



# Environment and Natural Resources Trust Fund

## 2025 Request for Proposal

### General Information

**Proposal ID:** 2025-244

**Proposal Title:** Continued Aggregate Resource Mapping

### Project Manager Information

**Name:** Heather Arends

**Organization:** MN DNR - Lands and Minerals Division

**Office Telephone:** (651) 219-1808

**Email:** heather.arends@state.mn.us

### Project Basic Information

**Project Summary:** DNR aggregate resource datasets provide vital information to local governments to support informed land-use decisions and resource conservation. This proposal will complete and start projects to equal about 4-6 counties.

**ENRTF Funds Requested:** \$697,000

**Proposed Project Completion:** June 30, 2028

**LCCMR Funding Category:** Foundational Natural Resource Data and Information (A)

### 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

## Narrative

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

Aggregate resource maps and databases play a crucial role in supporting conservation of natural resources and land-use decision-making. There is historic demand for aggregate resources driven by unprecedented funding for transportation and recreation infrastructure. In the past five years, twelve counties have passed resolutions requesting mapping, which has doubled the DNR waitlist to include 22 counties wanting this information. Issues driving the need for aggregate resource maps include a shortage of septic sand, which is necessary to protect groundwater; new MNDOT initiatives to lower the carbon footprint for transpiration projects, which requires access to local sources of aggregate in order to minimize green house gas emissions; and better management of competing resources to direct development onto less sensitive areas.

Maps have been completed for 30 out of 87 counties in Minnesota with two counties in progress (St. Louis and Yellow Medicine counties). This ongoing project is a continued effort to provide data and maps 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.**

Aggregate resource maps inform decisions about complex resource management and conservation issues. This information is frequently used to demonstrate alternative sources of aggregate when protecting high value conservation areas and enables decision-makers to spread the burden of development. In this proposal, the DNR's Aggregate Resource Mapping Program (ARMP) will identify and characterize aggregate resources to produce final maps and datasets, as well as compile information to equal about 4-6 counties. Final datasets will be widely available so that all stakeholders are better informed to protect, conserve, preserve, and enhance the state's natural resources. The County Board of Commissioners of every county on the ARMP waitlist has passed a resolution requesting this work.

ARMP uses a combination of remote sensing interpretation, geologic fieldwork, and GIS analysis to inventory aggregate resources and the status of reclamation for gravel pits. Aggregate maps and associated GIS data can be layered with other natural resource layers to inform decisions on resource conservation and protection, infrastructure projects, and sustainable community development.

### **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?**

This proposal will complete current projects and start new projects to equal 4-6 complete counties with the following outcomes:

1. A complete survey of active, inactive and abandoned aggregate mines, which will aid in reclamation efforts (abandoned mines can be a source of storm water runoff and pollution from illegal dumping).
2. Complete any unfinished ENRTF supported Aggregate Mapping projects in progress started with 2021 appropriations.
3. Provide technical data and maps that is accessible to the public, easily understood by non-geologists, and shows the distribution of sand, gravel, and crushed stone resources compiled at 1:50,000 scale.

## Activities and Milestones

### Activity 1: Initiate or complete 4-6 aggregate resource maps

**Activity Budget:** \$697,000

**Activity Description:**

DNR geologists use county-scale geologic mapping techniques to identify sand, gravel, and crushed stone resources and characterize their relative quality. This information is foundational to natural resource stewardship and is used by local governments and the public. The aggregate mapping process includes:

1. Compiling and evaluating gravel pit data, historic geologic information, GIS datasets, and remotely sensed layers (e.g. LiDAR).
2. Conducting fieldwork to describe and analyze deposits, survey gravel pits and bedrock quarries, and collect geologic observations.
3. Drafting aggregate resource potential maps based on office and field-based data, and facilitating technical peer review.
4. Publishing county-specific data products including free GIS data packages, countywide PDF maps, and interactive aggregate map services.
5. Co-sponsoring a workshop with local partners to educate users how to apply project data to local resource stewardship, while continuing to provide ongoing technical support.

DNR’s Aggregate Resource Mapping Program coordinates with Minnesota Geologic Survey and Minnesota Department of Transportation, as well as local partners, to produce geologically accurate and publicly accessible maps and information.

**Activity Milestones:**

| Description  | Approximate Completion Date |
|--|-----------------------------|
| Conduct fieldwork, collect field observations, inventory active, inactive, and reclaimed pits/quarries, and collect samples. | December 31, 2027           |
| Digitize draft lines and mapping units within mapped counties.   | May 31, 2028                |
| Compile data for 4-6 counties  | June 30, 2028               |
| Complete and publish aggregate resource maps for at least three counties, potentially up to six.                             | June 30, 2028               |

## 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?**

As provided by MN Statute 84.94, counties who receive this data must consider the information in their land use decision. This work will be undertaken by county and township planning and zoning authorities. No additional funding will be required.

## Other ENRTF Appropriations Awarded in the Last Six Years

| Name                                   | Appropriation   | Amount Awarded |
|--|---|----------------|
| Accelerated Aggregate Resource Mapping | M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 03h | \$700,000      |
| Aggregate Resource Mapping             | M.L. 2022, , Chp. 94, Art. , Sec. 2, Subd. 10a                      | \$500,000      |

## Project Manager and Organization Qualifications

**Project Manager Name:** Heather Arends

**Job Title:** Mineral Potential Section Manager

**Provide description of the project manager's qualifications to manage the proposed project.**

Heather Arends is the manager of the Mineral Potential Section and has worked for the Department of Natural Resources for over 25 years. Heather earned a degree in Geological Sciences from the University of Minnesota, Morris and attended graduate school at the University of Minnesota, Duluth. In her current role, Heather is responsible for the stewardship of the state's 12 million acre minerals, supervises the Aggregate Mapping Resource Program, and oversees the management of the Drill Core Library. She successfully oversaw the completion of an 2019 LCCMR grant, where four counties were provided aggregate resource data, and is currently the project manager for a second three-year grant. Heather has also managed several sub-awards from the University of Minnesota that pass through funds from the United States Geological Survey.

**Organization:** MN DNR - Lands and Minerals Division

**Organization Description:**

The Minnesota Department of Natural Resources works to integrate and sustain the interdependent values of a healthy environment, a sustainable economy, and livable communities. DNR's integrated resource management strategy shares stewardship responsibility with Minnesotans and partners to manage for multiple interests. DNR protects the state's natural heritage by conserving the diversity of natural lands, waters, and fish and wildlife that provide the foundation for Minnesota's recreational and natural resource-based economy. DNR manages natural lands such as forests, wetlands, and native prairies; maintains healthy populations of fish and wildlife; and protects rare plant and animal communities throughout the state. DNR manages the state's water resources, sustaining healthy waterways and ground water resources. DNR provides access to enrich public outdoor recreational opportunities, such as hunting, fishing, wildlife-watching, camping, skiing, hiking, biking, motorized recreation, and conservation education through a state outdoor recreation system that includes parks, trails, wildlife management areas, scientific and natural areas, water trails, and other facilities. DNR supports natural resource-based economies, managing state forest lands for multiple forest values, ensuring the maximum long-term economic return from school trust lands, and providing other economic opportunities in a manner consistent with sound natural resource conservation and management principles.

## Budget Summary

| Category / Name                       | Subcategory or Type   | Description  | Purpose  | Gen. Ineligible | % Benefits | # FTE | Classified Staff? | \$ Amount        |
|---------------------------------------|-----------------------|--|--|-----------------|------------|-------|-------------------|------------------|
| <b>Personnel</b>                      |                       |  |  |                 |            |       |                   |                  |
| Geologist 1                           |                       | Project Geologist  |  |                 | 28%        | 3     |                   | \$270,000        |
| Geologist 2                           |                       | Project Geologist  |  |                 | 28%        | 3     |                   | \$270,000        |
| Geologist 3                           |                       | Team lead  |  |                 | 28%        | 0.75  | X                 | \$45,000         |
|                                       |                       |  |  |                 |            |       | <b>Sub Total</b>  | <b>\$585,000</b> |
| <b>Contracts and Services</b>         |                       |  |  |                 |            |       |                   |                  |
|                                       |                       |  |  |                 |            |       | <b>Sub Total</b>  | -                |
| <b>Equipment, Tools, and Supplies</b> |                       |  |  |                 |            |       |                   |                  |
|                                       | Equipment             | Field equipment such as augers, shovels, safety equipment and related items. | Equipment needed to conduct geologic fieldwork.  |                 |            |       |                   | \$2,000          |
|                                       | Tools and Supplies    | Supplies includes fieldnote books, field clothing and boots, sample bags     | Supplies for conducting fieldwork.   |                 |            |       |                   | \$3,000          |
|                                       |                       |  |  |                 |            |       | <b>Sub Total</b>  | <b>\$5,000</b>   |
| <b>Capital Expenditures</b>           |                       |  |  |                 |            |       |                   |                  |
|                                       |                       |  |  |                 |            |       | <b>Sub Total</b>  | -                |
| <b>Acquisitions and Stewardship</b>   |                       |  |  |                 |            |       |                   |                  |
|                                       |                       |  |  |                 |            |       | <b>Sub Total</b>  | -                |
| <b>Travel In Minnesota</b>            |                       |  |  |                 |            |       |                   |                  |
|                                       | Miles/ Meals/ Lodging | Lodging, meals, mileage for 200 days   | Travel expenses for MN travel related to field survey in Activities 1 & 2. Travel expenses are subject to State of MN labor agreements |                 |            |       |                   | \$35,461         |
|                                       |                       |  |  |                 |            |       | <b>Sub Total</b>  | <b>\$35,461</b>  |

|                                 |          |   |   |  |  |  |                    |                  |
|---------------------------------|----------|---|---|--|--|--|--------------------|------------------|
| <b>Travel Outside Minnesota</b> |          |   |   |  |  |  |                    |                  |
|                                 |          |   |   |  |  |  | <b>Sub Total</b>   | -                |
| <b>Printing and Publication</b> |          |   |   |  |  |  |                    |                  |
|                                 | Printing | Paper and ink for printing maps                   | Print maps internally                                     |  |  |  |                    | \$392            |
|                                 |          |   |   |  |  |  | <b>Sub Total</b>   | <b>\$392</b>     |
| <b>Other Expenses</b>           |          |   |   |  |  |  |                    |                  |
|                                 |          | Direct and Necessary Cost - Safety Support        | To support DNR internal services associated with projects |  |  |  |                    | \$2,282          |
|                                 |          | Direct and Necessary Cost - People Support        | To support DNR internal services associated with projects |  |  |  |                    | \$16,254         |
|                                 |          | Direct and Necessary Cost - Financial Support     | To support DNR internal services associated with projects |  |  |  |                    | \$6,054          |
|                                 |          | Direct and Necessary Cost - Communication Support | To support DNR internal services associated with projects |  |  |  |                    | \$1,528          |
|                                 |          | Direct and Necessary Cost - IT support            | To support DNR internal services associated with projects |  |  |  |                    | \$43,892         |
|                                 |          | Direct and Necessary Cost - Planning Support      | To support DNR internal services associated with projects |  |  |  |                    | \$1,137          |
|                                 |          |   |   |  |  |  | <b>Sub Total</b>   | <b>\$71,147</b>  |
|                                 |          |   |   |  |  |  | <b>Grand Total</b> | <b>\$697,000</b> |

## Classified Staff or Generally Ineligible Expenses

| Category/Name           | Subcategory or Type | Description | Justification Ineligible Expense or Classified Staff Request   |
|-------------------------|---------------------|-------------|--|
| Personnel - Geologist 3 |                     | Team lead   | <b>Classified :</b> By contract, we must convert unclassified personal to classified. This person is an experienced aggregate mapper and is needed to assist projects. |

Non ENRTF Funds

| Category         | Specific Source | Use                            | Status                     | Amount           |
|------------------|-----------------|--------------------------------|----------------------------|------------------|
| <b>State</b>     |                 |                                |                            |                  |
| Cash             | General Fund    | Salary for classified employee | Potential                  | \$200,000        |
|                  |                 |                                | <b>State Sub Total</b>     | <b>\$200,000</b> |
| <b>Non-State</b> |                 |                                |                            |                  |
|                  |                 |                                | <b>Non State Sub Total</b> | -                |
|                  |                 |                                | <b>Funds Total</b>         | <b>\$200,000</b> |

**Total Project Cost: \$897,000**

**This amount accurately reflects total project cost?**

Yes



## Attachments

### Required Attachments

#### *Visual Component*

File: [b665f552-5d9.pdf](#)

#### *Alternate Text for Visual Component*

This map shows the current status of aggregate resource mapping in the state, with 30 completed counties, 22 counties that have requested this information, and 2 counties in progress....

## Administrative Use

**Does your project include restoration or acquisition of land rights?**

No

**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

**Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing \$10,000 or more or large-scale stream or wetland restoration?**

No

**Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care, treatment, education, training, instruction, or recreation to children")?**

No

**Provide the name(s) and organization(s) of additional individuals assisting in the completion of this proposal:**

Jason Tidemann, Department of Natural Resources

