Linking Habitat Restoration to Bioenergy: an East-Central Minnesota Partnership

Annual report to the Minnesota Legislature:
Senate Environment, Energy and Natural Resources Budget Division
Senate Environment and Natural Resources Policy Committee
Senate Energy, Utilities, Technology & Communication Committee
House Environment and Natural Resources Finance Division
House Environment Policy and Oversight Committee
House Energy Finance and Policy Division

(Laws of 2007, Chapter 57, Article 2, Sec. 3, subd. 6)

Submitted by the
Minnesota Department of Natural Resources
Division of Ecological Resources

Date of Report: June 18, 2010
For Project Work Completed Through May 31, 2010

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Date of Final Report: July 1, 2011

I. PROJECT TITLE

Linking Habitat Restoration to Bioenergy: an East-Central Minnesota Partnership

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II. EXECUTIVE SUMMARY

The Department of Natural Resources, Division of Ecological Resources (DNR) received $500,000 from the legislature as part of the 2007 environment, natural resources, energy, and commerce finance bill. The appropriation language is provided in Appendix 1.

"Linking Habitat Restoration to Bioenergy" is an innovative new project that unites two separate but linked aspects of environmental health: habitat restoration and bioenergy. The goal of this effort is to restore valuable habitats while providing a local source of energy. The funding provided by the legislature for this project is helping to facilitate habitat restoration efforts that might not have otherwise occurred while making the woody material generated as a by-product available to facilities that convert this material to energy.

Overall Status of Project as of April 14, 2008:

- A 50% time project manager began implementing the project in December 2007.
- Data about habitat restoration projects that could generate woody biomass within 75 miles of St. Paul were compiled; over 7,000 acres were identified. A contact list was created.
- The project is being conducted in two phases. Phase 1 pilot project sites were selected from the list of potential habitat restoration sites to develop procedures and test feasibility. In Phase 2, procedures developed in Phase 1 will be applied to additional sites until all project funds are expended.
- A process and criteria for selecting and implementing Phase 1 pilot habitat restoration project sites were developed.
- A Grant Agreement template was developed.
- Management Plan templates and examples were selected.
- Management Plan Review Team was established to review management plans to ensure that ecological restoration principles are adequately addressed and that plans include considerations for exotic invasive species management, threatened

and endangered species, and short- and long-term maintenance and management strategies.
- Harvest Plan templates and examples were developed.
- Potential woody biomass removal service contractors were identified and a list of contacts was compiled. This list is dynamic and will be updated as more contractors are identified.
- Service Contract templates and examples were created.
- A Cooperative Agreement was developed with Environmental Wood Supply, LLC, a subsidiary of District Energy St. Paul, a local energy generation facility. The agreement defines roles and responsibilities of the DNR and Environmental Wood Supply, LLC related to the project.
- Four Phase 1 pilot projects were identified and implemented as described in detail in Section III, Result 3.
- A fact sheet was prepared to describe the project.

Overall Status of Project as of May 31, 2009:
- As the project progressed, there became four distinct phases of implementation: Phase 1 involved two projects implemented winter of 2008; Phase 2 involved two projects implemented spring/summer 2008; Phase 3 involved six projects implemented fall 2008/winter 2009; and, Phase 4 involves an RFP due on June 26, 2009 for the final set of projects to be completed by April 30, 2010. Phase 4 was delayed due to temporarily unalloted funds that required rescinding the RFP initially posted in December 2008.
- Lessons learned during each phase helped to inform and refine the criteria, process, procedures and metrics applied to projects of each subsequent phase.
- The document "DNR Woody Biomass Project Guidelines for Grantees" was developed and is revised as needed.
- New Office of Grants Administration policies and guidelines implemented by the DNR in August 2008 were applied to Phase 3 projects and resulted in the issuance of a formal Request for Proposals using the criteria and guidelines previously developed for Phase 1 and Phase 2 projects.
- DNR Division of Ecological Resources Invasive Species Guidelines were adapted for woody biomass projects and provided to grantees for incorporation into the required Harvest Plan and to Ever-Green Energy, service provider to District Energy.
- A Management Plan review checklist has been developed.
- The Harvest Plan Template has been revised and an accompanying harvest plan review checklist developed.
- The example service contract template has been revised.
- A "DNR Woody Biomass Project Checklist" was developed.
- A filing system has been created to easily track project status and data.
- A database has been created to capture funded project information and information on others who have expressed interest in this project.
- A "Permit to Transport Noxious Weed Infested Material or Equipment" was obtained from the Minnesota Department of Agriculture.

- A resource contact list has been created for use by grantees that includes organizations and businesses involved in habitat restoration and management, and woody plant removal.
- Grantees are provided a copy of the "Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines" including the "Biomass Harvesting Guidelines for Forestlands, Brushlands and Open Lands" dated December 2007.
- Additional funding has been sought through the LOHC (unsuccessful) and the LCCMR (pending).

Overall Status of Project as of May 31, 2010

- To date, 13 projects have been completed with one pending (see page 17 for more details).
- A project webpage was created and posted to the DNR website: http://www.mndnr.gov/grants/habitat/biomass.html.
- A tour of District Energy St. Paul's combined heat and power facility was held on July 14, 2009 for grantees and other interested parties involved in this overall effort.
- A Grinding Plan template was developed for the Uncas Dunes Scientific and Natural Area (SNA)-South Unit Phase 2 project that will be used in future projects involving complicated grinding operations.
- An electronic storage and backup system for project images was created.
- Overall process to select and implement projects was refined (informed by previous project experiences).
- Project manager completed Department of Administration, Office of Grants Management and DNR Grants Training sessions; adapted woody biomass project grants management process to meet state requirements of grant policies.
- Project manager attended professional conferences, technical workshops and field demonstrations including: International Biomass Conference (Mpls); FLD Biobaler WB55 Demonstration (Belwin); Woody Biomass Workshops (North Branch and St. Cloud); Growing the Bioeconomy (St. Paul). These sessions provided enhanced learning to improve project delivery and served to inform interested parties about this project.
- This project was featured as a case study for a paper on economic clusters around urban wood utilization. Written by Steve Bratkovich, Project Manager for Recycling and Reuse with Dovetail Partners, Inc., this publication is pending.
- Lessons learned during each project phase were used to inform and refine the criteria, process, procedures and metrics of each subsequent phase.
- Project manager responded to numerous inquiries about this project and how it relates to other efforts throughout the state. Shared many project insights, documents, and resources to assist others.
- Project manager prepared newsletter articles and reviewed drafts of project-related public relations pieces for content and accuracy.
- Building on the success of this project, a $600,000 appropriation from the Environment and Natural Resources Trust Fund through the Legislative-Citizen

Commission on Minnesota Resources (LCCMR) will link restoration efforts with emerging markets.

III. PROJECT RESULTS

Result 1: Compile information about habitat restoration sites with woody by-products within 75 miles of St. Paul.

Description: Information will be compiled on site location, distance from St. Paul, contact, acres, and biomass potentially available through contacts with public and private landowners and managers of sites undergoing habitat restoration.

Status as of April 14, 2008:
Planned and active habitat restoration sites comprising over 7,000 acres were identified and a contact list was created. Additional habitat restoration sites and acreage are added to this list as they are identified. Organizations involved in habitat restoration and management were also identified and are included in the contact list.

For practical purposes, the 75-mile radius for woody biomass procurement specified in the legislation will be measured from the Wood Recycling Center at 2165 Pigs Eye Lake Road, St. Paul where woody material is collected and processed for use by District Energy St. Paul.

Status as of May 31, 2009:
A database has been developed from the initial contact list and is regularly updated to include information on current and possible future projects.

Status as of May 31, 2010: No additions to previous reports.

Result 2: Coordinate with Environmental Wood Supply, LLC, their subsidiaries and contractors, document their business requirements related to the project, and develop an agreement covering respective roles and responsibilities of the DNR and Environmental Wood Supply, LLC.

Description: Project manager will make contacts at Environmental Wood Supply, LLC and determine their business requirements through conversations and meetings. An agreement will be developed that reflects the needs of industry and the state.

Status as of April 14, 2008:
Barb Spears, project manager, met with Jeff Guillemette of Environmental Wood Supply, LLC to tour the Wood Recycling Center wood yard and discuss project site and logistic requirements. A Cooperative Agreement was drafted and signing is in progress.

Status as of May 31, 2009:
A Cooperative Agreement has been signed and is in effect through June 30, 2010.

A good working relationship has been established between Barb Spears, DNR Woody Biomass Project Coordinator and Jeff Guillemette, Biomass Fuel Procurement Specialist with Environmental Wood Supply, LLC (service provider to District Energy St. Paul). Protocols have been agreed upon for final project site selection and overall communication among DNR, Ever-Green Energy and grantees to ensure successful project implementation.

Status as of May 31, 2010: Continued productive partnership between the DNR and Ever-Green Energy.

Result 3: Conduct Phase 1 pilot projects during winter 2008 to test feasibility, criteria, costs and procedures.

Description: Phase 1 pilot projects will be selected from the list of potential sites, and implemented during winter 2008 to take advantage of frozen ground conditions. Criteria for Phase 1 project sites include: a current habitat restoration management plan, adequate biomass volume, accessibility for equipment and trucks, and capacity of the grantee to immediately implement the project.

Status as of April 14, 2008: Phase 1 Pilot Projects

- **Pilot Knob Hill, Mendota Heights, City of Mendota Heights.** Oak savanna and mesic prairie restoration. Located 10 miles from the Wood Recycling Center in St. Paul. This is a unique site of significant cultural, historic and natural significance with many entities, including the DNR Metro Greenways program, involved in purchasing the land (a/o January 31, 2008) and working to restore its varied features. The City of Mendota Heights received funding to remove overgrown mixed hardwoods from three acres. Cutting, staging, grinding, and transport of the material was completed on March 8 with a total of 16 semi-truckloads of material equaling 1,280 cubic yards and 320 tons for use by District Energy in St. Paul. KMSP-TV, Channel 5 aired a 2:19-minute segment on this project titled "Pilot Knob Energy Project in Mendota Heights" on March 7 at 6:00 p.m.

- **Hastings Sand Coulee SNA, Hastings, Minnesota Department of Natural Resources.** Sand-gravel prairie restoration. Located 24 miles from the Wood Recycling Center in St. Paul. Approximately 6.8 acres of planted red pine, white pine, mixed spruce and encroaching red cedar was cut and staged for future grinding and transport. District Energy contractors will grind and collect the material when road and site soil conditions allow during spring or early summer 2008.

- **Indian Mounds Regional Park, St. Paul, City of St. Paul.** Oak savanna and oak forest restoration. Located 1 mile from the Wood Recycling Center in St. Paul. Approximately 9 acres of predominantly buckthorn with additional mixed tree species will be removed. Cutting will begin the end of May/early June. On June 21, 300-400 volunteers will move the material to staging area(s) for collection by Environmental Wood Supply, LLC. The volunteer coordination is in partnership with Hands-on Twin Cities and Minnesota Conservation Corps. The City of St. Paul Mayor's office, KARE-11 TV and other sponsors are coordinating public relations and media activities.

- **Zumbro Falls Woods SNA, Zumbro Falls, Minnesota Department of Natural Resources.** Oak forest and oak savanna restoration. Located 75 miles from the Wood Recycling Center in St. Paul. Approximately 25 acres of planted red pine, white pine, and encroaching mixed hardwoods to be removed and thinned resulting in approximately 500 cords of biomass material. The initial site visit with DNR SNA and Forestry staff and Environmental Wood Supply, LLC, determined that the size and complexity of this project warranted the delay in the actual harvesting until frozen ground conditions in late-fall 2008/early-winter 2009. DNR Foresters and Society of American Foresters (SAF) worked closely with the MN SAF Student Chapter on March 29 to mark the trees and boundaries of the specific biomass harvest areas and collect additional information necessary to solicit bids for biomass removal contractors.

Procedures followed in Phase 1:

- Make initial contact with landowner/manager to assess distance from the Wood Recycling Center in St. Paul, habitat restoration goals, written management plan, species to be removed, estimate of acreage/biomass volume, overall site characteristics, potential staging area(s), and accessibility for equipment and trucks.
- If proposed project appears viable, visit the site with Environmental Wood Supply, LLC representative to ensure that the project will meet their needs.
- Upon approval of project site, complete Grant Agreement to encumber project funds and activate the project.
- Management Plan. Request a file copy. If none, request that one be written. If one exists but is more than 10 years old, request updated plan. If the plan is less than 10 years old, review and determine if project site(s) involved are adequately addressed. If not, request an amendment to update information on site(s) involved in this project.
- Provide management plan templates and examples to grantee~~s~~ as needed.
- Management Plan Review Team reviews management plan for site.
- Harvest Plan. Request a file copy. This provides more details and information on the site-specific considerations and process for removing undesirable woody plant material during habitat restoration activities.
- DNR project manager reviews and approves Harvest Plan in consultation with Environmental Wood Supply, LLC and others as appropriate.
- Provide list of potential woody biomass removal service contractors to grantee to assist in their efforts to solicit bids. Obtaining a minimum of 3 bids is recommended utilizing this list and other sources.
- Provide Service Contract templates and examples to grantee~~s~~. This relates directly to the Harvest Plan but is more specific with regards to actual work and expectations of the service contractor.

Status as of May 31, 2009: Phase 1 Pilot Projects

Two projects originally identified as Phase 1 projects, Pilot Knob Hill and Hastings Sand Coulee SNA, were implemented during the winter of 2008 as planned. The other two

projects originally identified as Phase 1 projects, Indian Mounds Regional Park and Zumbro Falls Woods SNA, could not be fully implemented until a later time.

Status as of May 31, 2010: Phase 1 Pilot Projects
No additions or changes to previous reports for Phase 1 projects as reported below.

Phase 1 Pilot Projects – Winter 2008

Pilot Knob Hill, Mendota Heights, City of Mendota Heights

Status: Completed March 2008.
Description: 3 acres. Oak savanna restoration. This is a unique site of significant cultural, ecological and historic significance. The City of Mendota Heights, with many partners including the DNR Metro Greenways program, Trust for Public Land, and Dakota County, purchased a 15 acre addition (Phase II) to the 8 acres (Phase I) of existing public natural area on Pilot Knob Hill on January 31, 2008. This project helped to implement the *Pilot Knob Hill Phase II Natural Resource Management Plan* dated November 2007 prepared by Great River Greening.
Distance: 10 miles from the Wood Recycling Center in St. Paul.
Press/Media: 1) Pioneer Press article, Nick Ferraro, March 6, 2008; 2) KMSP-TV, Channel 5 aired a 2:19-minute segment on this project titled "Pilot Knob Energy Project in Mendota Heights" on March 7, 2008 at 6:00 p.m.
Operations: Great River Greening managed the project on behalf of the City of Mendota Heights and contracted with Tree Top Service. Upon completion of the grinding of biomass material, volunteers planted acorns collected from trees in the immediate vicinity.
Biomass Type: Mixed hardwoods.
Biomass Volume: 16 loads, 1,280 cy, 320 tons.

Hastings Sand Coulee SNA, Hastings, Minnesota Department of Natural Resources.

Status: Cutting completed March 2008, grinding completed June 2008.
Description: 6.8 acres. Sand-gravel prairie restoration. Hastings Sand Coulee SNA is situated in a sandy ravine, or coulee, formed by a tributary stream to the Vermillion River. It contains 13 rare species of plants and animals. This project implemented the management goal of removing a planted conifer stand and invading red cedar as outlined in the *Prairie Stewardship Plan* dated June 2006 prepared by Friends of the Mississippi River for the Maher Family who previously owned the property.
Distance: 24 miles from the Wood Recycling Center in St. Paul.
Press/Media: None.
Operations: Friends of the Mississippi River managed the project on behalf of the DNR SNA Program and contracted with Tree Technology & Recycling, Inc.
Biomass Type: Planted red pine, white pine, mixed spruce and invading red cedar.
Biomass Volume: 27 loads, 2,160 cy, 540 tons.

Result 4: Analyze results of pilot projects and develop criteria, process, and metrics for Phase 2.

Description: Phase 2 of this project will be informed by lessons learned in implementing Phase 1 and will further develop the criteria and process for future projects to be implemented.

Status as of April 14, 2008:

- Criteria being evaluated and revised include: distance, volume of biomass, habitat restoration goals, site and access considerations, verified land ownership and management responsibility, a management plan in place that describes the habitat restoration objectives, short-term management prescriptions, long-term maintenance and monitoring strategies, invasive species considerations, benefits to threatened and endangered species, a harvest plan that describes site harvest boundaries, site characteristics, road access, staging areas, ecological concerns, appropriate harvest methods, community relations considerations.
- The overall process of initiating and facilitating a project through to completion is being evaluated and written guidelines developed.
- Lack of resources for follow-up maintenance including prescribed burning/chemical treatment costs is in some cases preventing projects from being implemented; options that would provide additional resources for grantees are being researched.
- Grant Agreement language is being evaluated for efficacy.
- Costs for pilot projects are being evaluated for future project cost projections – see second table in Section IV below.
- Considerations for local public relations are being addressed related to concerns over cutting trees and shrubs, heavy equipment and associated loud noise during operations, semi-trucks moving material, and end use of material.

Status as of May 31, 2009:

- Grantees have utilized alternative funding and other resources to implement the post-woody biomass harvest restoration activities such as through the Minnesota Board of Soil and Water Resources, DNR internal funding opportunities (State Park gift store sales, terrestrial invasive species grant), watershed districts, non-profit sources, National Park Service, and volunteers. While this has been effective for a few of the pilot projects, adequate restoration funds remain a barrier for future projects, particularly in light of current economics for local government units and private entities.
- Grant Agreement language has been modified as appropriate for each project based on current and emerging policies and procedures.
- Costs for the first 10 pilot projects have been evaluated and will inform Phase 4 projects. This project is providing valuable cost data that vary based on specific project site characteristics, project size and location, harvest prescriptions, size and volume of species removed, availability of service providers, and unique circumstances. For example, hand-cutting of dense buckthorn and other shrubs on steep slopes is more costly than mechanized tree removal on level ground. The baseline per acre estimate for future projects has been adjusted accordingly.
- A public relations strategy, in particular involving affected adjacent properties or the locally impacted community, is required in the Harvest Plan and copies of communications are requested as a component of the final report.

Status as of May 31, 2010:

- Due to complexities of the Uncas Dunes SNA-South Unit Phase 2 project implemented during Phase 4, a Grinding Plan template was developed that will be used in future projects involving complicated grinding operations.
- No other significant additions or changes to criteria, process and metrics to report from previous reports for Phase 3 and Phase 4 project implementation.

Result 5: Conduct Phase 2 projects beginning spring 2008.

Description: Phase 2 projects will be selected from the list of potential sites and newly identified sites. Projects will be implemented as site-specific conditions warrant.

Status as of April 14, 2008:

- A contact form has been created to assist in capturing information during initial discussions to identify potential project sites.
- Initial contacts have been made with landowners and managers of potential Phase 2 project sites.
- The initial list of potential sites has been incorporated into a database that is being updated as new potential project sites are identified and includes the current status of each project.

Status as of May 31, 2009:

- Two Phase 2 projects (Janet and Carl T. Schuneman Wildlife Preserve and Indian Mounds Regional Park) were implemented spring/summer 2008 and were selected from the initial contact list of potential project sites. (See descriptions below).
- A formal RFP process has been established using the criteria identified in Phase 1 and Phase 2 and refined for Phase 3 and Phase 4.
- The RFP for Phase 3 was posted August 26, 2008 to the DNR website and linked through the Office of Grants Management. Possible project proposers were also solicited through a direct e-mail notice sent to names from the database. Proposal deadline was September 19, 2008 with project completion requested by February 15, 2009. Extensions were granted.
- Six Phase 3 projects (Bridgeview Park Reserve, Zumbro Falls Woods SNA, Fort Snelling WPA, Lake Edith Prairie and Savanna, Kelleher Park, and Uncas Dunes SNA) were implemented fall 2008/winter 2009. (See descriptions below)
- The RFP for Phase 4 projects was posted May 26, 2009 to the DNR website and linked through the Office of Grants Management. Possible project proposers were also solicited through a direct e-mail notice sent to names from the database as updated with contacts acquired since Phase 3. Proposal deadline is June 26, 2009 with project completion requested by April 30, 2010.

Status as of May 31, 2010:

- Phase 2 pilot projects: there are no additions or changes to previous reports as reported below.
- Phase 3 pilot projects: Zumbro Falls Woods SNA; Lake Edith Prairie and Savanna Phase 1; and, Uncas Dunes SNA-South Unit Phase 1 are updated as reported below.
- Phase 4 pilot projects: Uncas Dunes SNA-South Unit Phase 2; Alimagnet Park; Lake Edith Savanna Phase 2; and, DNR St. Paul Hatchery Aquatic Management Area were selected for implementation beginning fall 2009 with completion by April 30, 2010 as reported below.

Phase 2 Pilot Projects – Spring/Summer 2008:

Janet and Carl T. Schuneman Wildlife Preserve, White Bear Lake, Jaques Chapter, Izaak Walton League.

Status: Completed August 2008.
Description: 3 acres. Oak savanna restoration. This project implemented an important component of the *Schuneman Marsh Restoration Project Plan* dated February 2006 to restore the 100-acre site, including a wetland complex to pre-European settlement conditions and increase public accessibility to the Preserve.
Distance: 21 miles from the Wood Recycling Center in St. Paul.
Press/Media: None.
Operations: The Washington Conservation District and Izaak Walton League managed the project and contracted with Tree Technology & Recycling, Inc.
Biomass Type: Planted red pine, jack pine, and spruce and invading mixed hardwoods.
Biomass Volume: 16 loads, 1,280 cy, 320 tons.

Indian Mounds Regional Park, St. Paul, City of St. Paul.

Status: Phase 1 completed June 2008; Phase 2 completed December 2008.
Description: 11.7 acres DNR funded plus an additional 2.4 acres funded by the City of St. Paul. Oak savanna and oak forest restoration. This project implemented an important management recommendation as outlined in the *Natural Resource Inventory and Management Plan of Indian Mounds Park* dated December 2007, compiled by Great River Greening. A population of kittentails (*Besseya bullii*), a state threatened vascular plant species, was documented in the park in the 1990s. This project was implemented in two phases; the second phase occurring upon receipt of funding from the Ramsey-Washington Metro Watershed District for erosion mitigation following biomass removal from areas with steep slopes:

- **Phase 1 – June 2008-September 2008:** Funding through the DNR Woody Biomass Project was granted for the cutting, moving, and staging of material from approximately 6.7 acres through June 30, 2008.
- **Phase 2 – October-December 2008:** The City of St. Paul secured a $13,850 grant from the Ramsey-Washington Metro Watershed District to restore highly erodible slopes following the buckthorn removal. Additional funding through the DNR Woody Biomass Project was granted to complete the project as originally proposed.

Distance: Less than 1 mile from the Wood Recycling Center in St. Paul.
Press/Media: None.
Operations:

- **Phase 1:** The City of St. Paul managed the project and contracted with Natural Resources Restoration, Inc. who utilized Sentencing to Service (STS) crews for hand-cutting and stump treatment of buckthorn through June. The City of St. Paul cut the large trees and additional buckthorn July-September. Many community volunteers were utilized to move and stage the material for transport to the Wood Recycling Center, as well as plant native replacement tree and shrub species. Partner organizations assisting with additional funding and coordinating volunteer activities included: Hands On Twin Cities; National Park Service; Great River Greening, Corporate Volunteerism Council; Church of Latter Day Saints; REI; Minnesota Conservation Corps; and Minnesota Teen Challenge.
- **Phase 2:** The City of St. Paul managed the project and contracted with Natural Resources Restoration, Inc. that utilized Sentencing to Service (STS) crews to cut, move and stage the buckthorn from approximately 5 additional acres.

Biomass Type: Predominantly buckthorn with additional mixed hardwood and conifer tree species.
Biomass Volume: 1,488 cy, 372 tons. The City of St. Paul and Ever-Green Energy (service provider to District Energy St. Paul) transported raw material, no load count.

Phase 3 Pilot Projects – Fall 2008/Winter 2009:

Bridgeview Park Reserve, Big Lake, Sherburne County.

Status: Completed January 2008.
Description: 15 acres. Oak woodland-brushland restoration. The Bridgeview Park Reserve was created in 1999 utilizing grants from the DNR's Natural and Scenic Areas grant program (matched by the adjacent developer) and the Central Minnesota Initiative Fund's Scenic Area Land Preservation Program and is included in a large-scale Mississippi River corridor restoration effort. This project helped to implement the *Sherburne County Management Plan for the Bridgeview Park Reserve* dated May 2001, prepared by a team of experts.
Distance: 55 miles from the Wood Recycling Center in St. Paul.
Press/Media: West Sherburne Tribune article, Ken Francis, November 13, 2008.
Operations: Due to the elimination of the Sherburne County Parks and Forestry Coordinator, management of the project was a coordinated effort of the Sherburne County Planning and Zoning Administrator, the Sherburne County SWCD and DNR Forestry. Sherburne County contracted with Prairie Restorations, Inc. that utilized Sentencing to Service crews for the hand-cutting and stump treatment, and Tree Top Services for mechanized cutting and skidding.
Biomass Type: Buckthorn and honeysuckle shrubs, eastern red cedar and mixed hardwoods.
Biomass Volume: 23 loads, 1,840 cy, 460 tons.

Zumbro Falls Woods SNA, Zumbro Falls, Minnesota Department of Natural Resources (updated June 1, 2010).

Status: Pending completion. The cutting and staging was completed on 7 of 8 originally designated sites in January 2009. The operator, Johnson Logging, Inc., purchased 120 cords of scaled logs to be utilized for higher value products @2.50/cord = $300 (which was deducted from the original contract amount and reincorporated into the project budget). Some grinding occurred in February 2009 but warm weather conditions stopped grinding operations. The final grinding operation, postponed until fall 2009, was cancelled due to the purchase of remaining logs and standing timber by a local logger in the fall 2009-winter 2010. This logging operation was set up by DNR Forestry and sold as an informal timber

sale with a value of $887.50 (which was collected as revenue and incorporated into the project budget). This portion of the project is scheduled to be completed by June 30, 2010.
Description: 29 acres. Oak savanna restoration. Zumbro Falls Woods SNA, located along the Zumbro River in the southeast, is characterized by steep bluffs, loess-covered uplands, narrow river valleys and broad floodplains. This project involved the complete removal of 2 red pine plantations, partial removal of 3 white pine plantations, and appropriate clearing of woody vegetation from 3 mixed hardwood, conifer and shrub sites.
Distance: 75 miles from the Wood Recycling Center in St. Paul.
Press/Media: None. DNR SNA staff and a representative from Ever-Green Energy (service provider to District Energy St. Paul) attended a Zumbro Falls Town Hall meeting on December 8, 2008.
Operations: This complex project was managed as a joint effort of DNR SNA staff, Forestry staff and the Woody Biomass Project Coordinator. DNR Foresters coordinated with Society of American Foresters (SAF) and the MN SAF Student Chapter on March 29, 2008 to mark the trees and boundaries of the specific biomass harvest areas and collect additional information necessary to solicit bids for biomass removal contractors. Johnson Logging, Inc. was awarded the contract.
Biomass Type: Planted red pine, white pine, and encroaching mixed hardwoods, conifers and shrubs.
Biomass Volume: As of 2/13/09: 56 loads; 4,480 cy; 1,120 tons.

Fort Snelling WPA, Mendota Heights, Minnesota Department of Natural Resources.
Status: Completed April 2009.
Description: 16.5 acres. Oak savanna and dry prairie restoration. This is a unique site of historical and ecological importance. In 1935, the National Park Service and the Works Progress Administration (WPA) established a residential work camp at the site. This project implemented management goals as indicated in the *Fort Snelling State Park Management Plan* (1997); *Inventory of Biological Features and Fort Snelling State Park* (1995); and, *WPA Camp Management Plan* (2008) as well as enhance access and educational opportunities at the WPA camp site.
Distance: 10 miles from the Wood Recycling Center in St. Paul.
Press/Media: KARE-11, Channel 11, Jeffrey DeMars aired 1:57 minute at 6:00p.m. on March 18, 2009.
Operations: DNR Parks and Recreation managed the project. Olsen Fencing, LLC was awarded the contract. Minnesota Conservation Corps crews were funded through the DNR Terrestrial Invasives grant program to treat the buckthorn stumps immediately after cutting.
Biomass Type: Shrubs (buckthorn, honeysuckle) and mixed hardwoods.
Biomass Volume: 19 loads; 1,520 cy; 380 tons.

Lake Edith Prairie and Savanna Phase 1, Afton, Belwin Conservancy (updated June 1, 2010).
Status: Completed. Lake Edith Prairie cutting and grinding was completed January 2009, 33.4 acres. Lake Edith Savanna cutting was completed April 2009, 40.9 acres; grinding completed September 2009.
Description: 74.3 acres. Oak savanna and dry prairie restoration. The Belwin Conservancy owns 1,300 acres which are managed, in part, to protect the Valley Creek trout stream. This project helped to implement their management goals for the Lake Edith Unit and was originally proposed to complete 34 acres with the funding provided. Many more acres were accomplished due to extended frozen ground conditions and cost efficiencies in project implementation.

Distance: 16 miles from the Wood Recycling Center in St. Paul.
Press/Media: 1) Minnesota Public Radio, Stephanie Hemphill, December 3, 2008; 2) Pioneer Press article, Dennis Lien, December 8, 2008; 3) Outdoor News article, Joe Albert, December 12, 2008.
Operations: Belwin Conservancy managed this project by overseeing Mike's Tree Service, Inc. who did the majority of the cutting, moving and staging in areas conducive to mechanized equipment. They also worked with Sentencing to Service and Minnesota Conservation Corps crews for hand-cutting, stump treating and moving of material. Access to the biomass staging area for grinding operations required road improvements as determined by Belwin and Ever-Green Energy.
Biomass Type: 1) Lake Edith Prairie: Planted pine and spruce, and mixed hardwoods and shrubs; 2) Lake Edith Savanna: Shrubs, primarily buckthorn and Amur maple, and mixed hardwoods.
Biomass Volume:

Lake Edith Prairie: 44 loads; 3,520 cy; 880 tons from 33.4 acres.
Lake Edith Savanna: 165 loads; 13,200 cy; 3,300 tons from 40.9 acres.
TOTAL BIOMASS: 209 loads; 16,720 cy; 4,180 tons from 74.3 acres.

Kelleher Park, Burnsville, City of Burnsville.

Status: Completed April 2009.
Description: 23 acres. Oak savanna and oak woodland restoration. Kelleher is a Burnsville city park and is known to have a population of kittentails (*Besseya bullii*), a state threatened vascular plant species. This project implemented recommendations outlined in the *2007 Natural Resources Master Plan* to restore oak savanna areas.
Distance: 25 miles from the Wood Recycling Center in St. Paul.
Press/Media: 1) Burnsville Bulletin article, Volume 18, No. 3, October 2008; 2) Star Tribune article, Joy Powell, January 22, 2009, plus related video posted to startribune.com; 3) Pioneer Press article, Jessica Fleming, January 23, 2009.
Operations: The City of Burnsville managed this project and contracted with Applied Ecological Services, Inc. The City also involved volunteers from the Minnesota Native Plant Society and students from the University of Minnesota Fisheries, Wildlife, and Conservation Biology club to help mark trees to be saved.
Biomass Type: Mixed hardwoods, conifers and shrubs (primarily buckthorn and honeysuckle).
Biomass Volume: 41 loads; 3,280 cy; 820 tons.

Uncas Dunes SNA-South Unit Phase 1, Zimmerman, Minnesota Department of Natural Resources (updated June 1, 2010).

Status: Cutting and staging completed March 2009. Grinding completed February 2010.
Description: 31 acres. Oak savanna. Uncas Dunes, located within the Anoka Sandplain, contains a relic dunefield associated with Glacial Lake Grantsburg. Named for the rare butterfly, Uncas skipper (*Hesperia uncas*), this is one of only two sites in the state where this species was found. Several other rare plant and animal species are being documented through surveys in progress. The SNA is embedded within the Sand Dunes State Forest, administered by DNR Forestry. The Anoka Sand Plains is the focus of much funding and restoration work. This project accelerated the removal of ecologically inappropriate woody plant material on a larger area than was originally planned in support of restoration goals.
Distance: 55 miles from the Wood Recycling Center in St. Paul.
Press/Media: None.

Operations: Great River Greening managed the project logistics on this site under contract with the DNR SNA Program and sub-contracted portions of the work with Minnesota Native Landscapes, Inc. DNR Forestry staff were actively involved in planning the project. Due to concerns over pine bark beetle, all pine was chipped on-site for collection at the time of final grinding. Great River Greening hosted the Uncas Dunes Restoration Event held May 2, 2009 for volunteers sponsored by the Minnesota Board of Water and Soil Resources, DNR, and National Fish and Wildlife Foundation.
Biomass Type: Mixed hardwoods, shrubs, eastern red cedar and planted conifers.
Biomass Volume: 27 loads; 2,160 cy; 540 tons.

Phase 4 Pilot Projects – Fall 2009/Winter 2010

Lake Edith Savanna Phase 2, Afton, Belwin Conservancy.

Status: Completed September 2009.
Description: 15.4 acres. Oak savanna. The Belwin Conservancy owns 1,300 acres which are managed, in part, to protect the Valley Creek trout stream. This project continued to implement their restoration goals for the Lake Edith Unit.
Distance: 16 miles from the Wood Recycling Center in St. Paul.
Press/Media: None.
Operations: Belwin Conservancy managed this project by overseeing Mike's Tree Service, Inc. who did the majority of the cutting, moving and staging in areas conducive to mechanized equipment. Belwin staff also worked with Sentencing to Service crews for hand-cutting, stump treating and moving of material from the steep areas. Access to the biomass staging area for grinding operations required road improvements as determined by Belwin, DNR and Ever-Green Energy.
Biomass Type: Mixed hardwoods and shrubs (primarily buckthorn and Amur maple).
Biomass Volume: 37 loads; 2,960 cy; 740 tons.

Alimagnet Park, Burnsville, City of Burnsville.

Status: Completed January 2010.
Description: 28 acres. Red oak-sugar maple-basswood (bitternut hickory) forest restoration. This park was established in 1979 and lies between the two lobes of Alimagnet Lake. The natural areas within the park are designated as Priority A (highest priority) for implementing recommendations outlined in the *2007 Natural Resources Master Plan* to restore important natural areas.
Distance: 21 miles from the Wood Recycling Center in St. Paul.
Operations: The City of Burnsville managed this project and contracted with Minnesota Native Landscapes, Inc. The City also utilized Sentencing to Service crews and City Forestry staff to complete the project.
Biomass Type: Primarily buckthorn and honeysuckle with additional mixed shrubs and trees.
Biomass Volume: 13 loads; 1,040 cy; 260 tons.

Uncas Dunes SNA-South Unit Phase 2, Zimmerman, Minnesota Department of Natural Resources.

Status: Completed February 2010.
Description: 16 acres. Oak savanna restoration. Uncas Dunes, located within the Anoka Sandplain, contains a relic dunefield associated with Glacial Lake Grantsburg. Named for the rare butterfly, Uncas skipper (*Hesperia uncas*), this is one of only two sites in the state where

this species was found. Several other rare plant and animal species are being documented through surveys in progress. The SNA is embedded within the Sand Dunes State Forest, administered by DNR Forestry. The Anoka Sand Plains is the focus of much funding and restoration work. This project accelerated the removal of ecologically inappropriate woody plant material on a larger area than was originally planned in support of restoration goals.
Distance: 55 miles from the Wood Recycling Center in St. Paul.
Press/Media: None.
Operations: Great River Greening managed the logistics of this project under contract with the DNR SNA Program, in consultation with DNR Forestry and DNR Trails and Waterways, and contracted with Minnesota Native Landscapes, Inc. A local snowmobile club assisted in resolving issues relating to the state snowmobile trail impacted by this project. Great River Greening hosted the Uncas Dunes Brush Hauling event held April 17, 2010, utilizing volunteers and sponsored by the Minnesota Board of Water and Soil Resources, DNR, and National Fish and Wildlife Foundation.
Biomass Type: Mixed hardwoods, shrubs, eastern red cedar and planted conifers.
Biomass Volume: 17 loads; 1,360 cy; 340 tons.

DNR St. Paul Hatchery Aquatic Management Area, St. Paul, Minnesota Department of Natural Resources.

Status: Terminated. Project activity was halted on February 16, 2010 due to probable nesting bald eagles. Upon confirmation that the nest was active, the project was officially terminated as of March 17, 2010. The grant agreement had been signed with the City of St. Paul, but the project did not commence. The project is scheduled to resume in August 2010 upon successful fledging of the eaglet(s).
Description: 8 acres. Oak woodland and wet ash swamp restoration. This DNR-owned land is immediately adjacent to Indian Mounds Regional Park managed by the City of St. Paul. This project will further implement an important management recommendation as outlined in the *Natural Resource Inventory and Management Plan of Indian Mounds Park* compiled by Great River Greening (December 2007) and will become an important component of the overall restoration of this park. A population of kittentails (*Besseya bullii*), a state threatened vascular plant species, was documented in the park in the 1990s.
Distance: Less than 1 mile from the Wood Recycling Center in St. Paul.
Press/Media: None.
Operations: The City of St. Paul was to manage this project with oversight from the DNR. Raw biomass material would be transported directly to the Wood Recycling Center by St. Paul City staff and Ever-Green Energy where loads and tonnage are calculated as it is being ground.
Biomass Type: Primarily buckthorn with additional mixed hardwoods.
Biomass Volume: TBD.

IV. PROJECT BUDGET

Original Appropriation: $500,000
Amount Remaining: $23,356

Budget Summary as of 5/12/10

Expense category	Expended/Allocated	
Beginning Balance		**$500,000**
Grants	$393,602	
Project Salary and support costs (project manager) - excluding report preparation	$76,100	
Cost of preparing report	$800	
Permanent Unalloted Funds	(2009) $5,303 (2010) $1,726	
Sub-Total Expended/Allocated		**- $477,531**
Revenue from Zumbro Falls Woods SNA Timber Sale		**+ $887**
Balance a/o 5/12/10		**$23,356**

Pilot Project Costs by Site (project funds for cutting, moving and staging only)

	Site name	Acres harvested	Project funds	Cost per acre	Tons	Cost per ton [1]
1	**Pilot Knob Hill**	**3**	**$6,880**	**$2,293**	**320**	**$21.50**
2	**Hastings Sand Coulee SNA**	**6.8**	**$8,700**	**$1,279**	**540**	**$16.11**
3	**Schuneman Wildlife Preserve**	**3**	**$3,945**	**$1,315**	**320**	**$12.33**
4	**Indian Mounds Regional Park**	**11.7**	**$27,000**	**$2,308**	**372**	**$72.58**
5	**Bridgeview Park Reserve**	**15**	**$30,784**	**$2,186**	**460**	**$66.92**
6	**Belwin Lake Edith Phase 1**	**74.3**	**$81,391**	**$1,095**	**4,180**	**$19.47**
7	**Zumbro Falls Woods SNA**	**29**	**$14,230[2]**	**$491**	**1,120[3]**	**$12.70**
8	**Kelleher Park**	**23**	**$46,907**	**$2,039**	**820**	**$57.20**
9	**Fort Snelling WPA**	**16.5**	**$10,779**	**$653**	**380**	**$28.37**
10	**Uncas Dunes SNA Phase 1**	**31**	**$37,000**	**$1,194**	**540**	**$68.52**
11	**Uncas Dunes SNA Phase 2**	**16**	**$24,000**	**$1,500**	**340**	**$70.58**
12	**Alimagnet Park**	**28**	**$37,100**	**$1,325**	**260**	**$142.69**
13	**Belwin Lake Edith Phase 2**	**15.4**	**$34,500**	**$2,240**	**740**	**$46.62**
14	**DNR Hatchery[4]**	**0**	**$0**	**$0**	**TBD**	**$0**
	TOTAL	**272.7**	**$363,216**	**$1,386[5]**	**10,392**	**$43.19[6]**

[1]Cost per ton is calculated based on the actual costs for on-the-ground cutting, moving, and staging of woody plant material and does not include project management or other project-related costs.

[2]Zumbro Falls Woods SNA - Actual project funds account for the value of round wood sold February 2009 for $300 and deducted from the original contract amount to cut, move and stage the material. An additional volume of round wood was sold in December 2009 to a logger for a value of $887.50 (which is not accounted for in this number) and is considered revenue to be used for future projects.

[3]Zumbro Falls Woods SNA - Additional biomass may be collected upon completion of the logging operation due to be completed by June 30, 2010.

[4] DNR Hatchery - Project terminated due to actively nesting bald eagle pair. Project funds in the amount of $17,000 had initially been granted. Project is scheduled to resume in August 2010.

[5]Average cost per acre is $1,386 for the 13 projects for which there is complete data.

[6]Average cost per ton is $43.19 for the 13 projects for which there is complete data.

HABITAT BEING RESTORED

- **Oak savanna: 156.8**
- **Prairie: 55.2**
- **Oak woodland/forest: 60.7**

Appendix 1.

Laws of 2007, Chapter 57, Article 2, Sec. 3, subd. 6

Of this amount, $500,000 is transferred to the Department of Natural Resources for the Ecological Services Division to prepare, authorize, and implement habitat restoration plans on public or private properties to fulfill ecological principles of restoration ecology, while providing roadside access to the byproduct of the management actions at no cost to the operator of a biomass-fueled cogeneration facility located in St. Paul. The division may provide grants or otherwise transfer some or all of these funds to other public or private entities to accomplish these purposes. If a higher value nonbiomass market is available for some of the byproduct of this management, the division is authorized to sell the material to that market, provided that all of the proceeds are spent for the further purposes of this appropriation. The nonbiomass market sales of material from this management cannot exceed 20 percent by weight of the total byproducts produced by all approved activities under this appropriation. The restoration activities shall take place on land located within 75 miles by road of the city of St. Paul. The division shall consult with the operator of the biomass facility and other appropriate parties regarding planned projects to be funded with this appropriation. The division shall report annually to the legislative policy and finance committees for natural resources and energy regarding the expenditures and results of the program. This appropriation does not cancel but is available until spent.