

Final Abstract

Final Report Approved on May 29, 2026

M.L. 2022 Project Abstract

For the Period Ending June 30, 2025

Project Title: Forest Data Inventory

Project Manager: Dennis Kepler

Affiliation: MN DNR - Forestry Division

Mailing Address: 483 Peterson Rd.

City/State/Zip: Grand Rapids, MN 55744

Phone: (218) 322-2512

E-mail: dennis.kepler@state.mn.us

Website: <https://www.dnr.state.mn.us/forestry/index.html>

Funding Source:

Fiscal Year:

Legal Citation: M.L. 2022, Chp. 94, Sec. 2, Subd. 10d

Appropriation Amount: \$500,000

Amount Spent: \$496,300

Amount Remaining: \$3,700

Sound bite of Project Outcomes and Results

A forest inventory system has been designed to provide forest inventory metrics, e.g., volume/biomass utilizing lidar and field measurement data to create statewide forest inventory models. This data will be instrumental to NR managers and private landowners to understand the forest structure and improve their forest management plans.

Summary of Project and Outcomes

The DNR's Resource Assessment Program (RAP) has been able to design a programmatic forest inventory system across state, county, and private lands. The DNR needed to create a more comprehensive statewide inventory system to help landowners better understand their forests, account for forest changes, and provide improved forest inventory metrics such as volume and biomass. This data would be used to inform landowners of fire fuel estimates, risk assessment, forest change detection, guideline monitoring, accurate carbon storage mapping and modeling, and forest health planning including climate adaptation. To accomplish this task RAP established partnerships with two entities: the Minnesota Forestry Association (MFA) and Jennifer Wahls – Landscape Connections LLC to conduct outreach and engagement to collect Plot Based Inventory (PBI) plots on private lands. This was accomplished through the creation of a web interface; where landowners sign up to host plots on their land and our partners work them to establish where and

when plot data is collected. Outreach materials in the form of five different flyers illustrating the advantages and asking for participation were also designed and distributed with the help of our partners (approx. 20,000). From partner and material outreach, approximately 800 landowners signed up for PBI collection across the state. The sentinel landscape was selected as a pilot area to engage with private landowners to establish outreach and data collection protocols so we can then expand this work on a statewide basis. 110 PBI plots were collected within the landscape with an additional 450 plots collected on private lands outside the sentinel landscape, employing more than fifteen field contractors. In addition, RAP is currently working with UMN to analyze the USFS Forest Inventory & Analysis (FIA) plot data to determine if this plot system may be used for future statewide forest inventory models.

Project Results Use and Dissemination

All participating landowners with a plot on their land(s) have received a data sheet explaining what's collected and measured on plot as well as what it means for their parcel(s). In addition, resulting models from their plots as well as all plots measured in the area are displayed on the UMN's Atlas and the DNR's Forest Finder web applications. With this information, private landowners will be able complete a stewardship plan of their parcel(s) using this data. This is an ongoing project spanning additional grants, RAP continues to develop, process, and distribute materials and data to landowners.



Environment and Natural Resources Trust Fund

M.L. 2022 Approved Final Report

General Information

Date: August 18, 2026

ID Number: 2022-298

Staff Lead: Mike Campana

Project Title: Forest Data Inventory

Project Budget: \$500,000

Project Manager Information

Name: Dennis Kepler

Organization: MN DNR - Forestry Division

Office Telephone: (218) 322-2512

Email: dennis.kepler@state.mn.us

Web Address: <https://www.dnr.state.mn.us/forestry/index.html>

Project Reporting

Final Report Approved: May 29, 2026

Reporting Status: Project Completed

Date of Last Action: May 29, 2026

Project Completion: June 30, 2025

Legal Information

Legal Citation: M.L. 2022, Chp. 94, Sec. 2, Subd. 10d

Appropriation Language: \$500,000 the second year is from the trust fund to the commissioner of natural resources for an enhanced forest inventory on county and private lands.

Appropriation End Date: June 30, 2025

Narrative

Project Summary: Design and pilot the expansion of a program to conduct an enhanced forest inventory on private and county lands, complementing the work already begun on some public forest lands.

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

This project is designed to expand the MNDNR novel forest inventory process currently being conducted on state, county and federal lands to tribal, and private lands. The data collected will expand statewide analyses for tree density, forest changes, and carbon storage, which are critical elements in understanding our options for climate change response while making proactive, collaborative forest management possible. Since 2020, MNDNR has been transitioning to a more efficient and data-rich forest inventory method that combines plot-based forest inventory (PBI) and high-density light detection and ranging (lidar) derived data. Lidar uses pulsed lasers to measure features on and above the ground in three dimensions with great detail. PBI gathers precise forest metrics on the ground at distributed locations. Combining lidar derived information and field data from PBI provides accurate forest inventory information. These modernized forest inventory efforts to-date have focused mainly on DNR and USFS lands, only select counties and one Tribal Nation are participating currently. Private and county ownership account for the majority of Minnesota's forests. It is essential that PBI data also be collected for private and county forest lands to ensure Minnesota has reliable forest inventory information statewide.

What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.

The rich dataset collected through lidar derived information and PBI represents Minnesota's dynamic forests and supports highly detailed mapping, improved modeling, and increased monitoring capabilities. This information will significantly enhance the ability of forest managers to make and measure data-driven management decisions, including decisions regarding climate change mitigation and adaptation efforts. This project provides funding to begin the expansion of PBI data collection beyond DNR-managed lands and extend field data collection to interested county and private forest land managers. Significant coordination and planning will be necessary to design the most comprehensive and effective program and align with ongoing lidar data collection. This effort will provide the PBI data needed to expand and modernize the forest inventory on millions of additional acres of forest land in Minnesota. This investment builds on current FMIA appropriations for partnering on lidar and PBI data collection, potentially doubling the total area of modernized forest inventory to 10 million acres of forest land. This is more than half of the 17.8 million acres of forest land in Minnesota.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

The key benefit of this project is the programmatic design of a forest inventory system that provides increased efficiencies of conducting forest inventory across state, county, and private lands – greatly accelerating our ability to comprehensively measure and monitor Minnesota's forest resources. This includes metrics such as volume and biomass, resulting in improved timber growth and yield projections statewide. These improvements support the DNR and other land managers in sustainable decision making. Improved information will advance fire fuel estimates, risk assessment, forest change detection, guideline monitoring, accuracy of carbon storage mapping and modeling, and forest health planning including climate adaptation.

Project Location

What is the best scale for describing where your work will take place?

Statewide

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: Begin Planning and Network Design for Programmatic Approach to Plot Based Inventory and Landowner Involvement.

Activity Budget: \$100,000

Activity Description:

DNR Resource Assessment Program (RA) will work with the DNR's Operational Services Division (OSD) to develop a new programmatic approach to expand forest inventory across non-state forest lands. RA and OSD will define the process for developing and maintaining relations with new and existing collaborators and stakeholders. Emphasis will be on both new relationships and existing relationships, with specific attention given to add value to existing relationships with additional products and services while recognizing their early participation. Strategic design will also focus on working with the DNR's Private Forest Management Program (PFM) and other designated cooperative forest management partners that work with private landowners.

Programmatic design will continue throughout the first year of the proposed project, with heavy emphasis in the first six months. Coordination will be led by RA, with several other state and non-state partners involved in development of this program.

Strategic elements to be addressed include: identification and collaboration with PFM organizations, inventory collection design elements, as well, facilitated focus groups and listening sessions with private landowners, Tribal and County professionals, to better understand their data needs. Flexibility and additional efforts will be needed to identify all feasible logistical solutions for the activity.

Activity Milestones:

Description	Approximate Completion Date
Project definition and programmatic design team established	November 30, 2022
Agreement on strategic organizational roles and responsibilities, identification of collaborators and stakeholders, project organizational chart.	January 31, 2023
Identification of landscape priorities for PBI; forest conditions, areas to be sampled; pilot area selected.	January 31, 2023
Develop draft plan for engaging private vendors able to complete private lands PBI field work.	March 31, 2023

Activity 2: Strategize, test design, and begin private landowner outreach and PBI network development.

Activity Budget: \$275,000

Activity Description:

Partner input is essential in solidifying the organizational structure needed to accomplish the project objectives. After the initial six months, the Project Team assembled in Activity 1 will continue working with the defined stakeholder community to define a pilot area and measurable outcomes that will be used to test the efficacy of the piloted programmatic approach. The private lands PBI network will depend on partner capacity and organizational priorities, among other considerations to be determined.

RA will work with identified internal and external stakeholders to coordinate private landowner outreach associated with strategic priorities and needs defined. RA will work with PFM and external organizations to identify private forestry consultants to conduct PBI on lands where permission to collect data is granted. Training on the procedures and standards used for PBI data collection will follow the public lands PBI effort currently nearing completion. This activity

will also include facilitated focus groups and listening sessions with private land owners, Tribal and County professionals, to better understand their data needs.

Activity Milestones:

Description	Approximate Completion Date
Priority landowner identification, landowner contact and permissions for private lands PBI collection.	April 30, 2023
Development of request for proposals and contract for use with private forestry consultants doing PBI.	May 31, 2023
Coordination with partners producing inventory models based on FIA and other forest inventory data.	May 31, 2023

Activity 3: PBI Data Collection on County and Private Lands.

Activity Budget: \$125,000

Activity Description:

The DNR's Resource Assessment Program (RAP) and collaborators from UMN and MFRC will investigate incorporating other field inventory plots from public lands PBI and United States Department of Agriculture's Forest Inventory and Analyses Program (FIA) to improve precision of final products. Implementing any strategic design and collaboration will start in a priority pilot region.

RAP staff and contractors will also conduct forest inventory on approximately 250 PBI plots across county, private, and tribal forestland ownerships within the selected pilot region. Then assess the ability of the new plot data to enable extension of public lidar derived forest inventory models to all-lands.

Activity Milestones:

Description	Approximate Completion Date
Conduct focus groups and listening/input sessions with stakeholders.	June 30, 2023
Develop new forest inventory model estimates within the pilot region.	January 31, 2024
Assess the model results with and without the expanded plot network .	March 31, 2024
Conduct outreach and education workshops with participating landowners.	May 31, 2024
Collect PBI data on private lands.	October 31, 2024

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Minnesota Forest Resources Council	Minnesota DNR - Forestry	Partner Coordination, Landscape Prioritization for PBI Collection, Strategic Direction and Oversight of Project Objectives and Deliverables, Oversight of student workers involved with private landowner interactions.	No
Private Forest Management Program	Minnesota DNR - Forestry	Private Landowner Contact and PBI Permissions for Private Lands	Yes
Extension Services	University of Minnesota	Private Landowner Contact and Permissions	No
Minnesota Forestry Association	Minnesota Forestry Association	Private Landowner Contact and Participation	Yes
Forest Stewardship Planning Coordination	Minnesota Board of Soil and Water Resources	Coordination with local Soil and Water Conservation Districts, Partner Coordination, Strategic Direction and Contribution to Project Objectives and Deliverables, Private Landowner Contact and Participation	No
Resource Assessment Program	Minnesota DNR - Forestry	Project Management, Remote Sensing Model Development, Partner Coordination, PBI Network Design, PBI Collection Procedure Oversight, Time Series Map Production.	Yes

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.

Forest inventory information needs to be available across entire landscapes that encompass multiple ownerships. This project will aim to develop program materials that assist private forest landowners in particular, to address their forest management challenges and stewardship goals. Maintaining the connection between professional foresters and the myriad of landowners with a programmatic approach that includes collection of forest inventory and monitoring data will be key (i.e., PBI). Web based GIS solutions will be needed. DNR Resource Assessment will also conduct an analysis of the newly acquired high density lidar and any high resolution aerial photography with all available forest inventory information (e.g., PBI, other existing plot data). If possible, all of the newly acquired data will be provided free to the public and will be hosted through the most effective acceptable internet website (e.g., <http://www.mngeo.state.mn.us/>, <https://gisdata.mn.gov/>). A brief report will be prepared to summarize the project research and development, including a condensed version of an accuracy assessment.

The Environment and Natural Resources Trust Fund will be acknowledged through the use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the ENRTF Acknowledgment Guidelines.

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?

This project will develop a programmatic approach to engaging with private landowners on collecting time sensitive PBI data. These data will be collected with the goal to merge with public data to produce statewide estimates of forest resources information, and pilot results will be shared with participants in the form of property specific maps and reports. Private landowners and associated stakeholders will help the project team understand landowner priorities and

desired incentives. This pilot project will leverage current funding for state and federally managed lands and build the programmatic structure for future funding requests.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount	\$ Amount Spent	\$ Amount Remaining
Personnel										
Project Manager		Manage project funds and activities			28%	0.74	X	\$95,000	-	-
Private Inventory Field Supervisor		Manage/supervise the field data collection and QAQC			30%	0.18	X	\$23,000	-	-
Forest Inventory and modeling Data Manager		Manage forest inventory modeling processes			30%	0.18	X	\$25,000	-	-
Remote Sensing and Outreach Consultant		Manage and organize the remote sensing and outreach work.			29%	0.48	X	\$54,000	-	-
							Sub Total	\$197,000	\$194,000	\$3,000
Contracts and Services										
Private Forestry Consultants	Service Contract	Private Forestry Consultants will do most of the actual plot based inventory data collection. Private contractors will report to Resource Assessment.				0.7		\$203,000	\$202,300	\$700
Minnesota Forestry Association	Service Contract	MFA will provide a point of contact with private forest stewards possibly interested in participation in the private lands PBI network. Landowner communications related to this effort will be maintained by MFA. Participating landowners will be provided with a private forestry consultant to collect PBI data.				0.8		\$100,000	\$100,000	-
							Sub Total	\$303,000	\$302,300	\$700

Equipment, Tools, and Supplies										
							Sub Total	-	-	-
Capital Equipment										
							Sub Total	-	-	-
Acquisitions and Stewardship										
							Sub Total	-	-	-
Travel In Minnesota										
							Sub Total	-	-	-
Travel Outside Minnesota										
							Sub Total	-	-	-
Printing and Publication										
							Sub Total	-	-	-
Other Expenses										
							Sub Total	-	-	-
							Grand Total	\$500,000	\$496,300	\$3,700

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Personnel - Project Manager		Manage project funds and activities	Classified : This position's usual responsibility is to manage the DNR's public inventory. However, these ENRTF funds are being used for private inventory work for a period of three years only. Thus, the responsibilities have been transferred from public to private inventory work. Without ENRTF funding, this position would not be fully funded, unless additional contracts for work were entered into with other entities.
Personnel - Private Inventory Field Supervisor		Manage/supervise the field data collection and QAQC	Classified : This position's usual responsibility is to manage the DNR's public inventory. However, these ENRTF funds are being used for private inventory work for a period of three years only. Thus, the responsibilities have been transferred from public to private inventory work. Without ENRTF funding, this position would not be fully funded, unless additional contracts for work were entered into with other entities.
Personnel - Forest Inventory and modeling Data Manager		Manage forest inventory modeling processes	Classified : This position's usual responsibility is to manage the DNR's public inventory. However, these ENRTF funds are being used for private inventory work for a period of three years only. Thus, the responsibilities have been transferred from public to private inventory work. Without ENRTF funding, this position would not be fully funded, unless additional contracts for work were entered into with other entities.
Personnel - Remote Sensing and Outreach Consultant		Manage and organize the remote sensing and outreach work.	Classified : This position's usual responsibility is to manage the DNR's public inventory. However, these ENRTF funds are being used for private inventory work for a period of three years only. Thus, the responsibilities have been transferred from public to private inventory work. Without ENRTF funding, this position would not be fully funded, unless additional contracts for work were entered into with other entities.

Non ENRTF Funds

Category	Specific Source	Use	Status	\$ Amount	\$ Amount Spent	\$ Amount Remaining
State						
			State Sub Total	-	-	-
Non-State						
			Non State Sub Total	-	-	-
			Funds Total	-	-	-

Attachments

Required Attachments

Visual Component

File: [80a49fc1-5e8.pdf](#)

Alternate Text for Visual Component

Plot network design is planned where there is only forest cover. Each map shows total number of proposed PBI plots per county and private ownership, with yellow to red background color indicating a lower total number of plots, green to yellow color indicates higher total number of plots....

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
Private PBI Enrollment Process	7a9b1c0a-e81.pdf
Private PBI Outreach Rack Card	c8886d0a-61f.pdf

Media Links

Title	Link
PBI Press Release	https://www.dnr.state.mn.us/news/2024/01/11/dnr-seeks-private-woodland-owners-help-expand-forest-inventory-data
Looking for woodland owners to expand forest inventory	https://www.dnr.state.mn.us/forestry/resource-assessment/forest-inventory.html
Lidar modeled forest inventory on Atlas	https://mnatlas.org/

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

No changes from proposal to work plan.

Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?

N/A

Do you understand that travel expenses are only approved if they follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

N/A

Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

No

Does the organization have a fiscal agent for this project?

No

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

Not acknowledged

Work Plan Amendments

Amendment ID	Request Type	Changes made on the following pages	Justification For Amendment Request (word limit 75)	Date Submitted	Approved	Date of LCCMR Action
1	Amendment Request	- Budget - Personnel - Budget - Capital, Equipment, Tools, and Supplies - Budget - Professional / Technical Contracts	Moved \$50,000 from the DNR-PFM program to Minnesota Forestry Association (MFA). The PFM program does not have the capacity to complete these tasks and the MFA will fulfill this need using these additional funds to help with outreach, coordinate, and manage the private PBI data collection. Moved \$12,500 from the equipment budget to the Private Forestry Consultants category because we purchased 25 GPS's previously and determined we do not need more.	September 26, 2023	Yes	September 26, 2023
2	Amendment Request	- Budget - Professional / Technical Contracts - Budget - Personnel	I need to change one of the category/Name items. The DNR will NOT allow me to write a contract with ourselves so I need to change the \$200,000 Internal services or fees subcategory to a personnel category with the same dollar amount.	December 29, 2023	Yes	January 3, 2024
3	Amendment Request	- Budget - Other - Budget - Personnel - Budget - Professional / Technical Contracts - Attachments	Changes in both personnel and service contracting occurred. We spent a little less in labor for staff (\$2,346) and a bit more in data collection (\$2,299.80). This will result in a reduction in in personnel to \$197,654.18, and an increase in service contracting to \$202,299.80. Reason for the increase in service contract category was higher contracting costs than anticipated.	March 4, 2026	Yes	April 2, 2026

Status Update Reporting

Final Status Update August 14, 2025

Date Submitted: May 28, 2026

Date Approved: May 29, 2026

Overall Update

During this granting period, RAP has improved their programmatic design of the new lidar forest inventory modeling system through partnerships with the forestry consultants to both sign up and collect PBI data on private landowners, as well as work with the UMN to investigate other ongoing forest inventory collections (FIA). This programmatic design where the state partners with forestry associations and consultants has enhanced our ability to more effectively collect inventory data on a variety of private landowners notoriously difficult to access. To date, MN DNR and forestry consultants have collected more than 6,000 plots: 2,863 on state lands, 1,030 on County, 787 on federal, 26 on other public, and 1,657 on private lands. In the areas that have been completed (PBI field data collection and lidar modeling), this data is already being used by the State, County, and Federal land owners for a multitude of analysis including, timber harvesting assessments, fire and fuel loading risk assessments, carbon assessments, and disaster (blowdown & fire) assessments to understand those changes affecting our forests on all lands and how we might mitigate those affects.

This appropriation funded 560 plots.

Activity 1

This activity was previously marked complete.

(This activity marked as complete as of this status update)

Activity 2

This activity was previously marked complete.

(This activity marked as complete as of this status update)

Activity 3

Resource Assessment Program (RAP) entered into a contract with the UMN to investigate incorporating FIA data into our forest inventory models using other funds. This work has shown that FIA is useful. However, because FIA doesn't have submeter plot locations, they're not optimum for lidar modeling. However, FIA is useful for conducting a quality assurance, modeling Site Index (SI), and age within the larger modeling effort. We've asked the UMN to continue to investigate whether FIA can be used to drive our forest inventory models given more accurate plot locations. They are also investigating the differences between our PBI plot size (1/10 acre) and FIA and whether that has a significant impact on our forest inventory models too. This is funded by state GF(\$20K), LCCMR-2023-092(\$30K), and federal PFM (\$20K). RAP awarded 325 PBI plots to private forestry consultants in the fall of 2024 and they completed the field data collection of those plots June 30, 2025. We've assessed that these plots along with an additional ~1,900 plots on private/County/Municipal lands will suffice in quality forest inventory models across all land ownerships in Minnesota. These plots are funded by other legislative and federal grants.

(This activity marked as complete as of this status update)

Dissemination

RAP has and will continue to collect PBI field data to use for our lidar forest inventory models on all lands. As inventory models are completed within an area/region RAP posts those datasets on the NRRRI Atlas <https://mnatlas.org/> and the MN DNR Forest Finder <https://forest-finder.dnr.state.mn.us/> web applications. As stated in activity 3, a round of PBI plots have been field visited and measured on private land and a resulting report for each land owner about what we

measured will be sent via email by the end of August or beginning of September. After the forest inventory models have been completed on their lands within that lidar collection block, more comprehensive reports will be sent out. These reports will contain the inventory modeled data over their entire property, not just the plot. These reports will likely be sent out in FY26 or FY27 sometime as lidar block are completed and quality assessed for accuracy.

Status Update Reporting

Status Update March 1, 2025

Date Submitted: March 31, 2025

Date Approved: May 7, 2025

Overall Update

We've completed activities 1 and 2. All PBI plots have been measured on the Sentinel Landscape Committee. MFA and Jen Wahls have been coordinating well with DNR staff to sign up private landowner to have PBI plots established and measured on their property. Thus far, we've signed up more than 1,500 private landowners for PBI plots; 1,300 plots have been contracted for measurements; of those, ~740 have been measured; and ~300-400 more are anticipated to sign up. These are signed up via the PBI sign up website we created, and I listed during the last update. We've also entered into a contract with UMN to investigate the use of FIA in our future forest inventory models. Two web applications have been developed to disseminate our forest inventory models: DNR's Forest Finder app and the Natural Resources Research Institute (NRRI) <https://nrri.umn.edu/> Atlas web application, both listed in the dissemination update below.

Activity 1

This activity was previously marked complete.

(This activity marked as complete as of this status update)

Activity 2

This activity is complete.

Landowner outreach is going well as the DNR, MFA, and Jen Wahls continues to communicate with private landowner and sign them up for PBI data collection. 1,300 landowners have agreed to have a PBI plot established on their property and contractor are currently collecting measurements on these PBI plots. We have an additional ~350 private landowners signed up for PBI plots and anticipate an additional ~400 PBI plots to complete the statewide forest inventory models on all ownerships. These additional plots will be measured in FY26 and paid for by the ERNTF project - 2023-092. Approx. 1,900-2,000 plots will be collected/measured on private ownership.

(This activity marked as complete as of this status update)

Activity 3

We are working with UMN to investigate FIA to improve and use as plot data for our forest inventory models. We'll continue this contract into FY26 paid for by a federal grant for PFM purposes. We've also worked with the USFS FIA national program to investigate further use of FIA for our future models as well. Private PBI data collection is in full swing: A total of 1,300 PBI plots have been awarded to contractors in this phase of the statewide forest inventory project, approx. 740 plots have been measured. 325 plots (original estimate = 250 plots, but because of a lower per plot cost, we're able to measure 325 instead) are paid for by this ERNTF project (2022-298), and of those, 193 have been completed. All 1,300 plots will be measured by June 30, 2025. To complete the statewide all lands forest inventory, we'll bid and award an additional ~650-700 PBI plots (paid for by the ERNTF project - 2023-092) on private and other public land in FY26. To finish out the field plot data collection, all PBI plots are expected to be completed by June 30, 2026. New models will be created using these private PBI plots.

Dissemination

The DNR has developed a web application to display aerial imagery and forest inventory models for public use.

Currently, only the public models are loaded because we've not completed the private lands yet. This was, and currently is, paid for with DNR funds, not ERNTF funds. <https://forest-finder.dnr.state.mn.us/>

The Resource Assessment Program has granted the NRRI funds (from a federal LSR grant targeted to be used for these

purposes) to develop another web application disseminating our forest inventory models as well as other geospatial data for public consumption. <https://mnatlas.org/>

Status Update Reporting

Status Update September 1, 2024

Date Submitted: September 11, 2024

Date Approved: October 14, 2024

Overall Update

The design of private PBI collection has been completed and the pilot project is almost complete: plots have been completed and the models are in progress.

Our two private PBI coordinator's (Brian Huberty & Dave Roerick with MFA & Jen Wahls in SE MN) have utilized the PBI dashboard to enroll more than 800 landowners into the program. These plots will be contracted sometime in October and the portion of those to be paid for by this grant will be completed by the end of this grant end date, June 30, 2024. The coordinators will also contact an additional 300 - 600 private PBI plots in strategic areas around the state. More County PBI plots have also been identified which will assist in enhancing our models even further.

Activity 1

This activity was previously marked complete.

(This activity marked as complete as of this status update)

Activity 2

While this activity is behind schedule, RAP continues to move forward with these tasks. This activity should be complete by the next update.

- Our two private PBI coordinator's (Brian Huberty & Dave Roerick with MFA & Jen Wahls in SE MN) have utilized the PBI dashboard to enroll more than 800 landowners into the program. This task is complete
- The request for proposals and contract has been drafted and will be posted in September and bids, to complete private PBI field data collection, should be awarded in October. This task will be complete by October.
- RAP continues to work with our partners and to evaluate models developed with PBI plots as well as the opportunity to use FIA as an alternative.

Activity 3

- RAP has completed our listening/input sessions with pilot area stakeholders.
- Models are being completed now on the pilot project areas and will be complete by the next update.
- Assessment of these models will begin soon after the models for the pilot area is complete.
- Quite a lot of outreach and education has occurred between working with county staff, MFA, and Jen Wahls to sign up and educate private landowners to better understand this program.
- All PBI plots have been collected for this pilot area.

Dissemination

Program material has been created, printed, and disseminated to the public (the links and files have been attached to our other grant titled: Statewide Forest Carbon Inventory and Change Mapping, ID: 2023-092). Lidar is being hosted at <https://www.mngeo.state.mn.us/>

RAP is also re-creating our forest finder website which will eventually display aerial photos, and our forest inventory models created through these grants.

Status Update Reporting

Status Update March 1, 2024

Date Submitted: March 8, 2024

Date Approved: April 11, 2024

Overall Update

The Resource Assessment Program is well on our way to collecting needed forest inventory data on private lands. We have entered into two major agreements with outside organizations to begin private outreach and engagement to collect Plot Based Inventory (PBI) plots on private lands. We have also created a web interface survey for private landowners to sign up for PBI data collection (645 have signed up thus far); produced outreach materials in the form of flyers (understanding your woods, PBI information, enrollment into the PBI program, and sign-up flyers). This is beginning to accelerate our ability to reach more private citizens to sign-up and participate in our PBI program. Again, these private plots, when collected, will be added to already collected public plots to further increase our statewide forest inventory models for improved decision making by land managers.

Activity 1

Project definition and design has been completed to include, roles and responsibilities, of Resource Assessment Program staff and outside organizations.

We have entered into an agreement with Jennifer Wahls (\$50,000 paid by other funds - not these funds) to coordinate private PBI collection in the southeast and the Minnesota Forestry Association (MFA) (\$160,000: \$100,000 from these funds, \$60,000 from other funds) for the rest of the forested portion of the state.

We've already selected the pilot area, awarded a contract of 110 plots to a contractor and they've collected 39 of those plots. This data will be fully collected by the end of summer 2024.

Private landowner engagement plan has been developed with Jen Wahls and MFA to ensure appropriate private engagement occurs.

(This activity marked as complete as of this status update)

Activity 2

Priority PBI plot locations and landowner placement has been established via a website signup:

<https://www.dnr.state.mn.us/forestry/resource-assessment/forest-inventory.html>

Thus far ~650 private landowners have signed up for possible PBI data collection on their lands.

Resource Assessment, MFA, and Jen Wahls are establishing a contact protocol so private landowner may be contacted after signup to establish their engagement for PBI data collection.

Activity 3

RAP has been working with other partners and collaborator to begin the establishment of focus groups and listening sessions.

Models are complete for the two lidar blocks (Rainy Lake & Lake Superior) from all public land PBI. RAP will be delivering model results to our public collaborators (DNR, County, and USFS) in April. After the establishment and collection of private PBI has been completed, the inventory models will be rerun for the entire area again. For the Pilot area, we will run the models once we've completed all PBI data collection as stated in activity 1.

Outreach and education workshops will begin after our engagement coordinators (Jen Wahls & MFA) begin the outreach process established in activity 2.

PBI data collection on private lands has only begun in the pilot area but will likely begin in fall of 2024.

Dissemination

This is the link to our Private Landowner PBI sign-up:

<https://survey123.arcgis.com/share/fde71ccbd7a14103b7ac754a7dd8ae32?portalUrl=https://arcgis.dnr.state.mn.us/portal>

Here's our link to the PBI news release: <https://www.dnr.state.mn.us/news/2024/01/11/dnr-seeks-private-woodland-owners-help-expand-forest-inventory-data>

Here's the link to inform the public of DNR's woodland owners forest inventory expansion effort:

<https://www.dnr.state.mn.us/forestry/resource-assessment/forest-inventory.html>.

Here's the link to our PBI enrollment process in PDF form - This link is accessible to state employees with Office365

(People in State of MN - MN365): <https://mn365.sharepoint.com/:b:/s/DNR->

[Sites/FOR/ResourceAssessment/EX2ZnjavJK9Brwh_LThWwPgBbbGGVJojZi6UqUkwh4mIMw?e=pflZmT](https://mn365.sharepoint.com/:b:/s/DNR-Sites/FOR/ResourceAssessment/EX2ZnjavJK9Brwh_LThWwPgBbbGGVJojZi6UqUkwh4mIMw?e=pflZmT)

Status Update Reporting

Status Update September 1, 2023

Date Submitted: September 26, 2023

Date Approved: September 26, 2023

Overall Update

We are a bit behind schedule. However, we are moving Activity 1 along and have developed the project definition and programmatic design phase. We have been working with the Sentinel Landscape Committee in developing a pilot to collect private PBI. We are developing relationships for outreach efforts to collect private PBI data with the Minnesota Forestry Association (MFA), Minnesota Forest Resources Council (MFRC) Landscape committees, and County SWCD's (currently working on relationships with Itasca, Morrison, St. Louis, Winona, Wadena, Pine, Lake, Carlton, Crow Wing, Koochiching, and Beltrami Counties) for identifying and contacting possible private landowners to collect PBI field data. I have altered the funding distribution and moved \$50,000 from the DNR, Division of Forestry's PFM program to the MFA. The PFM program does not have the capacity to complete these tasks and the MFA will be able to fill this need. Moved \$12,500 from the equipment budget to the Private Forestry Consultants category because we purchased 25 GPS's previously and determined we do not need more. Utilizing these funds for additional PBI plots will be useful in our modeling efforts.

Activity 1

We are a bit behind schedule.

- Project definition and programmatic design team established. This included the Resource Assessment team as well as one individual from the MFRC, and the MFA team.
- Completed strategic roles and responsibilities and have identified collaborator and stakeholders. Still working on a project organizational chart.
- Working through the identification of Minnesota's landscapes and developing priorities for PBI data collection. Completed a plan with the sentinel Landscape Committee around Camp Ripley to collect 226 private PBI plots as a pilot area. We should be awarding those to a vendor within the next two months. We are working with the Minnesota Forestry Association (MFA), Minnesota Forest Resources Council (MFRC) Landscape committees, and County SWCD's (working on relationships with Morrison, Winona, Wadena, Pine, Lake, Carlton, and Beltrami Counties) for identifying and contacting possible private landowners as well as vendors (PBI field data collectors).
- The above work is establishing a plan for engaging private vendors to collect PBI data on private property. This includes working with the above partners to and current vendors who complete Forest Inventory and Analysis (FIA) field data collection.

Activity 2

The group has established where private PBI should be placed in according to our ecological sections and counties and we're working with our collaborators to ensure private outreach contact and permissions are achieved properly as mentioned in Activity 1.

- We have developed a benchmark number of private PBI plots needed to complete the forest inventory models by ecoregions and County boundaries. Based on these plots we are working with those partners listed in Activity 1 to identify and contact landowners within each of those boundaries. We've already completed work in the pilot project area (sentinel Landscape).
- Completed the RFP for the sentinel Landscape to collect 226 private PBI plots. We should be awarding those to vendors within the next two months. During the fall (2023) and into the winter (2024), we will continue to offer the RFPs for private PBI data collection via Resource Assessment vendor's and MFA/SWCD's Counties outreach efforts.
- Currently coordinating with our partners to run our forest inventory models based on FIA data. However, the Lidar

Research Scientist producing these models has gone out on FMLA with the birth of a new son. He will return early November.

Activity 3

- As stated in Activity 1 & 2, we have put together focus group/listening session to discuss options and opportunities for private PBI data collection and the resulting inventory modeling products in the Sentinel Landscape, SE & northern MN, which included County SWCD's, Camp Ripley staff, MFA staff, MFRC landscape committees as well as private landowners and stewardship plan writers (vendors). This milestone should be completed by the end of the 2023 calendar year.
- Models criteria have mostly been developed based on previous model development in the northern portion of the state. However, final models will be created when we receive the lidar data (hopefully, winter 2024) and after the PBI field data has been collected.
- Will assess the model results after the models have been completed.
- Have begun the outreach and educational workshops with landowners in the Sentinel Landscape and will continue this work as we include more areas around the state.
- As stated in Activity 1 & 2, we should be collecting private PBI in the Sentinel Landscape this fall/Winter and ongoing private PBI as we work with other area around the state.

Dissemination

We have not yet begun this work.

Status Update Reporting

Status Update March 1, 2023

Date Submitted: March 6, 2023

Date Approved: March 10, 2023

Overall Update

The Resource Assessment Program (RAP) is working with the Division of Forestry's Private Forest Management Program (PFM) and the Camp Ripley Sentinel Landscape committee as a pilot project to identify and implement private PBI methods. RAP has created a PBI outreach document and map depicting the Sentinel Landscape boundary as well as current private PBI plot locations. RAP is working with the Morrison County Soil and Water Conservation District (SWCD) and the Camp Ripley forestry team during this outreach effort. An outreach meeting is set up at Camp Ripley for March 16, 2023, to introduce interested private landowners with PBI on their lands and forestry consultants to inform, promote, and get acceptance of PBI field data collection on these lands.

Activity 1

The Resource Assessment Program (RAP) is working with the Division of Forestry's Private Forest Management Program (PFM) and the Camp Ripley Sentinel Landscape committee as a pilot project to identify and implement private PBI methods. RAP has created a PBI outreach document and map depicting the Sentinel Landscape boundary as well as current private PBI plot locations. RAP is working with the Morrison County Soil and Water Conservation District (SWCD) and the Camp Ripley forestry team during this outreach effort. An outreach meeting is set up at Camp Ripley for March 16, 2023, to introduce interested private landowners with PBI on their lands and forestry consultants to inform, promote, and get acceptance of PBI field data collection on these lands. This activity is not yet complete.

Project definition and programmatic design team has been established.

Strategic organizational roles and responsibilities have been identified.

Identification of landscape priorities for PBI; forest conditions, areas to be sampled; and pilot area has been selected.

A draft plan for engaging private vendors to complete PBI on private lands is almost complete.

Activity 2

RAP is just beginning work on this activity. After the March 16, outreach meeting with landowners, in the Camp Ripley Sentinel Landscape, we will have a list to begin working off of to begin implementation of private PBI field data collection.

Activity 3

No work has been done on this activity.

Dissemination

No work has been done on dissemination.