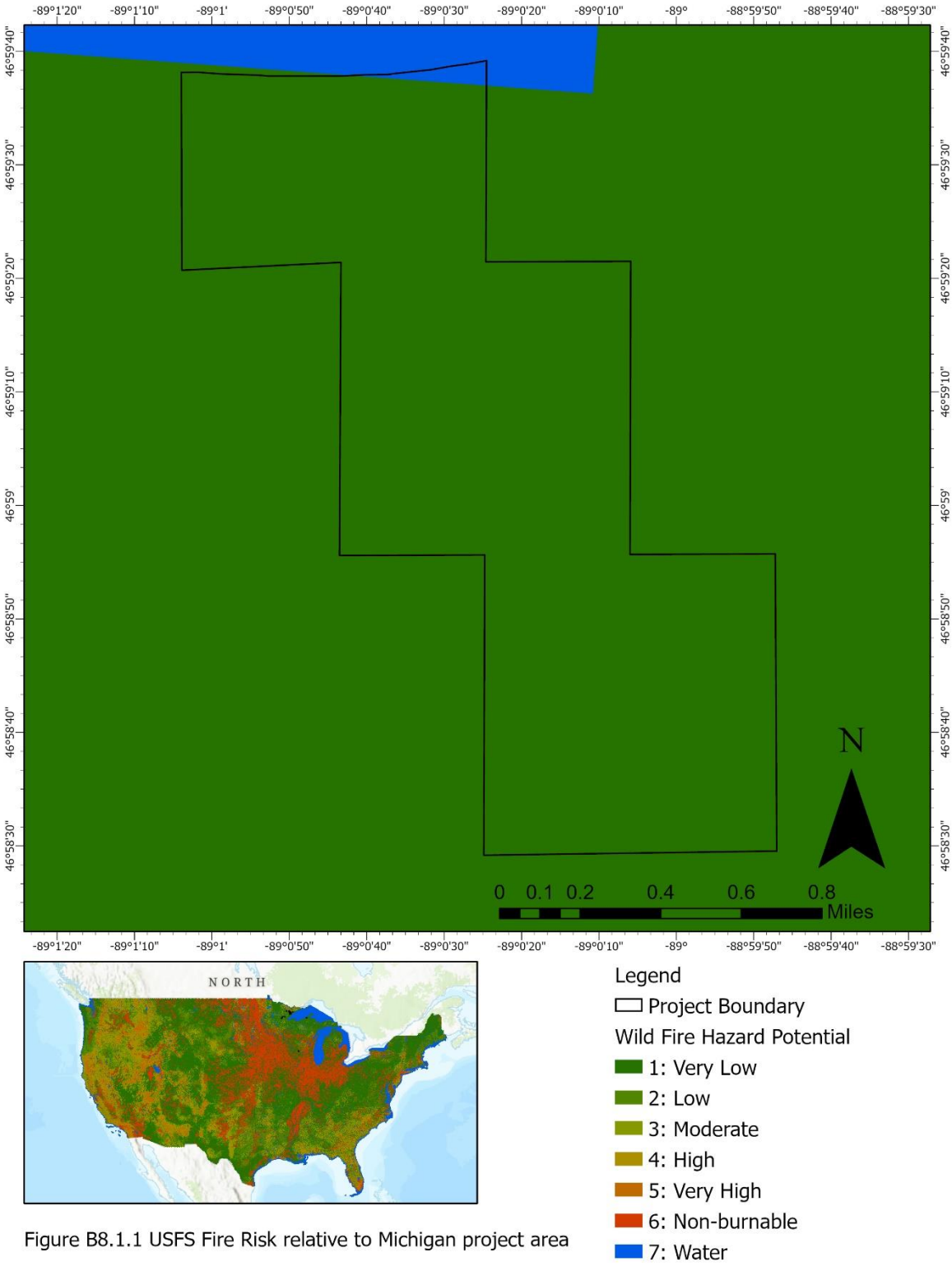


Figure B8.1.1 USFS Fire Risk relative to Michigan project area

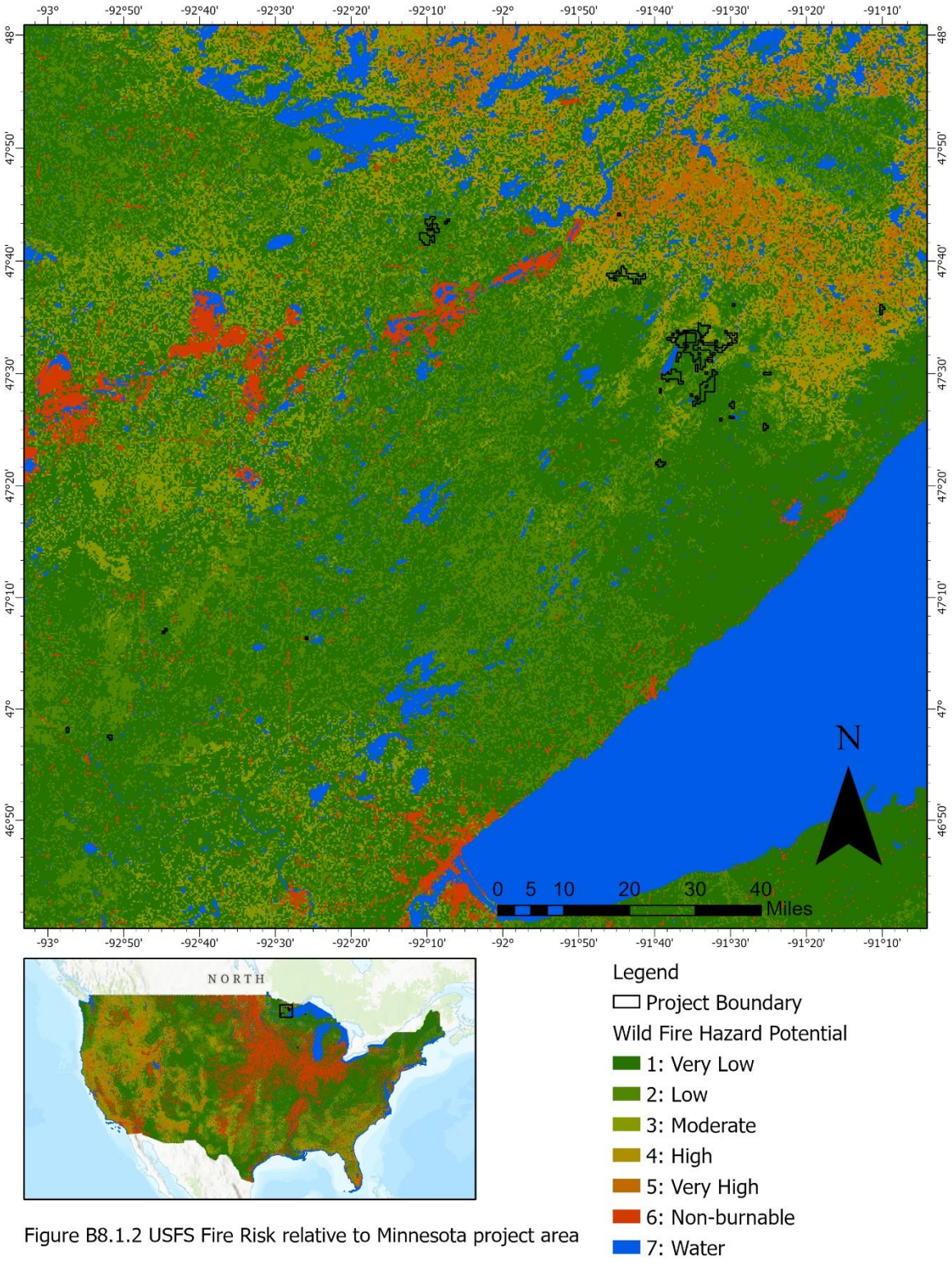


Figure B8.1.2 USFS Fire Risk relative to Minnesota project area

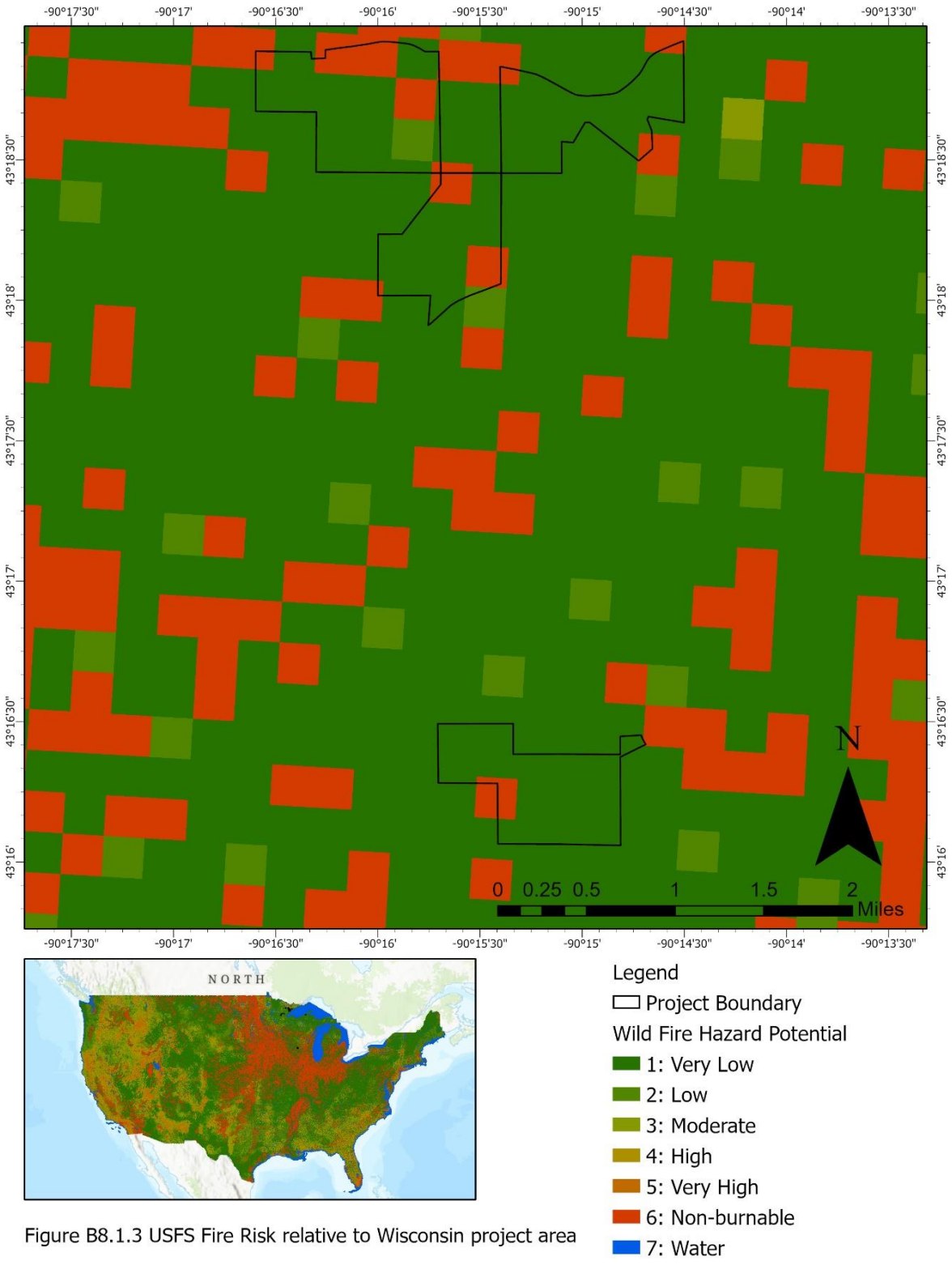


Figure B8.1.3 USFS Fire Risk relative to Wisconsin project area

6) Disease and Pest Risk

Disease and pests can pose a significant risk to the permanence of the GHG emission reductions and GHG removal enhancements. The 2012 National Insect and Disease Risk Map (https://usfs.maps.arcgis.com/apps/webappviewer/index.html?id=52cb2bcc3c2b4868ac87b66f622062ab) is a nationwide assessment of the potential hazard for tree mortality from forest insects and disease. This assessment shows that the HUC-12 watersheds within the project area watershed have between 1-4% of the treed area at risk of damage by insects and diseases. This is the lowest risk category which supported section of the default value.

- Disease or Insect Outbreak 4% (default)

7) Levee Failure and Water Table Changes

The project does not occur in a forested wetland, therefore a 0% buffer value.

- Levee Failure and Water Table Changes 0%

8) Other Natural Disaster Events

- Other Natural Disaster Events (Default) 2% (default)

Calculated Risk Score

The calculated risk score is applied in aggregate to all acres within the project. The risk score will be revisited at subsequent verifications as described in the applicable ACR Standard Version 7.0 and reevaluated when additional sites are included in the carbon project. Section 1 (A + B + C + D) + Section 2 (E + F + G + H) = Total Risk score %

Section 1 (4% + 4% + 2% + 0%) + Section 2 (2% + 4% + 0% +2%) = 10% + 8% = 18%

Buffer Pool Contribution

(Total Risk score %) * (Net0[1] ERTs generated for reporting period) = Buffer pool contribution in ERTs at time of issuance.

18% X 69,237 = 12,463 credits of buffer pool contribution[2]

1) Net ERTs is the total less leakage and uncertainty
2) Total buffer pool based on summing the rounded up annual values.

Table B1.1 ERTs by Vintage

Report Period	Net ERTs			Gross ERTs			Buffer Credits		
	Vintage 2020	Vintage 2021	Total	Vintage 2020	Vintage 2021	Total	Vintage 2020	Vintage 2021	Total
1	35,200	21,574	56,774	42,927	26,310	69,237	7,727	4,736	12,463

C. ADDITIONALITY

C1. REGULATORY SURPLUS TEST

Relevant laws, regulations, statutes, legal rulings, and other regulatory frameworks that could affect the project activity includes:

National Laws, Regulations and Policies

- Clean Water Act
- Endangered Species Act
- The Logger's Guide to the New OSHA Logging Safety Standards, 1995
- The US Army Corps of Engineers may require a permit for stream crossings, with exemptions for certain crossings where Best Management Practices are followed

State and Local Laws and Programs

- Michigan Department of Natural Resources: Forestry Best Management Practices for Soil and Water Quality
- Michigan Commercial Forest Act
- Wisconsin Department of Natural Resources, Division of Forestry: Best Practices for Water Quality
- Minnesota Sustainable Forest Resources Act,

International Agreements

- Paris Agreement, sign by US in 2016. President Trump withdrew US from agreement in June 2017. President Biden rejoined in January 2021.
- Kyoto Protocol, 1997 (signed, not ratified).
- United Nations Framework Convention on Climate Change, 1992.
- United Nations Convention on Biological Diversity, 1992 (signed, not ratified)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973
- UNESCO World Heritage Convention, 1972

None of the above or any other existing law, regulation, statute, legal ruling, or other regulatory framework in effect as of the start date in 2020 effectively require the proposed forest carbon project activity and its associated GHG emissions reductions/removal enhancements. Consequently, the project passes the Regulatory Surplus test.

C2. COMMON PRACTICE TEST

The geographic region includes Minnesota, Michigan, and Wisconsin. Wood products including sawtimber and pulpwood are distributed to mills throughout this region. The forest type for this project is most similar to industrial forestland ownership due to the size of the property and its status as private landholding. Throughout the geographic region, the industrial forestland type is heavily clearcut and managed for maximizing NPV of the forestland investment. If the Wolf Lands Forest Carbon Project was not implemented, the forest management could more closely resemble that of industrial forestland ownership in the region. Instead, the project will exceed the common practice as described in Section A6. Project Action.

C3. IMPLEMENTATION BARRIERS TEST

- *Financial*
- *Technological*
- *Institutional*

Financial Test – *Does the project face capital constraints that carbon revenues can potentially address; or is carbon funding reasonably expected to incentivize the project's implementation; or are carbon revenues a key element to maintaining the project action's ongoing economic viability after its implementation?* **YES**

Carbon funding is reasonably expected to incentivize the project's implementation. The implementation of the carbon project represents an opportunity cost to lost revenue associated with the potential timber harvesting that could legally and feasibly occur on the property in the lifetime of the carbon project. Net present values were calculated referencing the baseline and project scenarios outlined in Section E using a 5% discount rate A financial feasibility assessment is provided separately for verification demonstrating the financial barrier carbon funding overcomes in project implementation (See file PC378_WL12_LPA_Baseline_PB_2022_12_20.xlsb.

The net present values are summarized below.

Table C3.1 NPV components by scenario, over first 2 decades.

Scenario	NPV
The net present value of the baseline scenario, over the crediting period, is	$4,144,000
This is in contrast to the project scenario NPV, for timber harvest only, of	$0
The carbon revenues add another	$3,145,930
The total 20-year project NPV is	$3,145,930

C4. PERFORMANCE STANDARD TEST

The Wolf Lands Forest Carbon Project uses the three-pronged approach; therefore, this step is not required.

D. MONITORING PLAN

D1. MONITORED DATA AND PARAMETERS

The following data/parameters will be monitored and reported:

Data or Parameter Monitored	Area
Unit of Measurement	Acres
Description	Area of IFM Project
Data Source	GIS data derived from GPS coordinates and remotely sensed data
Measurement Methodology	Area is calculated using GIS area calculation tool. Information is reported in monitoring reports. Total project area shall remain fixed through crediting period.
Monitoring Frequency	Every 5 years, following with inventory update
Value applied	11,275 acres
Reporting Procedure	Handheld GPS unit, GIS software
QA/QC Procedure	Meta data is kept current and uncorrupted
Purpose of Data	Calculation of project emissions
Calculation method	Calculated in ArcGIS
Notes	-

Data or Parameter Monitored	Time (T) between monitoring events
Unit of Measurement	Year(s)
Description	Number of years between monitoring ($T = t_2 – t_1$); used for calculation of project emissions
Data Source	Monitoring reports
Measurement Methodology	Number of years between monitoring ($T = t_2 – t_1$)
Monitoring Frequency	Annually
Value applied	Calendar
Reporting Procedure	Included in monitoring report
QA/QC Procedure	All calculations double checked for accuracy prior to submission for verification
Purpose of Data	Calculation of project emissions
Calculation method	Subtraction
Notes	-

Data or Parameter Monitored	Diameter at breast height of tree (DBH)

Unit of Measurement	Inches (to 1/10th of an inch)
Description	Tree diameter measure 4.5 feet above ground
Data Source	Field measurement
Measurement Methodology	Measured with loggers Tape, calipers, or Biltmore stick
Monitoring Frequency	Every 5 years after the first inventory
Reporting Procedure	Handheld GPS unit or cruise tally sheet
QA/QC Procedure	Equipment will be maintained in excellent condition. All diameters will be double checked for reasonableness prior to submission for verification
Purpose of Data	Calculations of project emissions
Calculation method	N/A
Notes	-

Data or Parameter Monitored	Decay class
Unit of Measurement	Decay class category
Description	Qualitative degree of decomposition
Data Source	Forest Inventory
Measurement Methodology	Qualitative assessment of dead tree into 1 of 4 decay classes based on class descriptions
Data Uncertainty	None
Monitoring Frequency	Every 5 years after the first inventory
Value applied	
Reporting Procedure	Handheld GPS unit or cruise tally sheet
QA/QC Procedure	Equipment will be maintained in excellent condition. All decay classes will be double checked for reasonableness prior to submission for verification
Purpose of Data	Calculations of project emissions
Notes	-

Data or Parameter Monitored	Tree Live or Dead Status
Unit of Measurement	Tree life status
Description	Record the live or dead status of trees in inventory plots
Data Source	Forest Inventory
Measurement Methodology	Measured per the Carbon Plot Methodology
Data Uncertainty	None
Monitoring Frequency	Every 5 years after the first inventory
Value applied	
Reporting Procedure	Handheld GPS unit or cruise tally sheet
QA/QC Procedure	Equipment will be maintained in excellent condition. All tree life statuses will be double checked for reasonableness prior to submission for verification
Notes	-

Data or Parameter Monitored	Defect
Unit of Measurement	%
Description	Qualitative percent of missing biomass
Data Source	Forest Inventory
Measurement Methodology	Tree defect is qualitatively assessed for missing biomass in the bole from 1 ft stump to total height. The exception is for broken tops below 4" DOB when the percent biomass missing is calculated from 1 ft stump to broken top. Top height and phantom height are measured and missing biomass in the broken portion is calculated post-inventory.
Data Uncertainty	None
Monitoring Frequency	Every 5 years after the first inventory
Value applied	Tree-specific
Reporting Procedure	Handheld GPS unit or cruise tally sheet
QA/QC Procedure	Equipment will be maintained in excellent condition. All tree defects will be double checked for reasonableness prior to submission for verification.
Notes	-

Data or Parameter Monitored	Species Composition
Unit of Measurement	%
Description	Spp. composition as a percentage of basal area
Data Source	Forest Inventory
Measurement Methodology	Derived from basal area calculations from inventory data.
Data Uncertainty	None
Monitoring Frequency	Every 5 years after the first inventory
Value applied	
Reporting Procedure	
QA/QC Procedure	Species identification is confirmed at verification.
Purpose of Data	Calculation of project emissions
Calculation method:	Basal Area = 0.005454 * DBH2
Notes	-

Data or Parameter Monitored	Harvested Wood Products
Unit of Measurement	Metric tonnes CO_2
Description	Carbon remaining in stored wood products 40 years after harvest for the project in year t.
Data Source	Harvest slips and reports
Measurement Methodology	Log Scale based on log length and DIB
Data Uncertainty	None
Monitoring Frequency	Annual data summed for the monitoring period, applied as average annual for the monitoring period
Value applied	

Reporting Procedure	Data summarized in monitoring reports
QA/QC Procedure	Compare to post harvest cruises
Notes	-

Data or Parameter Monitored	Forest Carbon
Unit of Measurement	Metric tonnes of CO_2
Description	Carbon stores in above and below ground live trees at the beginning of the year t.
Data Source	Forest Inventory
Measurement Methodology	Measured per the Carbon Plot Methodology
Data Uncertainty	To be calculated in FVS as the mean +/- 90% confidence interval
Monitoring Frequency	Summarized every 5 years after the first inventory
Reporting Procedure	
QA/QC Procedure	Consistent with carbon plot methodology - The inventory will use a random sample design and re-measure the same permanent plots, which targeted a precision level of +/- 10% of the mean live tree biomass with 90% confidence.
Notes	-

D2. MONITORING PLAN

Each year, the Project Proponent shall submit a signed Attestation that:

- Confirms the continuance of project activities;
- Confirms that ownership remains clear and uncontested;
- Discloses any negative environmental or community impacts or claims of negative environmental and community impacts, and documents plans to mitigate any reported negative environmental or community impacts;
- Addresses any significant change in external conditions that would affect the quality or environmental integrity of the project.

The following material outlines the monitoring plan to be followed during the decade following the initial project validation and verification.

General Monitoring Method

Prior to validation/initial verification, a representative sample of 151 fixed radius permanent inventory plots were established across the project area. All permanent plots will be re-inventoried at least twice over the following decade to calibrate forest growth models and improve carbon sequestration projections. See file PC378_WL00_Carbon_TreeList_2022_06_14.xlsx.

The well-monumented and maintained plot design will give forest managers the opportunity to consistently track the growth and development of specific trees over an extended timeline and allows for improved ease of plot location during field work and site verifications. All plots will be re-measured in a manner consistent with the Inventory Methodology, provided separately for verification.

In addition to the full inventory update of the entire property that will be conducted on all plots every 5 years, inventories of select portions of the Project Area will be updated periodically in response to natural disturbance or significant forest management activities. Following natural disturbance events, affected project stands will be assessed for damage by forestry staff. If damage is significant, the affected areas will be re-inventoried and project scenario models will be adjusted to reflect onsite carbon stocks.

In years in which forest plots are not re-inventoried, carbon stocks will be estimated and monitored through forest growth and yield modeling.

In addition to inventory sampling, management staff will consistently monitor the general health and condition of the forest throughout the course of normal forest management activities (e.g., road maintenance, ecological studies, boundary marking), reducing the risk of reversal by disease, pest invasion, and unauthorized timber removal.

Spatial Informatics Group, LLC (SIG) will oversee initial project reporting, modeling, and monitoring activities on behalf of the landowner. The landowner will be responsible for "on the ground" forest management activities on the project area, and a contractor will conduct inventory measurements and data collection. After forest inventory data collection, the forestry contractor will report results to SIG for processing and updating of modeling projections. After processing is complete SIG will house all data and submit the necessary documentation for compliance with ACR standard Version 7.0. SIG will ultimately store project data for at least ten years after the conclusion of the project.

Data Processing and Storage

Manually and electronically filed data are stored and archived. Backup copies of all electronically stored data are maintained in a separate data center with scheduled archiving to assure data protection. Future revisions to project documents after initial verification and registration will be clearly identified by saving them as separate files and including the date of revision in any modified documents. All data will be stored on Dropbox or similar online cloud storage service and kept by SIG for a minimum of 15 years.

QA/QC Field Procedures

Field Procedures

At the end of each field day, individual foresters back up their data recorders. The senior forester then looks for irregularities in the data and asks the field crew to confirm the data or remeasure any plots that cannot be reconciled. The senior forester then adds all the data to a master spread sheet.

At least 5% of the plots are checked by a different forester than cruised the plot, specifically by someone senior to the field crew. This involves full plot measurement to identify any problems with determining in/out trees, species calls, defect measurements, DBH measurements, and height measurements. Any errors noted during the check cruise are used to update the master spread sheet file. Any consistent

height, species, DBH, or defect errors are resolved by talking with the foresters and removing crew members as needed.

Desk Procedures

The following QA/QC approach was designed to ensure that field data, once inputted, was appropriately managed and maintained, and that subsequent calculations using that data to determine onsite carbon stocks and associated ERT issuance were correctly implemented.

A three-stage QA/QC process with a defined review group for the project was established, engaging both personnel intimately familiar with all project files and documentation, as well as independent reviewers who are able to bring fresh eyes to key outputs.

Independent Forester Review: Initial data checks are conducted prior to modeling as a part of the SIG QA/QC process. Once the inventory data is sent to SIG by the contracted inventory crew, SIG runs a series of data checks to look for abnormalities in the data including outlier searches for height/DBH/species, histograms looking for normal or expected distributions of data, and null or missing data entries. Additional data checks include looking for duplicate information within plots, and duplicate information across plots. Information searches include both text, values, and total carbon stocks per plots. Any missing plot data found during these checks results in SIG requesting clarification or additional field measurements from the inventory contractor. The project implementation team (SIG) has a team of foresters with intimate knowledge of the files, models and documents. The development of quantitative components, such as Access databases, FVS model runs and Excel workbooks, are led by one of these foresters. Each of these sources have queries to sum basic biometrics, which facilitate verification (i.e. the sum of tree diameters must be the same in each data component).

Technical Review: Once quantitative outputs are finalized, exported from Access/FVS to Excel, and are ready to be transferred into the GHG Plan and other project documents, an independent manager reviews these outputs. This individual performs data checks by tracing key outputs back from final ERT calculations though the chain of Excel documents to the underlying Access/FVS database.

Senior Management Review: Once outputs have been transferred from Excel to the GHG Plan and other project documents, a senior manager reviews these documents for consistency with other GHG plans, and also reviews text, grammar and formatting for presentation and accuracy.

E. QUANTIFICATION

E1. BASELINE

Inventory Development Overview

The carbon inventory of the project area (11,275 acres) was conducted in March and April of 2021. The inventory employed a sample of 151 fixed-radius circular plots installed in a random distribution across

the project area. The nested plots consist of a 1/20th acre plot recording trees ≥ 5" and a 1/150th acre plot recording trees ≥ 1" and <5" DBH.

Baseline Stratification

The project area was broken into 9 stratum, based on Land Fire SAF species type and canopy cover (see Project Stratum Acreage table below for details).

Table E1.1 Project Stratum Acreage

Strata	Project Area (acres)	# of Plots	Acres/Plot
Full Canopy_Mixed Hardwood	1,242.2	17	73.1
Full Canopy_SAF 13: Black Spruce-Tamarack	2,138.7	19	112.6
High Canopy_Mixed Hardwood	1,059.4	13	81.5
High Canopy_SAF 13: Black Spruce-Tamarack	550.9	9	61.2
OHFC Canopy_Mixed Conifer	879.5	7	125.6
OHFC Canopy_SAF 5: Balsam Fir	1,481.7	30	49.4
OHFC Canopy_SAF 52: White Oak-Black Oak-Northern Red Oak	474.5	7	67.8
Open Canopy_Mixed Hardwood	1,644.6	24	68.5
Open Canopy_SAF 13: Black Spruce-Tamarack	1,803.6	25	72.1

Growth Model Overview

Field measurement protocols are documented in "Wolf Lands Carbon inventory manual_ _final_20210226 copy.pdf."

Total aboveground biomass carbon was estimated from inventory data applying species group-specific allometric equations sourced from Jenkins et al 2003. Root biomass was then estimated from total aboveground biomass using component ratios from Jenkins et al 2003, to produce total live tree biomass. Total live tree biomass was converted from pounds to metric tons, multiplied by 0.5 to estimate carbon fraction, then multiplied by 3.664 to calculate CO2 equivalent.

Carbon in standing dead wood included deductions for decay class that were recorded in the field. Decay classes were recorded according to the ACR Standard Version 7.0 using the methodology-defined class (see Table E1.2). See the Section "ERT Calculation Overview" for further details on how carbon estimates are calculated for aboveground dead carbon.

Table E1.2 ACR decay classes

Decay Class	Description
Decay Class 1	Tree with branches and twigs that resembles a live tree (except for leaves)
Decay Class 2	Tree with no twigs but with persistent small and large branches.
Decay Class 3	Tree with large branches only.
Decay Class 4	Bole only, no branches.

Growth and Yield Simulation

For growth and yield projections, we used the US Forest Service Forest Vegetation Simulator (FVS) Lake States (LS) variant. FVS-LS was calibrated to the project area using site index value and species, and using plot aspect and slope, plus the projects National Forest location code. Site Index was calculated from tree cores taken in the field, one site tree per plot. (Note, not all plots had site measurements, in which case the closest plot's site info was used.) The available outputs following processing tree cores included tree species, DBH, Height, Pith Date (calendar year), and DBH Age (years). From these outputs, Site Index was calculated using species-specific Carmean site index curve (1989) equations. See file PC378_WL02_SiteIndexforPlots_2022_06_14.xlsx.

Initial carbon stock estimates for the project start date were back-modeled via FVS-LS with the approach outlined below.

1. Inventory tree data were entered into FVS-LS and grown for 5 years with no management (with "NoTriple" keyworded to track individual trees and permit cross-referencing to raw inventory dataset).
2. For each live tree (ascribed a unique identifier), annual diameter (and height) growth was derived assuming linear growth during the 5-year projection interval (i.e. for DBH, annual growth calculated as DBH at end of 5-year interval minus DBH at beginning of 5-year interval, reported in the FVS Tree list output, divided by 5).
3. For each live tree, diameter and height data from the plot measurement date were degrown referencing the percentage of annual basal growth observed by Winget & Kozlowski (1965). Trees per acre were held constant over the degrow period.
4. Initial carbon stocks were recalculated using the degrown data. No harvests or significant disturbances took place during the intervening period. Diameter of standing dead trees were assumed to be constant through the period.

Table E1.4 Project start values for above and belowground (live and dead) tree biomass

Live CO2e Statistics (AG+BG) May 20th, 2020			
Strata	**Average of Live CO2e**	**Std. Dev of Live CO2e**	**Plots**
Full Canopy_Mixed Hardwood	50.6	29	17
Full Canopy_SAF 13: Black Spruce-Tamarack	42.0	24	19
High Canopy_Mixed Hardwood	118.1	77	13
High Canopy_SAF 13: Black Spruce-Tamarack	80.5	38	9
OHFC Canopy_Mixed Conifer	90.3	99	7
OHFC Canopy_SAF 5: Balsam Fir	84.0	45	30
OHFC Canopy_SAF 52: White Oak-Black Oak-Northern Red Oak	230.3	283	7
Open Canopy_Mixed Hardwood	23.6	19	24
Open Canopy_SAF 13: Black Spruce-Tamarack	22.9	26	25
Dead CO2e Statistics (AG Only) May 20th, 2020			
Strata	**Average of Dead CO2e**	**Std. Dev of Dead CO2e**	**Plots**
Full Canopy_Mixed Hardwood	1.0	2	17
Full Canopy_SAF 13: Black Spruce-Tamarack	3.0	4	19
High Canopy_Mixed Hardwood	1.9	5	13
High Canopy_SAF 13: Black Spruce-Tamarack	1.7	4	9
OHFC Canopy_Mixed Conifer	3.9	9	7
OHFC Canopy_SAF 5: Balsam Fir	2.5	5	30
OHFC Canopy_SAF 52: White Oak-Black Oak-Northern Red Oak	5.7	7	7
Open Canopy_Mixed Hardwood	0.7	3	24
Open Canopy_SAF 13: Black Spruce-Tamarack	0.9	2	25

Estimated total stock in live and dead trees at the project start date, de-grown from the inventory data, is 715,318 tonnes CO2e (= 63.4 CO2/ac * 11,275 acres). See the details in file PC378_WL06_May2020_PlotAvgs_PB_2022_11_17.xlsx

Baseline Harvest Schedule Scenario Overview

The Baseline Scenario represents a non-governmental harvest regime designed to maximize the 100-year Net Present Value (NPV) at a 5% discount rate, subject to operational considerations in the region. Only volume from merchantable species count toward costs and revenues. The acres to cut of each prescription by plot was determined using a linear programming model, which found the combination of prescriptions that maximizes the NPV over 100 years.

1. The only regeneration harvest modeled was clearcutting.
    a. Clearcuts were modeled starting in 2020, and then in one-year intervals for the 1st decade, and then at the midpoint of each latter decade.
    b. Clearcuts were allowed on stands IF they have a minimum inventory of 2,500 board feet/acre, and IF the stand was growing less than the 5% discount rate.

c. The subsequent rotation age was modeled at 60 years.

The common practice in this area regarding post clearcut regeneration is to rely on natural regeneration, without any site prep. The post clearcut species composition is based on the existing site specie's shade tolerance. Stands with a shade tolerant major species (based on the site tree), will have lower seedling survivability due to the lack of shade in a clearcut. See file PC378_WL07_RxInputs_20210710.xlsx for details.

Table E1.5 Post clearcut establishment with shade tolerance distribution for stands cut in 1st decade

Common Name	Wood Type	Tolerance	Seedlings	% Tolerant	%Moderate	% Intolerant
Bigtooth Aspen	hardwood	TMBR_INT	1,568.0	0.25	0.25	0.5
Black Walnut	hardwood	TMBR_INT	1,568.0	0.25	0.25	0.5
paper birch	hardwood	TMBR_INT	1,568.0	0.25	0.25	0.5
quaking aspen	hardwood	TMBR_INT	1,568.0	0.25	0.25	0.5
Black Ash	hardwood	TMBR_MOD	2,238.0	0.25	0.5	0.25
Black Oak	hardwood	TMBR_MOD	2,238.0	0.25	0.5	0.25
Shagbark Hickory	hardwood	TMBR_MOD	2,238.0	0.25	0.5	0.25
Yellow Birch	hardwood	TMBR_MOD	2,238.0	0.25	0.5	0.25
Red Maple	hardwood	TMBR_TOL	1,563.0	0.5	0.25	0.25
Red Pine	softwood	TMBR_INT	1,803.2	0.25	0.25	0.5
tamarack	softwood	TMBR_INT	1,803.2	0.25	0.25	0.5
Balsam Fir	softwood	TMBR_TOL	1,198.3	0.5	0.25	0.25
black spruce	softwood	TMBR_TOL	1,198.3	0.5	0.25	0.25
Eastern Hemlock	softwood	TMBR_TOL	1,198.3	0.5	0.25	0.25
Eastern White Pine	softwood	TMBR_TOL	1,198.3	0.5	0.25	0.25
N. White-Cedar	softwood	TMBR_TOL	1,198.3	0.5	0.25	0.25

Volume yields were output for 100-year projections from FVS-LS.

The net present value of the harvests was computed using stumpage rates published by **Timber Mart North**. These per MBF rates are by state and species. The file stumpageprices_TimberMartNorthvolVol 27 No 1.pdf has the raw stumpage rates, based on sales from October 2020 – March 2021. Modelled stumpage is generally the simple average of the 3 reporting regions the project occurs in, or based on the areas with data.

Cost Assumptions

There are no site prep or planting costs in the modeling.

Fixed cost estimates for the property were not included as they do not affect harvest decisions in the NPV optimization, which are volume based. Ultimately, the financial analysis shows all harvest entries have

positive net revenues, therefore the baseline harvest activities are financially viable over a 100-year term using the stumpage estimates cited above.

Optimal Harvest Scheduling

The objective function maximized the net present value of the stumpage revenues at a 5% discount rate. The model was constrained to not harvest in 73 acres of riparian buffers, by strata. The maximization was also constrained to be under 10 MMBF/year (based on freight logical mill capacities).

Project Harvest Schedule Scenario Overview

The project model has no harvesting. Live and dead CO2 will be updated as the project area is remeasured.

Carbon Calculation Overview

The harvest schedule reports the two CO2 pools used in the uncertainty calculations:

1) Live Stocks: includes above and below ground live stocks
2) Dead Stocks: includes only above ground dead stocks

ERT Calculation Overview

The ERTs were computed based on the equations and coefficients provided in the ACR Document Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands; April 2018.

Table E1.9 Total Live CO2 Stocks

Strata	CO2/ Acre	Std. Dev.	Plots	Std. Error	Acres	Total CO2	Acres * Error (millions)
Full Canopy_Mixed Hardwood	51	29	17	7	1,242	62,875	78
Full Canopy_SAF 13: Black Spruce-Tamarack	42	24	19	6	2,139	89,890	141
High Canopy_Mixed Hardwood	118	77	13	21	1,059	125,100	517
High Canopy_SAF 13: Black Spruce-Tamarack	81	38	9	13	551	44,367	48
OHFC Canopy_Mixed Conifer	90	99	7	37	879	79,386	1,077
OHFC Canopy_SAF 5: Balsam Fir	84	45	30	8	1,482	124,403	150
OHFC Canopy_SAF 52: White Oak-Black Oak-Northern Red Oak	230	283	7	107	475	109,289	2,585
Open Canopy_Mixed Hardwood	24	19	24	4	1,645	38,778	41
Open Canopy_SAF 13: Black Spruce-Tamarack	23	26	25	5	1,804	41,230	89
Total	**63.4**	**84.7**	**151**	**6.9**	**11,275**	**715,318**	**15.91**

Table E1.10 Calculation of Aboveground Dead CO2 Stocks

Strata	CO2/ Acre	Std. Dev.	Plots	Std. Error	Acres	Total CO2	Acres * Error (millions)
Full Canopy_Mixed Hardwood	1.0	2	17	1	1,242	1,227	1
Full Canopy_SAF 13: Black Spruce-Tamarack	3.0	4	19	1	2,139	6,374	4
High Canopy_Mixed Hardwood	1.9	5	13	1	1,059	1,962	2
High Canopy_SAF 13: Black Spruce-Tamarack	1.7	4	9	1	551	932	0
OHFC Canopy_Mixed Conifer	3.9	9	7	4	879	3,463	10
OHFC Canopy_SAF 5: Balsam Fir	2.5	5	30	1	1,482	3,661	2
OHFC Canopy_SAF 52: White Oak-Black Oak-Northern Red Oak	5.7	7	7	3	475	2,698	1
Open Canopy_Mixed Hardwood	0.7	3	24	1	1,645	1,152	1
Open Canopy_SAF 13: Black Spruce-Tamarack	0.9	2	25	0	1,804	1,571	0
Total	**2.04**	**4.3**	**151**	**0.4**	**11,275**	**23,040**	**22**

The inventories were projected in FVS-LS for the 100-year scenario. Projections were annualized using linear interpolation. Direct biomass carbon estimates for live trees were output via FVS FFE carbon reports, using Jenkins et al 2003 biomass predictions in metric tons of carbon per acre, matching the calculations applied to the forest inventory measurements.

Defect deductions were applied to both live and dead trees at the plot level, using the following methodology:

- Calculate total cubic feet (CF) for each tree record: (trees/acre)*(CF/tree) = CF/ac
- Apply cruise defect to each tree
- Calculate live defect for each plot from a CF-weighted average of live trees
- Calculate dead defect for each plot from a CF-weighted average of dead trees, plus the ACR wood density deductions.
- See file PC378_WL03_FVS_AvgDefect_2022_06_14.xlsx for details

Standing dead wood was modeled using the Fire and Fuels Extension of FVS (FVS FFE) to produce plot level snag details per modeled period. Jenkin's biomass and carbon was computed for these snags external to FVS, and have the ACR density reductions applied.

Table E1.11 Snag description for project area

ACR Decay Class	FVS History Code	FVS description
1 - Tree with branches and twigs that resembles a live tree	7	Hard Snag

2 - Tree with no twigs but with persistent small and large branches	7	Hard Snag
3 - Tree with large branches only	9	Soft Snag
4 - Bole only, no branches	9	Soft Snag

Harvested wood products

Step 1: Long-term storage in wood products was calculated from FVS projections of merchantable carbon removed. The wood products are based on the percentages for the supersection in table E1.8.

Step 2: Estimate net wood product tonnes by applying mill efficiency values referenced from the ARB 2015 forest protocol "Regional Mill Efficiency Data.xls" database, for the Lake States (LS) region specified in Table E1-12.

The mill efficiencies are from the Regional Mill Efficiency Database and are broken down by species group (hardwood vs. softwood) and wood product (pulp vs. sawlog). However, since FVS provides no estimates of carbon by species or wood product, we determined species and product estimates from the ACR wood product classes for the project's Assessment Area. (From tab CO2Stats in file PC378_WL06_May2020_PlotAvgs_PB_2022_11_17.xlsx).

Table E1.12 Mill efficiency values

Wood Product Group	Mill Efficiency
SW SAW	63.0%
SW PULP	51.4%
HW SAW	58.5%
HW PULP	68.5%

Steps 3 and 4: Transformed carbon was summed across the hardwood/softwood/pulp/sawtimber categories and then distributed among a range of end wood product classes. Distributions of end wood product classes reference ARB 2015 forest protocol values derived from the supersection (Table E.1.13).

Table E1.13 Wood Product Category Percentages for supersection:

Supersection	Softwood Lumber	Hardwood Lumber	Plywood	Oriented Strand Board	Non-structural Panels	Misc.	Paper
Laurentian Mixed Forest Arrowhead	18.88%	6.92%	0.00%	69.59%	4.59%	0.02%	0.00%
MW Broadleaf Forest Driftless & Morainal	6.07%	74.43%	0.01%	13.45%	4.86%	1.14%	0.05%
Laurentian Mixed Forest MN & Ontario Lake Plain	17.18%	8.89%	0.00%	66.63%	4.36%	0.49%	2.44%
Laurentian Mixed Forest Southern Superior	15.73%	46.09%	0.51%	25.64%	8.54%	3.50%	0.00%

Wood product amounts retained in storage for 100 years in in-use wood products and landfills were then calculated referencing end wood product class-specific 100-year average storage factors provided in the methodology.

Table E1.14 100 Year storage factors

Wood Product Class	In-Use	Landfills
Softwood Lumber	0.234	0.405
Hardwood Lumber	0.064	0.49
Softwood Plywood	0.245	0.4
Oriented Strandboard	0.349	0.347
Non-Structural Panels	0.138	0.454
Misc. Products	0.003	0.518
Paper	0.000	0.151

Step 5: Carbon in long-term storage was then summed across in-use wood products and landfills and across modeled baseline strata to produce annual total t CO2 stored in in-use wood products and landfills after 100 years from wood harvested in a given year. Emissions due to burning logging slash are conservatively assumed in the baseline to be zero. Thus, parameter BSBSL equals zero and the outcome of equation 4 of the methodology, parameter GHGBSL, equals zero.

Baseline Harvest Mix

Table E1.15 presents the baseline mix of harvest practices that maximizes the net present value of 100-year cash flows. The maximum NPV under the baseline over 100 years is $4,822,000.

Table E1.15 Baseline prescription acreage

Row Labels	Clearcut	No Harvest
Full Canopy_Mixed Hardwood	1,169.1	73.1
Full Canopy_SAF 13: Black Spruce-Tamarack	2,134.7	4.0
High Canopy_Mixed Hardwood	1,029.3	30.1
High Canopy_SAF 13: Black Spruce-Tamarack	550.6	0.3
OHFC Canopy_Mixed Conifer	502.6	376.9
OHFC Canopy_SAF 5: Balsam Fir	1,432.3	49.4
OHFC Canopy_SAF 52: White Oak-Black Oak-Northern Red Oak	457.6	16.9
Open Canopy_Mixed Hardwood	1,439.0	205.6
Open Canopy_SAF 13: Black Spruce-Tamarack	1,370.8	432.9
Grand Total	**10,085.9**	**1,189.2**

E2. PROJECT SCENARIO

The actual project scenario is measured through future inventories over the course of the project lifetime. However, we produce an ex-ante projection of the project scenario assuming the landowner will not conduct any harvesting.

E3. LEAKAGE

Quantification of leakage is limited to market leakage, as no activity-shifting leakage is allowed by the methodology beyond de minimis levels. All entity owned lands that conduct commercial timber harvestings will be certified within one year of the state date, therefore there is no activity-shifting leakage.

Market leakage was determined by quantifying the merchantable carbon removed in both the baseline and with-project cases. Carbon in long-term storage in in-use wood products and landfills, calculated above, was used to assess relative amounts of "total wood products produced" in the two scenarios. The decrease in wood production relative to the baseline was calculated and the applicable market leakage discount factor was determined.

Table E3.1 Calculation of leakage factors for baseline:

Period	Total harvested wood products stored for 100 years under the Baseline Scenario (tCO_2e)	Total harvested wood products stored for 100 years under the Project Scenario (tCO_2e)	Decrease in Wood Products as Percentage of Baseline Stocks (%)	Applicable Leakage Factor
2020-2039	276,503	0	100.0%	40.0%

E4. UNCERTAINTY

Per the methodology, "*The 90% statistical confidence interval (CI) of sampling can be no more than ±10% of the mean estimated amount of the combined carbon stock across all strata. If the Project Proponent cannot meet the targeted ±10% of the mean at 90% confidence, then the reportable amount shall be the lower bound of the 90% confidence interval*."

Parameter $e_{BSL,TREE}$ is derived below from the 2020 Live inventory data. See tab [CO2 Stats] in file PC378_WL06_FVS_May2020_PlotAvgs_2022_11_17.xlsx.

Table E4.1. Live tree statistics from 2020 inventory

Parameter	Project
Mean tCO_2/acre	63.4
Variance (C)	7,181
Standard Deviation (C)	84.7
Coefficient of Variation (%)	1.336
Standard Error (in C)	**15.91%**
90% Confidence Interval (C)	11.413
n	151
Acres	11,275
Mean (acres)	74.7

Parameter $e_{BSL,DEAD}$ is derived below from the 2020 Dead inventory data.

Table E4.2. Dead tree statistics from 2020 inventory

Parameter	Project
Mean tCO_2/acre	2.0
Variance (C)	19
Standard Deviation (C)	4.3
Coefficient of Variation (%)	2.106
Standard Error (in C)	**33.43%**
90% Confidence Interval (C)	0.576
n	151
Acres	11,275
Mean (acres)	74.7

Overall uncertainty in the baseline is calculated using equation 10 of the methodology:

UNCBSL = √((*CBSL,TREE* * *eBSL,TREE*)^2 + (*CBSL,DEAD* * *eBSL,DEAD*)^2 + (*CBSL,HWP** *eBSL,TREE*)^2 + (*GHGBSL** *eBSL,TREE*)^2) /
(*CBSL,TREE* + *CBSL,DEAD* + *CBSL,HWP* + *GHGBSL*)

where *CBSL,TREE* is the live tree carbon stock at the start date, *CBSL,DEAD* is the dead wood carbon stock at the start date and *CBSL,HWP* is the twenty-year average stock of carbon in long term storage in wood products. Emissions due to burning logging slash are conservatively assumed in the baseline to be zero, thus parameter *GHGBSL* equals zero.

Table E4.3. Model Uncertainty

Scenario	Total Uncertainty
Baseline	15.25%
Project	15.32%
Total Uncertainty	13.92%

E5. REDUCTIONS AND REMOVAL ENHANCEMENTS

Methodology calculations and estimates of net reductions and removal enhancements are detailed in the tables below. Note that (2020) refers to starting stocks at the May 20, 2020 project start date; the first Reporting Period is May 20, 2020 to May 19, 2021, all subsequent stock values represent stocks on May 20th of the corresponding year. All change values apply to the annual interval ending May 19th of the corresponding year (i.e., project year 2024 accounts for the change taking place between May 20, 2023, and May 19, 2024).

Table E5.1 Wolf Lands Forest Carbon Project ERT Calculations, First Decade

Wolf Lands ERT Calculations, First Decade										*12/20/2022*	
Period Start Date	5/20/2020	5/20/2021	5/20/2022	5/20/2023	5/20/2024	5/20/2025	5/20/2026	5/20/2027	5/20/2028	5/20/2029	5/20/2030
Reporting Period	0	1	2	3	4	5	6	7	8	9	10
RP Days											
Project Yr	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
BASELINE											
AG+BG LIVE TREE	*715,318*	*584,277*	*486,303*	*350,078*	*296,742*	*279,313*	*271,521*	*260,697*	*261,815*	*263,080*	*273,941*
AG DEAD TREE	*18,157*	*13,688*	*6,105*	*3,521*	*2,763*	*4,253*	*6,597*	*4,681*	*5,215*	*6,572*	*8,625*
HWPs		13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825
C BSL	733,475	611,791	506,233	367,424	313,330	297,391	291,944	279,203	280,855	283,477	296,391
ΔC BSL, tree, t		(131,041)	(97,975)	(136,225)	(53,336)	(17,429)	(7,791)	(10,824)	1,118	1,265	10,861
ΔC BSL, dead, t		(4,469)	(7,583)	(2,585)	(758)	1,490	2,344	(1,916)	534	1,357	2,053
$\bar{c}$ BSL, HWP		13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825
C BSL, AVE		341,446	341,446	341,446	341,446	341,446	341,446	341,446	341,446	341,446	341,446
Year T		-	-	-	1	-	-	-	-	-	-
ΔC BSL, t		(121,684)	(91,733)	(124,984)	(53,628)	-	-	-	-	-	-
PROJECT											
AG+BG LIVE TREE	*715,318*	*715,455*	*731,365*	*750,126*	*769,913*	*790,661*	*809,493*	*828,874*	*848,741*	*869,296*	*890,362*
AG DEAD TREE	*18,157*	*30,387*	*28,102*	*24,350*	*20,513*	*19,092*	*18,796*	*18,650*	*18,686*	*18,936*	*19,437*
HWPs		-	-	-	-	-	-	-	-	-	-
C Proj	733,475	745,843	759,466	774,476	790,426	809,753	828,289	847,524	867,428	888,232	909,799
ΔC Proj, tree, t		137	15,909	18,761	19,787	20,748	18,832	19,381	19,867	20,555	21,066
ΔC Proj, dead, t		12,230	(2,286)	(3,752)	(3,837)	(1,421)	(296)	(146)	37	250	501
ΔC Proj, t		12,367	13,624	15,009	15,950	19,327	18,536	19,235	19,904	20,805	21,567
Total Uncertainty		13.917%	13.4%	13.7%	12.3%	15.6%	15.6%	15.6%	15.6%	15.6%	15.6%
C ACR (gross),t		134,052	105,356	139,994	69,578	19,327	18,536	19,235	19,904	20,805	21,567
C ACR (deduct),t		77,278	60,481	80,565	39,551	11,298	10,836	11,246	11,638	12,165	12,610
Net ERTs Issued, t		56,774.0	44,875.0	59,429.0	30,027.0	8,029.0	7,700.0	7,989.0	8,266.0	8,640.0	8,957.0
Total Tradeable Balance		56,774	101,649	161,078	191,105	199,134	206,834	214,823	223,089	231,729	240,686
Avoided Conversion ERTS		50,387	37,799	51,659	21,633	-	-	-	-	-	-
Removal ERTs		6,387	7,076	7,770	8,394	8,029	7,700	7,989	8,266	8,640	8,957

Table E5.2 Wolf Lands Forest Carbon Project ERT Calculations, Second Decade

Wolf Lands ERT Calculations, Second Decade									*12/20/2022*	
Period Start Date	5/20/2031	5/20/2032	5/20/2033	5/20/2034	5/20/2035	5/20/2036	5/20/2037	5/20/2038	5/20/2039	5/20/2040
ACR Acct Yr	11	12	13	14	15	16	17	18	19	20
Project Yr	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
BASELINE										
LIVE TREE	279,873	285,804	291,735	297,666	*303,598*	309,529	315,460	321,392	327,323	*333,254*
DEAD TREE	8,821	9,016	9,211	9,407	*9,602*	9,798	9,993	10,189	10,384	*10,580*
HWPs	13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825
C BSL	302,518	308,645	314,772	320,899	327,025	333,152	339,279	345,406	351,532	357,659
ΔC BSL, tree, t	5,931	5,931	5,931	5,931	5,931	5,931	5,931	5,931	5,931	5,931
ΔC BSL, dead, t	195	195	195	195	195	195	195	195	195	195
$\bar{c}$ BSL, HWP	13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825	13,825
C BSL, AVE	341,446	341,446	341,446	341,446	341,446	341,446	341,446	341,446	341,446	341,446
Year T	341,446	341,446	341,446	341,446	341,446	341,446	341,446	341,446	341,446	341,446
ΔC BSL, t	-	-	-	-	-	-	-	-	-	-
PROJECT										
LIVE TREE	913,983	937,604	961,224	984,845	*1,008,465*	1,032,086	1,055,706	1,079,327	1,102,948	*1,126,568*
DEAD TREE	19,437	19,437	19,437	19,437	*19,437*	19,437	19,437	19,437	19,437	*19,437*
HWPs	-	-	-	-	-	-	-	-	-	-
C Proj	933,420	957,040	980,661	1,004,281	1,027,902	1,051,522	1,075,143	1,098,764	1,122,384	1,146,005
ΔC Proj, tree, t	23,621	23,621	23,621	23,621	23,621	23,621	23,621	23,621	23,621	23,621
ΔC Proj, dead, t	-	-	-	-	-	-	-	-	-	-
ΔC Proj, t	23,621	23,621	23,621	23,621	23,621	23,621	23,621	23,621	23,621	23,621
Total Uncertainty	15.6%	15.6%	15.6%	15.6%	15.6%	15.6%	15.6%	15.6%	15.6%	15.6%
C ACR (gross),t	23,621	23,621	23,621	23,621	23,621	23,621	23,621	23,621	23,621	23,621
C ACR (deduct),t	13,812	13,813	13,814	13,815	13,815	13,816	13,817	13,818	13,818	13,819
Net ERTs Issued, t	9,809.0	9,808.0	9,807.0	9,806.0	9,806.0	9,805.0	9,804.0	9,803.0	9,803.0	*9,802*
Total Tradeable Balance	250,495	260,303	270,110	279,916	289,722	299,527	309,331	319,134	328,937	338,739
Avoided Conversion ERTS	-	-	-	-	-	-	-	-	-	-
Removal ERTs	9,809	9,808	9,807	9,806	9,806	9,805	9,804	9,803	9,803	9,802

E6. EX-ANTE ESTIMATION METHODS

Live tree carbon stocks in the project scenario were projected *ex ante* in FVS for the period 2020 to 2040. Projections were annualized using linear interpolation. Direct biomass carbon estimates for live trees were output via FVS Jenkins carbon reports. Projections were made assuming no timber harvests and sustainable conservation forest management activities take place during the period.

Carbon Dioxide projections per acre for the project scenario are summarized in the table below, including live tree, standing dead wood and harvested wood products carbon. The project scenario's crediting period is from 2020 to 2040. The inventory was completed in March 2021.

Table E6.1 Ex-ante CO2 estimation over time

Year	Live tCO2/Ac	Dead tCO2/Ac	HWP tCO2/Ac
2020	63.44	1.61	
2021	63.45	2.70	0.00
2022	64.87	2.49	0.00
2023	66.53	2.16	0.00
2024	68.28	1.82	0.00
2025	70.12	1.69	0.00
2026	71.79	1.67	0.00
2027	73.51	1.65	0.00
2028	75.28	1.66	0.00
2029	77.10	1.68	0.00
2030	78.97	1.72	0.00
2031	81.06	1.72	0.00
2032	83.16	1.72	0.00
2033	85.25	1.72	0.00
2034	87.35	1.72	0.00
2035	89.44	1.72	0.00
2036	91.54	1.72	0.00
2037	93.63	1.72	0.00
2038	95.73	1.72	0.00
2039	97.82	1.72	0.00

F. ENVIRONMENTAL & COMMUNITY IMPACTS

F1. NET POSITIVE IMPACTS

Community and Environmental Assessment

1. See Section A5. Brief Summary of Project and Section A4. Location.
2. See Section C1. Regulatory Surplus Test.
3. No formal stakeholder consultation was conducted in advance of the project, nor was any required because Wolf Lands Forest Carbon Project is privately held property. If Project Proponent is contacted by any persons regarding the project, Project Proponent will provide references to the publicly available documentation for the project

The project will generate significant environmental benefits including carbon sequestration, habitat protection for wildlife, trees, and plant species, water quality protection, and reduced soil erosion.

There are no perceived negative environmental effects of implementing the project activities maintaining forests and sustainable forest management (Table F1.1). This analysis was undertaken for the whole Aggregated Project and applies equally to each site. Ongoing evaluation of forest management practices is addressed in Section D2. Monitoring Plan, and results will be used to identify potential unforeseen future negative direct, indirect and cumulative impacts.

Table F1.1 An assessment of environmental risks and impacts of project activities including 1) maintaining forests, 2) sustainable forest management, 3) reduction in harvest levels. Risk assessment is based on change in risk between baseline and project scenario and categized by increase: project scenario increases risk compared to baseline, decrease: project scenario decreases risk compared to baseline, or no change: project scenario does not change risk.

Environmental Factors	Potential Risk or Impact of Forest Management	Change in Risk by Project Activities (Increase, Decrease, No Change)		
		Maintaining forests[1]	Sustainable forestry management[2]	Reduction in harvest levels[3]
Climate change mitigation	Forest conversion	Decrease	No Change	No Change
	Carbon emissions	Decrease	Decrease	Decrease
Climate change adaptation	Habitat fragmentation	Decrease	Decrease	Decrease or No Change

biodiversity	Introduction of invasive species	Decrease	Decrease	Decrease or No Change
	Habitat degradation or loss Habitat fragmentation	Decrease	Decrease	Decrease or No Change
Air quality	Emissions for logging and trucking equipment	Decrease	Decrease	Decrease
	C02 emissions	Decrease	Decrease	Decrease
Water quality	Non-point source pollution	Decrease	Decrease	Decrease or No Change
Soil quality	Soil erosion	Decrease	Decrease	Decrease or No Change
Protection, conservation, or restoration of natural habitats such as forests, grasslands, and wetlands	Habitat fragmentation	Decrease	Decrease	Decrease or No Change
	Habitat degradation	Decrease	Decrease	Decrease or No Change
	Disturbance of hydrological processes	Decrease	Decrease	Decrease or No Change

[1]Monitored by project monitoring plan (See Section D2)
[2]Monitored by American Tree Farm certification system
[3]Monitored by project monitoring plan (See Section D2)

Table F1.2 An overview of how the project contributes (positive, negative, or N/A) to the United Nation's Sustainable Development Goals

Sustainable Development Goal	**Project Impact (+, -, or N/A)**	**Rationale**
GOAL 1: No Poverty	N/A	
GOAL 2: Zero Hunger	N/A	
GOAL 3: Good Health and Well-being	N/A	
GOAL 4: Quality Education	N/A	
GOAL 5: Gender Equality	N/A	
GOAL 6: Clean Water and Sanitation	+	By maintaining forests and ensuring sustainable forest management the

		project reduces erosion and non-point source water pollution.
GOAL 7: Affordable and Clean Energy	N/A	
GOAL 8: Decent Work and Economic Growth	+	By maintaining forest, habitats, and recreational opportunities the project contributes to tourism, an important resource to the local economy.
GOAL 9: Industry, Innovation and Infrastructure	+	The project provides a new revenue stream for forest land owners.
GOAL 10: Reduced Inequality	N/A	
GOAL 11: Sustainable Cities and Communities	+	By maintaining forests and ensuring sustainable forest management the project sustains the character and economic viability of local communities.
GOAL 12: Responsible Consumption and Production	N/A	
GOAL 13: Climate Action	+	By maintaining forest and ensuring sustainable forest management the project increases sequestration of carbon.
GOAL 14: Life Below Water	+	By maintaining forest and ensuring sustainable forest management the project protects water quality and aquatic habitat both within the project area and the larger watershed.
GOAL 15: Life on Land	+	By maintaining forest and ensuring sustainable forest management the project protects habitat benefits both within the project area and the larger landscape.
GOAL 16: Peace and Justice Strong Institutions	N/A	
GOAL 17: Partnerships to achieve the Goal	N/A	

F2. STAKEHOLDER COMMENTS

N/A. The Project Proponent, Wolf Lands, Inc. is a private forestland owner, and adhered to their internally agreed upon practices of project consultation and notification on associated decision making.

G. OWNERSHIP AND TITLE

G1. PROOF OF TITLE

Ownership of forestlands

Forestlands included in the project are owned directly by the Project Proponent, Wolf Lands, Inc., which hold full legal titles and thus have long term control of the land. The deeds for lands within the project boundary were provided for review by the project developer and included in the project file.

Emission reduction rights

Emission reductions and removals rights are owned by the Project Proponent.

G2. CHAIN OF CUSTODY

No sales or purchasing of offsets was conducted prior to project registration.

G3. PRIOR APPLICATION

The Wolf Lands Forest Carbon Project has no prior application.

H. PROJECT TIMELINE

H1. START DATE

Project start date is May 20, 2020, which is the date of the contractual signing agreement between the Project Proponent and the Green Timber Forestry. This start date is appropriate and consistent with the ACR Standard Version 7.0.

H2. PROJECT TIMELINE

The table below provides the timeline for Wolf Lands Forest Carbon Project.

Project Activity	Date	Source/Notes
Project Start Date (Contract for feasibility assessment of carbon offsets).	May 20, 2020	Contract signing
Frequency of monitoring, reporting and verification		Every 5 years after the first verification
Length of First Crediting period	May 20, 2020 - May 19, 2040	20 years
Expected project longevity	May 20, 2020 - May 19, 2060	40 years

Addendum: Project Design Document

1. Initial Cohort
Total of 11,275 acres enrolled May 20, 2020.

1.1 Geographic Boundary

Reference section A4 of the Initial Greenhouse Gas Plan for details on the unique geographical boundaries of the initial cohort, including maps and spatial files.

1.2 Project Activities

Reference section *A5.2 Description of Project Activities* of the Initial Greenhouse Gas Plan for details on project activities carried out on the initial cohort site.

1.3 Landowners

Reference section A8 *Project Parties* of the Initial Greenhouse Gas Plan for the name and contact details of the landowner and operator of the initial cohort site.

1.4 Implementation Date

For the initial cohort, the site-specific implementation date is May 20, 2020 and is the same as the project's start date. The implementation date for future cohorts is not prior to the project's Start Date.

1.5 Eligibility Criteria

Reference section A3 *Proof of Project Eligibility* of the Initial Greenhouse Gas Plan for information on how the initial cohort site fulfills the eligibility criteria of the ACR Standard Version 7.0 and chosen methodology.

Reference section C *Additionality* of the Initial Greenhouse Gas Plan for a demonstration of additionality as specified in the Initial Greenhouse Gas Plan.

1.6 Inventory and Monitoring Approach

Reference section D *Monitoring Plan* of the Initial Greenhouse Gas Plan for information on details of inventory, modeling, and QAQC of data for the initial cohort site. Details on inventory and monitoring for future cohorts will be added at the time of enrollment.

1.7 Calculations of Baseline and Emission Reductions

Reference section E *Quantification* of the Initial Greenhouse Gas Plan for information on calculations of baseline emissions and estimated net emission reductions and removal enhancements.

1.8 Confirmation of Enrollment Date

Reference section H1 *Start Date* of the Initial Greenhouse Gas Plan for confirmation and evidence of the initial cohort's enrollment date.