

2006 Project Abstract

For the Period Ending June 30, 2008

PROJECT TITLE: Land Cover Mapping for Natural Resource Protection (H-29)
PROJECT MANAGER: Roel Ronken
AFFILIATION: Hennepin County – Dept. of Environmental Services
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WEBSITE: (If applicable) www.hennepin.us
FUNDING SOURCE: Minnesota Environment and Natural Resource Trust Fund
LEGAL CITATION:
ML 2006, [Chap.243], Sec.[20], Subd. 5

APPROPRIATION AMOUNT: \$250,000

Overall Project Outcome and Results

Much of the land cover within the five Twin Cities metropolitan county partners on this project (Carver, Dakota, Hennepin, Scott, and Washington) has been converted from historic native plant communities to human-disturbed systems. However, remnant natural plant communities persist and their protection remains critical, while significant opportunities also exist for the restoration of other cover types in these landscapes. Restoration within these areas will increase the extent and connectivity of remnant natural areas, provide ecological benefits such as improved wildlife habitat and reduced soil erosion, and present many opportunities for landowners and other citizens to engage in improving the natural resource base in their own communities. Large-scale restoration will be more possible with landscape-scale planning that provides methods for identifying and prioritizing opportunities based on the best available information.

Over a period of years, significant public funding has been invested in land cover mapping as part of a natural resource inventory to help determine regional priorities for wildlife habitat protection and restoration using the Minnesota Land Cover Classification System (MLCSS). The purpose of this project was to create a GIS-based model following MLCSS that the five participating counties could use as a tool for identifying opportunities for ecological restoration at a landscape-scale in their urbanized landscapes.

This project completed identified land cover mapping for the five partner counties and used it along with other data – e.g. soils, slope, and aspect – to develop prioritization criteria to identify and rank potential restoration sites. The Restoration Prioritization and Prediction Model (RePP) was the resulting computer model developed to identify these sites. After the initial categorization of approximately 1.5 million acres, the model was run on approximately 837,000 acres defined as having restoration potential.

Land cover data and an electronic version of the RePP including appendices are available by reviewing the “Restoration Prioritization and Prediction Model” located at the following Minnesota Department of Natural Resources .ftp site:

ftp://ftp.dnr.state.mn.us/pub/gisftp/barichar/restoration_model/Workshop%20Materials/

Additional background data is available at the Minnesota Department of Natural Resources Data Deli:
<http://deli.dnr.state.mn.us/>

Project Results Use and Dissemination

Increasingly, land cover data is referenced and used as a tool for planners and government officials. Cities and other local forms of government can benefit from the model and understanding how it can be used in planning efforts. A training session with the staff of county partners was conducted. A presentation of the model was made to a partnership of local nonprofit organizations and other entities that promotes protection of open space in the Twin Cities region. Further dissemination will occur through the Data Deli, through project partners familiar with the model, and through planners that find the publicly available model.

LCMR 2006 Work Program Final Report

Date of Report: August 15, 2008
Date of Next Status Report: NA
Date of Work program Approval: June 27, 2006
Project Completion Date: June 30, 2008

I. PROJECT TITLE: Land Cover Mapping for Natural Resource Protection (H-29)

Project Manager: Roel Ronken
Affiliation: Hennepin County – Dept. of Environmental Services
Mailing Address: 417 North 5th Street – suite 200
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FAX Number: 612 348-8532
Web Page address: www.hennepin.us

Location: Five County Minneapolis - St. Paul Metropolitan Region. See attached mapping.

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|--|----------------------------|----------------------|
| Total Biennial LCMR Project Budget: | LCMR Appropriation: | \$ 250,000.00 |
| | Amount Spent | \$ 247,385.43 |
| | Balance: | \$ 2,614.57 |

Legal Citation: ML 2006, [Chap.243], Sec.[20], Subd. 5

Appropriation Language: *\$125,000 the first year and \$125,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with Hennepin County to develop GIS tools for prioritizing natural areas for protection and restoration and to update and complete land cover classification mapping.*

II. and III. FINAL PROJECT SUMMARY

The term Land Cover can be defined as both native vegetation and areas disturbed by human activity. Over a period of years, significant public funding has been invested in land cover mapping as part of a natural resource inventory to help determine regional priorities for wildlife habitat protection and restoration. The present project, “Land Cover Mapping for Natural Resource Protection (H-29)”, completes the identified land cover mapping for the five county project partners which includes: Carver, Dakota, Hennepin, Scott, and Washington counties. Land cover mapping was produced using a combination of aerial photograph interpretation and field surveys that include modifiers that more specifically define attributes of the landscape (e.g. moderate quality maple-basswood forest).

Other goals of this project were to use the result of the land cover mapping along with soils, slope, and aspect to develop prioritization criteria to identify & rank potential restoration sites.

The Restoration Prioritization and Prediction Model (RePP) was the resulting computer model developed to identify these sites. After the initial categorization of approximately 1.5 million acres, the model was run on approximately 837,000 acres defined as having restoration potential. Restoration within the identified project area will increase the extent and connectivity of the remaining natural areas, and provide ecological benefits such as improved wildlife habitat and reduced soil erosion.

Land cover data and an electronic version of the RePP including appendices are available by reviewing the “Restoration Prioritization and Prediction Model” located at the following Minnesota Department of Natural Resources .ftp site:

ftp://ftp.dnr.state.mn.us/pub/gisftp/barichar/restoration_model/Workshop%20Materials/

Additional background data is available at the Minnesota Department of Natural Resources Data Deli:

<http://deli.dnr.state.mn.us/>

IV. OUTLINE OF PROJECT RESULTS: Significant state and local funds have been invested in mapping and classifying land cover in the seven county metropolitan region to help determine regional priorities for wildlife habitat protection and restoration. However, the existing information is incomplete and methodology is not designed for local scale or parcel analysis. New GIS-based tools created through this project will combine current scientific information with statistical analysis of land cover data in order to identify and rank the suitability of sites for protection and/or restoration. Having these new GIS application tools and updated information in priority areas will assist local units of government in protecting wildlife habitat and water quality as they review large scale development projects and develop and adopt new comprehensive plans in 2008.

Result 1: Development, Application, and Training of GIS-based Analysis Tools for Prioritizing Natural Area Protection and Restoration

Description:

A. Design and apply GIS-based Tools

1. Design and apply a protocol and tool to identify and rank existing ecologically-significant terrestrial and wetland areas at a scale sufficiently detailed and accurate for use on individual parcels.
2. A second tool will be designed and applied on at least 550,000 acres to identify sites for potential native plant community restoration which are degraded or where native plant communities no longer exist. This tool will provide the ability to suggest which plant community is best suited to the site based upon existing environmental conditions.

3. A third tool will be designed and applied to rank and refine these potential restoration sites. The system will be designed so that it can be easily modified in response to a variety of financial, ecological, ownership, recreational, and community considerations.

B. Outreach and Training

One presentation and one training session will be conducted. The presentation will be for the Regional Greenways Collaborative, which includes staff of local and state government agencies, nonprofits, and environmental consultants. The training session will be for staff of the partner counties, including natural resource managers and GIS technicians. In addition, web site access through the DNR will be provided.

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|---|--------------------|--------------------|
| Summary Budget Information for Result 1: | LCMR Budget | \$80,000.00 |
| | Balance | \$ 1,883.26 |

Completion Date Completion Date: Entire result will be completed June 30, 2008.

Result Status as of: (June 30, 2008).

We ended up running the model on 837,000 acres which was significantly more than the 550,000 acre goal that we had at the start of the grant.

This project was straight forward and there were no significant changes from what we initially envisioned. The project management was shared by the individual County representatives and I (Roel Ronken) concentrated on insuring that the modeling consultant and the DNR received data within the outlined timeline along with the overall financial coordination.

The familiarity of the Project Partners gave us confidence that we could complete the project in the allotted time. There was some concern that the consultants conducting the field work may not be able to live up to their agreements/contracts. This was not due to effort but rather the size of the work load they were responsible for completing. Everyone made extraordinary effort in seeing the project through to completion. I can't think of anything I'd change, it went very smoothly although it was perhaps a little too large for us to expect to complete in the two year timeframe of an LCCMR grant. I believe the success of the project was due to the individual County coordinators, the DNR and the relationships with and quality of the consultants.

The completed Restoration Prioritization and Prediction model (RePP), supporting data, and metadata is publicly available at:

ftp://ftp.dnr.state.mn.us/pub/gisftp/barichar/restoration_model/

Staff of the partner Counties attended a training session on June 2nd. A public presentation of the model was made at an Embrace Open Space meeting on June 24th, 2008.

Result 2: New and Revised Priority Land Cover Mapping in Carver, Hennepin, Scott, and Washington Counties

Result Status as of: June 30, 2008:

All MLCCS data from the individual partner Counties has been given to the DNR and is publicly available at: ftp://ftp.dnr.state.mn.us/pub/gisftp/barichar/restoration_model/GIS%20Files .

Washington SWCD shifted \$3,600 originally budgeted in their workload to their consultant, Critical Connections (Jason Hustvedth). This work consisted of completing the “ground-truthing”. Jay Riggs (Washington SWCD Manager) concluded that this was a more efficient means of completing the project. I (Roel Ronken) wasn’t aware of this budget change until completing the Final Report. I should have caught this when the invoice was given to me in February, ’08 and asked for permission for that budget change from the LCCMR at that time.

In addition, Carver County overspent their GIS costs with their SWCD by \$100.00

In regard to both Carver and Washington County, the final result was the same and the amount spent did not exceed the total budget amount per County.

Final Report Summary: Final payment for the Restoration Prioritization and Prediction model was completed by August 15th, 2008. All payments have been completed to partner Counties and Ecological Strategies (model consultant). All the defined project results were completed by June 30th, 2008.

TOTAL LCMR PROJECT BUDGET:

| | |
|----------------------------------|--|
| All Results: Personnel: | \$247,300 |
| All Results: Equipment: | \$0.00 |
| All Results: Development: | \$0.00 |
| All Results: Acquisition: | \$0.00 |
| All Results: Other: | \$ 2,700 (mileage, printing, and materials) |

TOTAL LCMR PROJECT BUDGET: \$250,000

Explanation of Capital Expenditures Greater Than \$3,500: NA

V. OTHER FUNDS & PARTNERS:

A. Project Partners: Carver County - \$51,730; Dakota County SWCD - \$1,040; Hennepin County – \$128,960, Scott County - \$12,000; Washington Conservation District - \$56,270; and the Minnesota DNR.

B. Other Funds being Spent during the Project Period: Cash: \$20,000 from Hennepin County and \$18,000 from Washington Conservation District and \$10,000 from Carver County. In-Kind: \$15,000 from the DNR, \$7,769 from Carver County, \$10,000 from Hennepin County, \$6,000 from Washington Conservation District, and \$3,000 from Scott County.

C. Required Match (if applicable): NA

D. Past Spending: This project is a continuation of work coordinated through Metro Greenways and the Big Rivers Partnership and funded by a variety of local, regional, state, and federal sources over the past six years. Approximately \$150,000 will have been expended for similar efforts described in this project proposal in the two years prior to July 1, 2005.

E. Time: The project will be completed by June 30, 2008

VI. DISSEMINATION: (see *Result 1B.*) The MN Dept. of Natural Resources maintains and manages all MLCCS data, and will add these data and make them available to the public. The DNR will review and assess the quality of the data and will not accept any data that does not comply with the MLCCS standards. Dissemination of the results of the project will be made through the public presentation to interested individuals and organizations as previously described. In addition, the technical training session with staff of partner organizations will ensure the results can be utilized fully by the partner organizations as the end of the project. Written materials and PowerPoint presentations used in Result 1 will also be available on the web.

VII. REPORTING REQUIREMENTS: Periodic work program progress reports will be submitted not later than: January, 2007; July, 2007; and January 2008. A final work program report and associated products will be submitted by June 30, 2008.

VIII. RESEARCH PROJECTS: NA

Attachment A: Budget Detail for 2006 Project - Summary and Budget

Proposal Title: Land Cover Mapping for Natural Resource Protection (H-29)

Project Manager Name: Roel Ronken

LCMR Requested Dollars: \$250,000

| 2006 LCMR Proposal Budget | Result 1 Budget: | Amount Spent (6/30/2008) | Balance (6/30/2008) | Result 2 Budget: | Revised Result 2 budget (5/15/2007) | Amount Spent (6/30/2008) | Balance (6/30/2008) | TOTAL(s) |
|---|---------------------------------|--------------------------|---------------------|--|-------------------------------------|--------------------------|---------------------|---------------------|
| | <i>GIS-based Analysis Tools</i> | | | <i>Design protocol & New Priority Land Cover Mapping</i> | | | | |
| BUDGET ITEM | | | | | | | | TOTAL(s) |
| CARVER COUNTY: | | | | | | | | |
| Staff Expenses, mileage in the State of MN | | | | 625.00 | 625.00 | 625.00 | 0.00 | 625.00 |
| Contract 1 - Carver Soil & Water Conservation District - Fee for Service \$29,590 (photo interpretation, field verification) | | | | 29,590.00 | 29,590.00 | 29,590.00 | 0.00 | 29,590.00 |
| Contract 2 - Professional Consultant - \$11,615 (support to SWCD & County Planning for field work & MLCCS coding in high quality areas) | | | | 11,615.00 | 11,615.00 | 11,132.29 | 482.71 | 11,615.00 |
| Contract 3 - Carver County GIS - Fee for Service \$9,900 (digitizing of land cover data and GIS assistance) | | | | 9,900.00 | 9,900.00 | 10,000.00 | (100.00) | 9,900.00 |
| DAKOTA SWCD: | | | | | | | | |
| SWCD wages & benefits (design protocol) | | | | 1,040.00 | 1,040.00 | 1,040.00 | 0.00 | 1,040.00 |
| HENNEPIN COUNTY: | | | | | | | | |
| Contract 1 - consultant contract for land cover mapping and field verification | | | | 48,960.00 | 48,960.00 | 48,960.00 | 0.00 | 48,960.00 |
| Contract 2 - Ecological Strategies, LLC | 80,000.00 | 78,116.74 | 1,883.26 | | | | | 80,000.00 |
| SCOTT COUNTY: | | | | | | | | |
| Contract 1: Consultant contract for land cover mapping and field verification. | | | | 12,000.00 | 12,000.00 | 12,000.00 | 0.00 | 12,000.00 |
| WASHINGTON SWCD: | | | | | | | | |
| Contract 1 - consultant contract for land cover mapping and field verification | | | | 0.00 | 27,400.00 | 31,000.00 | (3,600.00) | 27,400.00 |
| Washington Conservation District GIS, land cover mapping, field evaluation, quality control wages & benefits | | | | 0.00 | 28,870.00 | 24,921.40 | 3,948.60 | 28,870.00 |
| GIS tech wages & benefits - 1172hrs. @ \$25.00 | | | | 29,300.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Botanist wages & benefits - remote sensing, ground truthing (Sr tech) 700 hrs. @ \$30.00 | | | | 21,000.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Quality Control Project Manager wages and benefits - 150 hrs @ \$39.80 | | | | 5,970.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Column Total(s) | 80,000.00 | 78,116.74 | 1,883.26 | 170,000.00 | 170,000.00 | 169,268.69 | 731.31 | \$250,000.00 |