Environment and Natural Resources Trust Fund (ENRTF)
M.L. 2015 Work Plan

Date of Report: October 15, 2014

Date of Next Status Update Report: February 1, 2016

Date of Work Plan Approval:

Project Completion Date: June 30, 2018

Does this submission include an amendment request? __

PROJECT TITLE: Metro Conservation Corridors Phase VIII - Enhancing Restoration Techniques for Improved Climate Resilience and Pollinator Conservation

Project Manager: Wiley Buck

Organization: Great River Greening

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Web Address: www.greatrivergreening.org

Location: Dakota, Ramsey, Scott, Washington

Total ENRTF Project Budget:		
	ENRTF Appropriation:	**$400,000**
	Amount Spent:	**$0**
	Balance:	**$400,000**

Legal Citation: M.L. 2015, Chp. xx, Sec. xx, Subd. xx

Appropriation Language:
$400,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Great River Greening for the eighth phase of the Metropolitan Conservation Corridors partnership to pilot and evaluate innovative restoration techniques aimed at improving the resilience of bur oak communities to changing climate conditions and enhancing prairie management to benefit pollinators with the help and engagement of citizen volunteers. Expenditures on restoration efforts are limited to the identified project corridor areas as defined in the work plan. A list of proposed restorations must be provided as part of the required work plan This appropriation is available until June 30, 2018, by which time the project must be completed and final products delivered.

I. PROJECT TITLE: Metro Conservation Corridors Phase VIII - Enhancing Restoration Techniques for Improved Climate Resilience and Pollinator Conservation

II. PROJECT STATEMENT: Refining restoration practices to ensure continued cost-effective success in the face of climate change and the native pollinator crisis, is addressed by studying several restoration activities and sites. This project addresses these urgent real world challenges by: 1) comparing the seedling viability across three ecotypes of bur oak; 2) monitoring the pollinator communities and their relationship to vegetation at two restoration sites; 3) researching the effect of prairie restoration haying, a practice with promising cost-benefit potential in the metro area, on soil nutrients, vegetation, and pollinators; and 4) embedding citizen science programs, student outreach, and volunteer events throughout these activities to experientially inform and engage the public on these important and timely topics.

The project will be implemented on four restoration sites, two of which host multiple activities.

Table 1: Activity by Restoration Site Summary

SITE / ACTIVITY	Central Corridor	Fish Creek Open Space	Spring Lake Regional Park (Scott Co.)	Pilot Knob Hill
Planting and Researching Viability of Three Ecotypes of Bur Oak	√ (2 sites)	√	√	
Pollinator Habitat Restoration and Citizen Monitoring of Pollinators, Vegetation		√		√
Researching Effects of Haying on Vegetation, Soil N, Pollinators	√			

The project will be carried out by a compelling partnership comprised of The University of Minnesota Center for Forest Ecology, Xerces Society for Invertebrate Conservation, City of Maplewood, and Great River Greening. Results will guide oak community plantings and restoration, inform metro area prairie haying practices as it relates to pollinator conservation and vegetation management, provide valuable data to a bumble bee database including rare species searches , and engage 1,250 citizens including 800 K-12 east metro students.

III. OVERALL PROJECT STATUS UPDATES:

Project Status as of February 1, 2016:

Project Status as of August 1, 2016:

Project Status as of February 1, 2017:

Project Status as of August 1, 2017:

Project Status as of February 1, 2018:

Overall Project Outcomes and Results:

IV. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1: Accelerated Migration of Bur Oak Ecotypes for Climate Resilience

Description: Natural colonization by adapted native plants in response to a changing Minnesota climate is hindered by lack of seed source, invasive species, and fragmented habitat. Without careful intervention, weedy invasive species could come to dominate our vegetation. Oak trees, with their low natural rate of migration, extended age to maturity, and importance to Minnesota, are especially in need of human-assisted accelerated migration. In this study, we will complete early year growth and survival comparison of three ecotypes – local, southern, and northwestern – of bur oak *(Quercus macrocarpa)* at four metro sites to determine which if any ecotype fares better. The local ecotype acorns will originate from the 7-county metro area, the southern ecotype from 200-300 miles south (e.g. Des Moines, IA) and the northwestern ecotype will be from North Dakota / northwestern MN area, with its temperature extremes. Dr. Lee Frelich and his students will design the study, collect growth and survival data on 2000 stems of each ecotype, analyze the results, and write a report. Greening will collect (either directly or through purchase) and germinate acorns from verified sites; plant 6000 stems engaging 150 volunteers; fence (contracted services) and manage the plantings (using a mix of staff and contracted services); and produce informational materials for restoration practitioners based on the results. Verifying acorn collection sites will include driving to the out-of-state collection sites to photograph, take coordinates, and determine authenticity of wild-grown trees.

All data will be statistically analyzed and a report prepared for conference presentation. This report will help refine oak planting to help ensure the continued success of oak community restorations.

Summary Budget Information for Activity 1:

ENRTF Budget: $ 179,977
Amount Spent: $ 0
Balance: $ 179,977

Outcome	Completion Date
1. Early year growth and survival by oak ecotype determined; report written and prepared for publication/presentation	5/1/18
2. Informational materials for restoration practitioners prepared for distribution/presentation	6/30/18

Activity Status as of February 1, 2016:

Activity Status as of August 1, 2016:

Activity Status as of February 1, 2017:

Activity Status as of August 1, 2017:

Activity Status as of February 1, 2018:

Final Report Summary:

ACTIVITY 2: Citizen Engagement for Pollinator Habitat Restoration and Monitoring

Description: Pollinators are keystone species in prairies and woodlands, sustaining wild plant communities that in turn provide food and shelter for a myriad of other wildlife. Despite the recognized importance of pollination services, there is a rapidly growing body of evidence that both wild and managed pollinators are in serious decline, including several bumble bee species in Minnesota that have declined precipitously in recent years.

Vegetation restoration and pollinator management are intricately related. In order to merge the best science from both fields, and also have a broad public impact stemming from today's unprecedented public interest, we will form a working partnership between Greening, Xerces Society for Invertebrate Conservation, and Maplewood Nature Center each with their respective expertise. This collaboration will provide a suite of engagement opportunities for citizens to actively learn about pollinators, restoration, and their relationship, including citizen science monitoring to K-12 school outings with expert interpretation, to restoration volunteer opportunities, ranging from plugging of pollinator-friendly prairie plants to bumble bee surveys at restored sites.

Pollinator monitoring by citizens, students, volunteers and experts will focus on bees. Bees are an amazingly diverse and very important group of insects, yet they remain poorly understood by the general public. When most people hear the word "bee," a single species comes to mind, the European honey bee. However, in Minnesota, there are more than 350 species of native wild bees, including many extremely important pollinators of crops, wildflowers and trees. Most of these 350 species can only be identified by specialists. However, with a little practice and guidance, volunteer citizen scientists can learn to identify the most common bee species and "species-groups" found in Minnesota. Since research has found that the diversity measured by easily identifiable species-groups correlates with the more robust, species-level data collected by bee experts, the approach of measuring diversity of easily identified bees is expected to give an accurate measure of local bee community structure, status, and responses to habitat enhancement.

Citizen science is increasingly recognized as a valuable tool for generating meaningful scientific data and understanding of the distribution and conservation needs of pollinators. In addition, citizen science, like volunteering and interpretation, serves to increase participants' science literacy, environmental stewardship, and connections to nature and place. By developing and implementing pollinator citizen-science programs at restored sites in the metro area, this project will engage and educate participants about Minnesota's diverse pollinators and restored habitats. At the same time, valuable data on both the diversity and abundance of bees that are present on restored habitat, and how the composition of those pollinators change over the course of restoration, will be generated. Potential uses for this data include: quantifying the effectiveness of restoration efforts to promote pollinator populations; understanding the pollinator requirements of wild flowers dependent on insect pollinators; potentially documenting the occurrence and habitat of rare pollinators; and, simply, identifying the types of bees present on a particular site.

Fish Creek Open Space

At Fish Creek Open Space, a robust program with restoration, outreach, and citizen-science initiatives will accelerate the restoration of pollinator habitat in these recently restored prairie habitats; monitor the pollinator community; gather valuable bumble bee data; document relationships between pollinators, floral resources and restoration; and engage K-12 school children and the general public through outreach and citizen science.

Xerces will lead the pollinator and bumble bee monitoring including a 150-person citizen science program, and submit data to web-based Bumble Bee Watch. Maplewood Nature Center will lead and design an interpretation program for 800 distinct K-12 east-metro students and others, engaging them in pollinator observation, catch-and-release insect capture, bee photography, and habitat restoration. Greening will conduct focused pollinator habitat restoration, including plugging pollinator-friendly forbs with 50 volunteers. During all citizen engagement activities, the tie-in between restoration practice and pollinator management will be explored, and results and processes shared.

For the 150-person citizen science program, in addition to the activities above, we will:

- Conduct onsite education and outreach to school groups and families about native plant restoration, pollinator conservation, and kid-friendly citizen science projects (Maplewood)
- Conduct four specialized training courses for the more serious participants, on pollinator and native plants, and the relationship between the two. Trainings will cover plant and pollinator symbiosis,

biology, identification, conservation, habitat restoration, and introduction to a continental citizen-science monitoring project: Bumble Bee Watch (http://bumblebeewatch.org/) (Great River Greening, Xerces, Maplewood).
- Conduct six public surveys/monitoring for bumble bees and other pollinators in the restored and remnant areas of the site (Xerces, Maplewood)
- Develop a Minnesota Citizen Science Pollinator Monitoring Guide including a photo guide to MN bee groups, monitoring protocols, and sample data sheets. Incorporate this tool in the specialized training courses; school group outreach; and public monitoring (Xerces)

Pilot Knob Hill

At Pilot Knob Hill, Greening will monitor vegetation (using contracted services) including spring forbs and bloom coverage, and soil nitrogen levels (staff will collect while contracted services will analyze), and further restore pollinator habitat by plugging pollinator-friendly plants with 50 volunteers. At the same time, Xerces will implement spring-to-fall bumble bee monitoring including focused searches for the rusty patch bumble bee and other rare Minnesota species.

Bumble bee surveys will be conducted throughout the study period, with special attention to diversity, abundance, floral preferences, nesting habitat, and the presence/absence of declining species that have a high likelihood of encounter. In an effort to capture the maximum diversity of bumble bees on site, pollinator monitoring will be conducted three times per year for the duration of the three year study, engaging and training 50 volunteer citizen scientists over this time period. All floral associations will be recorded during the surveys. Since many bumble bees are large and readily identifiable to species in hand from photos, catch-and-release methods will be employed

During all citizen engagement and volunteer activities, the tie-in between restoration practice and pollinator management will be explored, and results and processes shared. Data will be evaluated, and a case study report prepared.

Summary Budget Information for Activity 2:

ENRTF Budget: $ 136,036
Amount Spent: $ 0
Balance: $ 136,036

Outcome	Completion Date
1. 1,100 citizens engaged, including 800 K-12 students	6/15/18
2. 3 yr of bumble bee, vegetation, and soil N monitoring and pollinator habitat at Pilot Knob Hill completed, data reported.	6/30/18
3. 3 yr Citizen Science monitoring program, pollinator habitat restoration at Fish Creek completed, data reported	6/30/18

Activity Status as of February 1, 2016:

Activity Status as of August 1, 2016:

Activity Status as of February 1, 2017:

Activity Status as of August 1, 2017:

Activity Status as of February 1, 2018:

Final Report Summary:

ACTIVITY 3: Prescribed Haying for Pollinators and Prairie

Description: At Central Corridor, a restored prairie site in the metro area, Greening will implement haying as a restoration and management tool, collect data on plant diversity, spring forbs, bloom coverage, and soil nitrogen levels on hayed and un-hayed (control) plots.

Haying will be led by Greening and implement by a local service provider during the first two weeks in August on five plots, the timing of which follows traditional prairie haying practices and nesting bird guidelines, and with the expectation that it will promote cool-season forbs over mesic warm-season grasses. Five plots of four to five acres each will be hayed, with five un-hayed control plots of similar size and composition and moisture gradient. Nitrogen samples will be collected by Greening staff in late April with 20 total soil samples in each unit. Soil samples will be collected by staff across a transect traversing the long center of each individual unit, with analysis by a qualified lab. Vegetation samples will be collected across the same transect by staff, using ten 1-square meter quadrats. Quadrats will be analyzed for presence-absence, cover, and bloom cover, in early June, mid-July, and late September.

Since floral variables alone give an incomplete assessment of the effectiveness of prescribed haying as a prairie management technique, another component of this study, led by Xerces, will examine pollinator abundance, diversity, and floral interactions in hayed and control plots. Haying methods will be designed to minimize direct and indirect negative effects to pollinators, e.g., by mowing as late as possible after peak bloom while still meeting farmer hay-quality objectives, and by haying in a patchy matrix leaving uncut areas that provide food and nesting resources for bees throughout the entire season. Anticipated benefits of haying to pollinators include higher diversity and abundance of forbs during the spring season when nectar and pollen is most limited; lower abundance of nitrophilic forb species; higher forb-to-grass ratio; and reduced thatch/easier access to soil for ground nesting bees.

Pollinator monitoring will be conducted every three to four weeks from May to September, weather permitting, for the duration of the study. Surveys will consist of timed visual transect walks using sweep nets to collect/record all pollinating insects in flight or on vegetation/flowers in designated survey areas of control and test plots. All flower associations will be recorded. Catch-and-release methods will be used when possible for large, readily identifiable insects such as many bumble bees and butterflies. All collected insects will be curated and identified to the lowest practical taxonomic level.

All data will be statistically analyzed and a report prepared for conference presentation. This report will help refine haying as a prairie management tool in Minnesota, for its effects on both plants and pollinators, particularly in the metro area.

Summary Budget Information for Activity 3:

ENRTF Budget: $ 83,987
Amount Spent: $ 0
Balance: $ 83,987

Outcome	Completion Date
1. Effect of prairie haying on floristic diversity, soil N, pollinators at Central Corridor determined. Report written, prepared for presentation/publication.	6/30/18
2. Informational materials for restoration practitioners prepared for distribution/presentation	6/30/18

Activity Status as of February 1, 2016:

Activity Status as of August 1, 2016:

Activity Status as of February 1, 2017:

Activity Status as of August 1, 2017:

Activity Status as of February 1, 2018:

Final Report Summary:

V. DISSEMINATION:
Description:

Greening anticipates periodic reporting on this project through our various electronic media outlets: The Greening monthly e-newsletter (reaches 7,000) (subscribe at www.greatrivergreening.org); Facebook (900 likes) (Like us on Facebook https://www.facebook.com/greatrivergreening); and Twitter (400 followers) (Follow us on Twitter https://twitter.com/greatrivergreen)

Periodic reports may also appear on:

- The U of MN Center for Forest Ecology web page is found at http://cffe.cfans.umn.edu/index.htm

- Maplewood Nature Center website: www.maplewoodnaturecenter.com; newsletter Maplewood Living: Seasons Environmental Insert (http://www.ci.maplewood.mn.us/index.aspx; Type in "Seasons" in the search box); Facebook (https://www.facebook.com/pages/Maplewood-Nature-Center/121697461192602?fref=ts); Maplewood Review : http://www.bulletin-news.com/ramsey-co-maplewood-review

- Xerces Society for Invertebrate Conservation e-newsletter (subscribe at www.xerces.org); Wings magazine (subscribe at www.xerces.org); Facebook (https://www.facebook.com/pages/Xerces-Society/111872242162708?fref=ts) and Twitter (https://twitter.com/xerces_society) and web page (www.xerces.org).

Results will be shared with colleagues including the Metro Conservation Corridors partnership. Some of the data collected will be input into a continental database, in addition to being shared with local pollinator experts. Deliverables include preparing reports and slideshows for eventual publication and/or presentation. Publications and presentations will likely occur after the grant period.

Status as of February 1, 2016:

Status as of August 1, 2016:

Status as of February 1, 2017:

Status as of August 1, 2017:

Status as of February 1, 2018:

Final Report Summary:

VI. PROJECT BUDGET SUMMARY:

A. ENRTF Budget Overview:

Budget Category	$ Amount	Overview Explanation
Personnel:	$ 58,665	Staff time for oversight, volunteer events, restoration implementation, procuring services, vegetation monitoring, soil sampling.
Professional/Technical/Service Contracts:	$ 309,391	100K U of M; 101K Xerces; 34K Maplewood; 74K oak fencing, watering, vegetation monitoring, nursery growing, soil analysis, haying.
Equipment/Tools/Supplies:	$ 20,200	Forb plugs with individual herbivory protection; soil amendments/mulch, acorns, herbicide
Capital Expenditures over $5,000:	$	
Printing:	$ 1,500	Handouts, poster boards, signs
Travel Expenses in MN:	$ 5,794	
Other: Volunteer Event Expenses	$ 3,450	Approved food and beverage, tent/table/chair /toilet rentals, overnight security, gloves and safety glasses, hand tools.
Other: Out of State travel	$ 1,000	Travel to Iowa and North Dakota for acorn source verification, procurement
TOTAL ENRTF BUDGET:	**$ 400,000**	

Explanation of Use of Classified Staff:

Explanation of Capital Expenditures Greater Than $5,000:

Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation: 1.1

Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation: 3.2 (including graduate student)

B. Other Funds:

Source of Funds	$ Amount Proposed	$ Amount Spent	Use of Other Funds
Non-state			
South Washington Watershed District (cash)	$35,000	$	Central Corridor activities
Local Government Units (cash)	$15,000	$	Activities at Fish Creek, Pilot Knob Hill, Spring Lake Regional Park
Private Corporations (cash)	$ 2,000	$	Volunteer Events
Private Corporations (in-kind)	$ 1,000	$	Volunteer Event Expenses
Xerces Society (in-kind)	$ 5,000	$	Printed materials
City of Maplewood (in-kind)	$ 3,000	$	Staff time, materials, supplies
State			
ENRTF M.L. 2014	$11,000	$	Central Corridor haying
TOTAL OTHER FUNDS:	**$72,000**	**$**	

VII. PROJECT STRATEGY:

A. Project Partners:

- Dr. Lee Frelich, Director, The University of Minnesota Center for Forest Ecology. Recipient of $100,000 ENRTF for research design, oversight, data collection, analysis, report preparation, for Activity 1, including graduate assistant, and undergraduate assistant(s).
- City of Maplewood Nature Center. Recipient of $34,000 for Nature Center staff, busing to/from Fish Creek for school group pollinator monitoring, interpretation, and restoration; printed materials. Activity 2.
- Xerces Society for Invertebrate Conservation. Recipient of $100,850 ENRTF funds for design and oversight for citizen science monitoring of pollinators; design, identification, curation, data collection, analysis for monitoring of pollinators in hayed vs. unhayed prairie plots; printing of materials. Activities 2 and 3.
- Metro Conservation Corridors Partnership, for planning and coordination.

B. Project Impact and Long-term Strategy:

This project will inform and guide oak restoration throughout the state. The long term strategy is for the most viable oak ecotypes to be used in restorations. Growth and survival data in later years, such as the 5 and 10 year marks, and later, of the oaks will also prove informative and useful. As such, future ENRTF proposals may be submitted for review, in addition to pursuing other funding sources.

This project will inform restoration practitioners on pollinator communities during restoration, and help guide restoration activities to promote pollinators. Collecting the same floral and pollinator data in the future (e.g. 3, 5, 10 years and beyond) will also prove informative and useful. As such, future ENRTF proposals may be submitted for review, in addition to pursuing other funding sources.

Haying is a proven prairie vegetation management tool but is rarely used in the metro area due to lack of agricultural infrastructure. This project will be a metro area demonstration of haying, inform haying practices so they can benefit pollinators, and has the potential to accelerate the development of haying into a cost-saving management and restoration practice in the metro area.

C. Funding History:

Funding Source and Use of Funds	Funding Timeframe	$ Amount
ENRTF M.L. 2009. MeCC V: Restore/Enhance Significant Habitat	7/1/09-6/30/11	$155,000
ENRTF M.L. 2011. MeCC VI: Restoring our Lands and Waters	7/1/11-12/1/14	$400,000
ENRTF M.L. 2013. MeCC VII: (Fish Creek Acquisition by FMR)	7/1/13-6/30/16	$162,000
ENRTF M.L. 2013. MeCC VII: Restoring our Lands and Waters	7/1/13-6/30/16	$208,000
ENRTF M.L. 2014. Upland and Shoreline Habitat Restoration in the Greater Metropolitan Area	7/1/14-6/30/17	$300,000
OHF M.L. 2011, 1st Special Session, Ch 6, Article 1, Sec 2, Subd. 5(d) Metro Big Rivers Habitat - Phase II (Fish Creek portion)	7/1/11-6/30/14	$ 40,000
OHF ML 2012, Regular Session, Ch 264, Article 1, Sec 2, Subd 5(b) Metro Big Rivers Habitat - Phase III (Fish Creek portion)	7/1/12-6/30/15	$176,337

VIII. FEE TITLE ACQUISITION/CONSERVATION EASEMENT/RESTORATION REQUIREMENTS:

A. Parcel List:

See Attached

B. Acquisition/Restoration Information:

While this is primarily a data collection and monitoring project, nonetheless restoration activities completed with these funds will occur on land in public ownership. The anticipated restoration outcomes for the oak plantings are that $\geq$ 33% of the planted oaks will survive and exhibit growth by the end of the grant period; that

the enhanced pollinator habitat will be established; and that haying will result in a higher diversity of forbs. While the Board of Soil and Water Resources "Native Vegetation Establishment and Enhancement Guidelines" will be followed for the forb plugs, the oak ecotype study requires a research variance. All sites are to be maintained by the landowner; evaluations at the end of the grant period and again after three years will be led by Great River Greening. Identifying which techniques worked and which ones did not is a central principle to the entire project. Great River Greening will continue to include CCM on service provider RFPs.

IX. VISUAL COMPONENT or MAP(S):
See Attached.

X. RESEARCH ADDENDUM:

XI. REPORTING REQUIREMENTS:
Periodic work plan status update reports will be submitted no later than February 1, 2016, August 1, 2016, February 1, 2017, August 1, 2017 and February 1, 2018. A final report and associated products will be submitted between June 30 and August 15, 2018.

Environment and Natural Resources Trust Fund
M.L. 2015 Project Budget

Project Title: Metro Conservation Corridors Phase VIII - Enhancing Restoration Techniques for Improved Climate Resilience and Pollinator Conservation
Legal Citation:
Project Manager: Wiley Buck
Organization: Great River Greening
M.L. 2015 ENRTF Appropriation: $400,000
Project Length and Completion Date: 3 Years, June 30, 2018
Date of Report: October 15, 2014

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Activity 1 Budget	Amount Spent	Activity 1 Balance	Activity 2 Budget	Amount Spent	Activity 2 Balance	Activity 3 Budget	Amount Spent	Activity 3 Balance	TOTAL BUDGET	TOTAL BALANCE
BUDGET ITEM	**Accelerated Migration of Bur Oak Ecotypes for Climate Resilience**			**Citizen Engagement for Pollinator Habitat Restoration and Monitoring**			**Prescribed Haying for Pollinators and Prairie**				
Personnel (Wages and Benefits)	$22,815	$0	$22,815	$23,815	$0	$23,815	$12,035	$0	$12,035	$58,665	$58,665
Wiley Buck, Project Manager/Ecologist: $14,924 (78% salary, 22% benefit);7% FTE for 3 years.											
Steve Thomforde, Ecologist: $8,884 (85% salary, 15% benefits); 4% FTE for 3 years											
Wayne Ostlie, Director of Conservation: $3,635 (90% salary, 10% benefits); 1.5% FTE for 3 years.											
TBD, Ecological Assistant: $14,865 (est. 86% salary, 14% benefits); est. 13% FTE for 3 years											
Jen Kader, Volunteer Manager: $8,851 (87% salary, 13% benefits); 7% FTE for 3 years.											
Sean Wickhem, Field Coordinator: $1,428 (86% salary, 14% benefits); 1% FTE for 3 years.											
TBD, Restoration Technician: $1,935 (93% salary, 7% benefits); 2% FTE for 3 years											
William Smith, Director of Finance: $2,857 (81% salary, 19% benefits); 1% FTE for 3 years.											
Julia Wells, Administrative Assistant: $1,286 (86%salary, 14% benefits). 1% FTE for 3 years.											
Professional/Technical/Service Contracts											
U of MN Center for Forest Ecology. Research Design, Oversight, Data Collection, Analysis, Report Preparation.	$100,000	$0	$100,000							$100,000	$100,000
Xerces Society for Invertebrate Conservation. Design and oversight for citizen science monitoring of pollinators; design, data collection, analysis for monitoring of pollinators; bee expert honorarium; printing of materials.				$38,233	$0	$38,233	$62,617	$0	$62,617	$100,850	$100,850
City of Maplewood. Nature Center staff, busing to/from Fish Creek for school group pollinator surveys and restoration, printed materials.				$34,000	$0	$34,000				$34,000	$34,000
TBD (competitive bid). Site preparation, fencing/tree caging and watering, nursery custom growing, soil N testing, vegetation monitoring, haying services.	$44,700	$0	$44,700	$21,141	$0	$21,141	$8,200	$0	$8,200	$74,041	$74,041
Equipment/Tools/Supplies											
Acorns, plugs, soil amendments, mulch, herbicide.	$5,500	$0	$5,500	$14,495	$0	$14,495				$19,995	$19,995
Restoration tools and supplies: chainsaw/brushcutter supplies and repair; flagging; herbicide sprayer; protective	$337	$0	$337	$368	$0	$368				$705	$705
Printing											
Signs, posters, large maps, volunteer handouts	$500	$0	$500	$664	$0	$664	$336	$0	$336	$1,500	$1,500
Travel expenses in Minnesota											
Mileage to/from sites, meetings, purchases	$2,775	$0	$2,775	$2,220	$0	$2,220	$799	$0	$799	$5,794	$5,794
Other											
Out-of-state travel to Iowa and North Dakota to verify acorn source. 2 nights lodging ($150), meals ($50), mileage ($700)	$1,000	$0	$1,000							$1,000	$1,000
Volunteer Event Expenses: 5 events (3 oak planting and 2 forb plugging). 250 volunteers total at $11/volunteer for approved food/beverage, gloves, safety glasses, boot brushes, table/chair/portable toilet rentals, hand tools; 1 tent rental ($450) for large oak event with overnight security to protect event set up ($250).	$2,350	$0	$2,350	$1,100	$0	$1,100				$3,450	$3,450
COLUMN TOTAL	**$179,977**	**$0**	**$179,977**	**$136,036**	**$0**	**$136,036**	**$83,987**	**$0**	**$83,987**	**$400,000**	**$400,000**

Environment and Natural Resources Trust Fund
M.L. 2015 Parcel List

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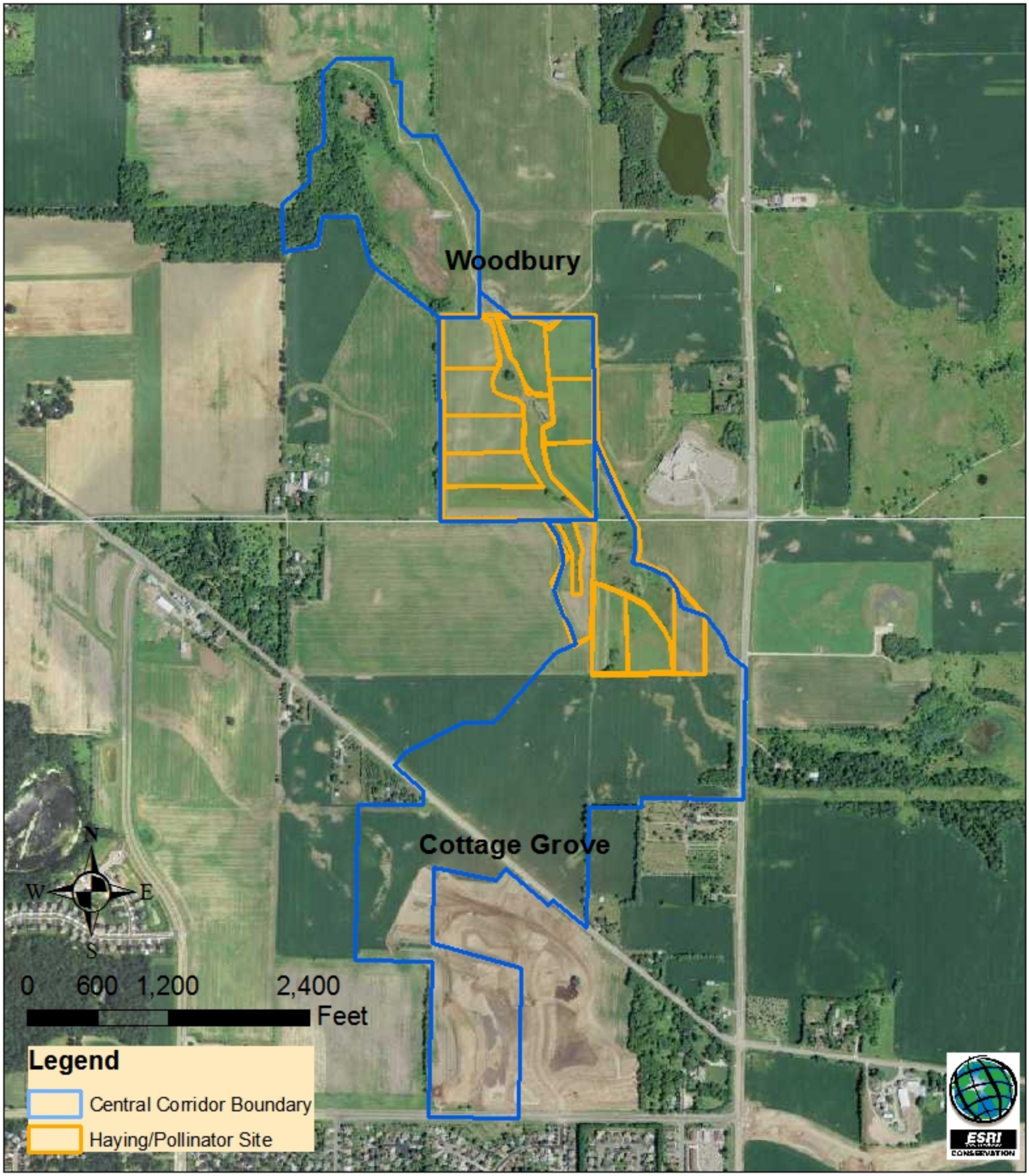
#	Acquisition or Restoration Parcel Name	Geographic Coordinates Format: [Deg.]° [Min.]' [Sec.]" [Hemis.] Latitude	Longitude	Estimated Cost	Estimated Annual PILT Liabilities	County	Site Significance	Activity Description	# of Acres	# of Shoreline Miles	Type of Landowner	Proposed Fee Title or Easement Holder (if applicable)	Status
1	Central Corridor	1)44° 51' 40.284" 2) 44° 51' 44.964"	1)-92° 54' 32.364" 2)-92° 54' 39.2034"	$ 71,991		Washington	Prairie and Savanna Habitat	Planting and Researching Three Ecotypes of Bur Oak	4		Watershed District		In Development
2	Fish Creek Open Space	44° 53' 49.9194"	-92° 59' 53.1594"	$ 35,995		Ramsey	Prairie, Savanna, Woodland Habitat	Planting and Researching Three Ecotypes of Bur Oak	1		Municipality and County		In Development
3	Spring Lake Regional Park	44° 42' 34.5234"	-93° 28' 19.8834"	$ 71,991		Scott	Wetland, Savanna, Woodland Habitat	Planting and Researching Three Ecotypes of Bur Oak	8		County		In Development
4	Fish Creek Open Space	44° 53' 46.7952"	-93° 0' 9.831"	$ 76,519		Ramsey	Prairie, Savanna, Woodland Habitat	Pollinator-Friendly Plugging and Monitoring Pollinators, Vegetation	0.5		Municipality and County		In Development
5	Pilot Knob Hill Open Space	44° 52' 52.2876"	-93° 10' 1.3902"	$ 59,517		Dakota	Prairie, Savanna Habitat	Pollinator-Friendly Plugging and Monitoring Pollinators, Soil N, Vegetation	0.5		Municipality		In Development
6	Central Corridor	44° 51' 53.6364"	-92° 54' 33.4866"	$ 83,987		Washington	Prairie and Savanna Habitat	Haying and Researching Effects on Vegetation, Soil N, Pollinators	22		Watershed District		Underway with Matching Funds

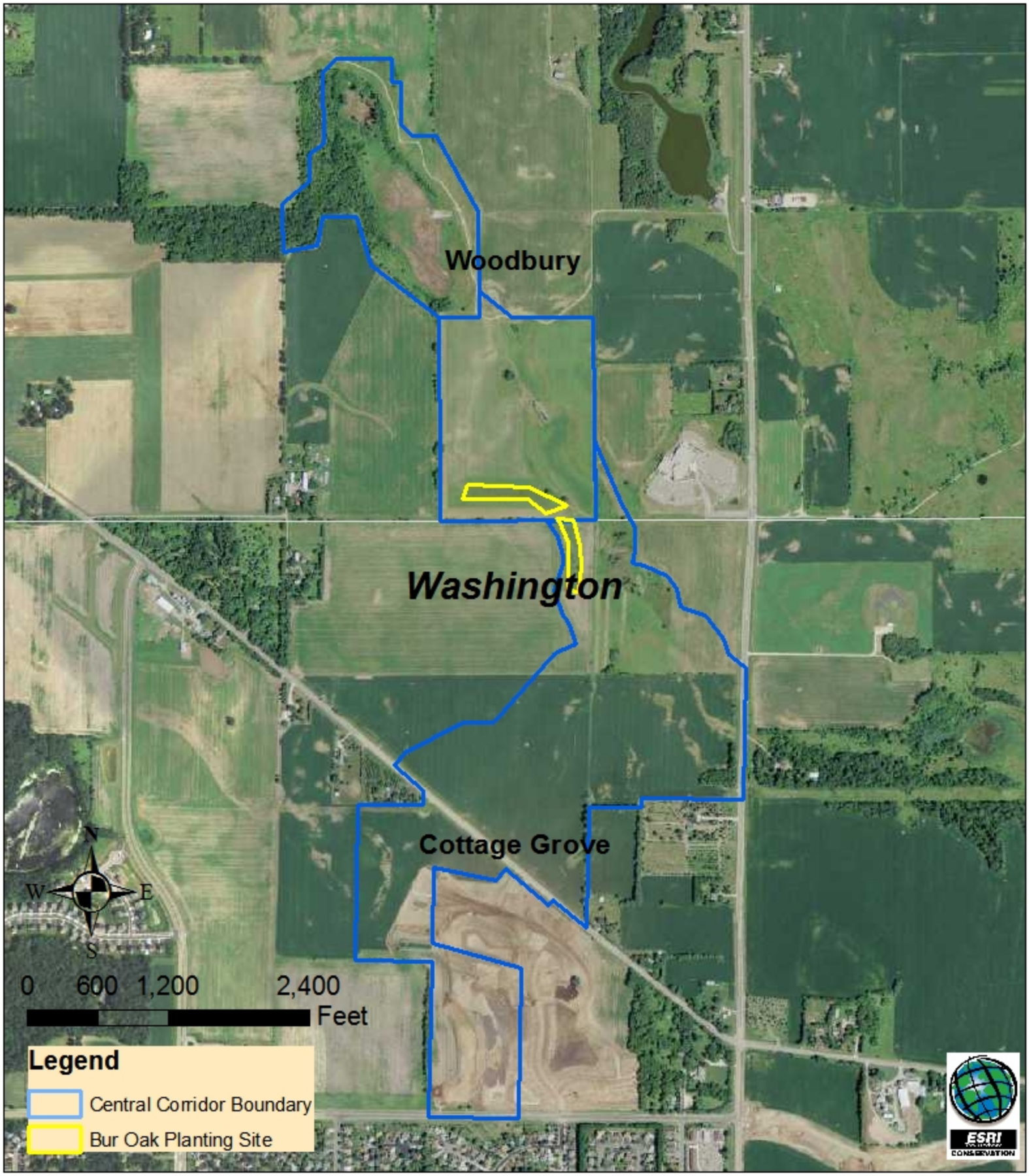
NOTES: As a research, monitoring, and citizen science project, $/acre for restoration activities are not comparable to other restoration projects.



Working Land Restoration and Pollinators: Central Corridor Site

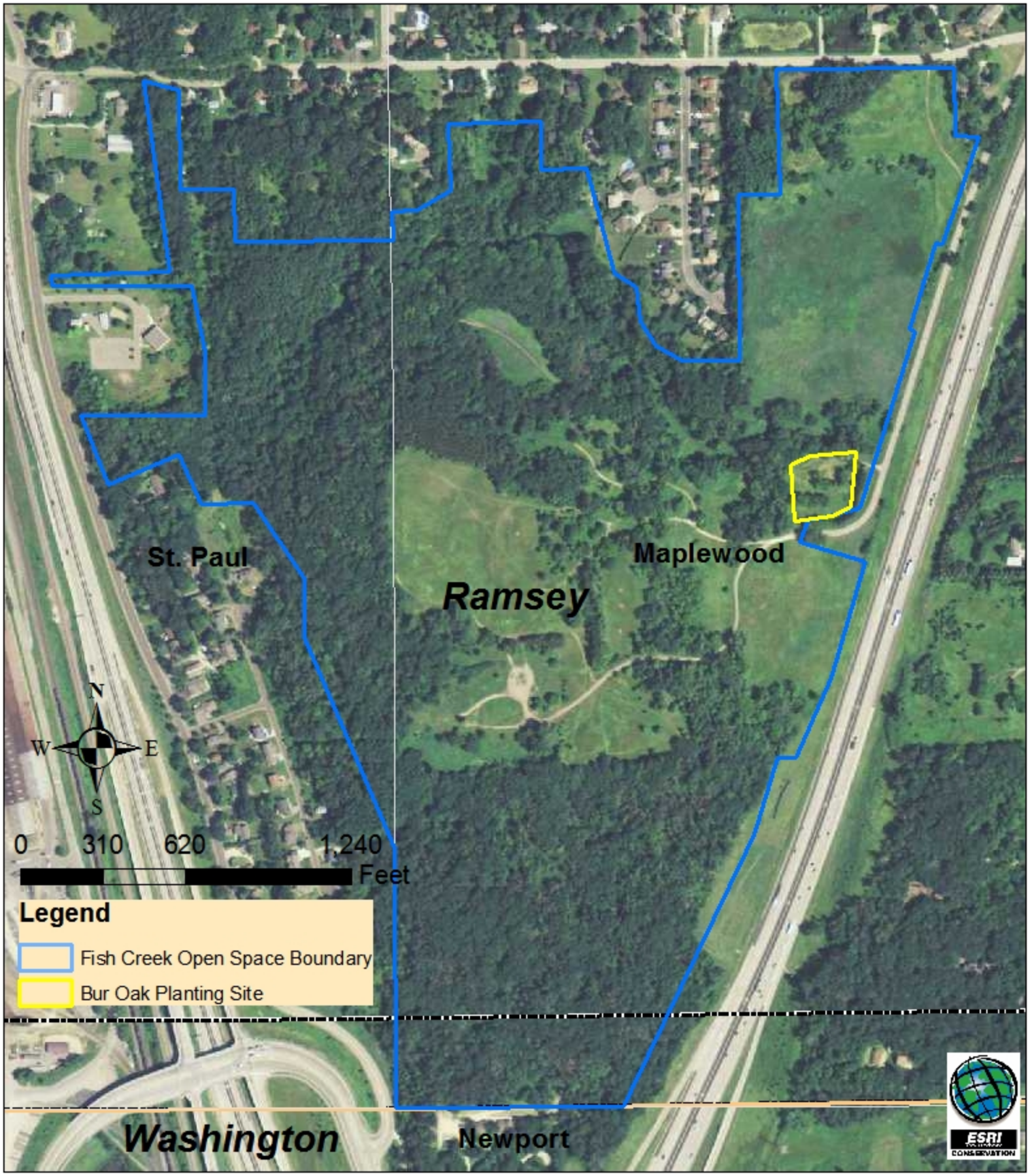
GREAT RIVER GREENING

THE XERCES SOCIETY FOR INVERTEBRATE CONSERVATION



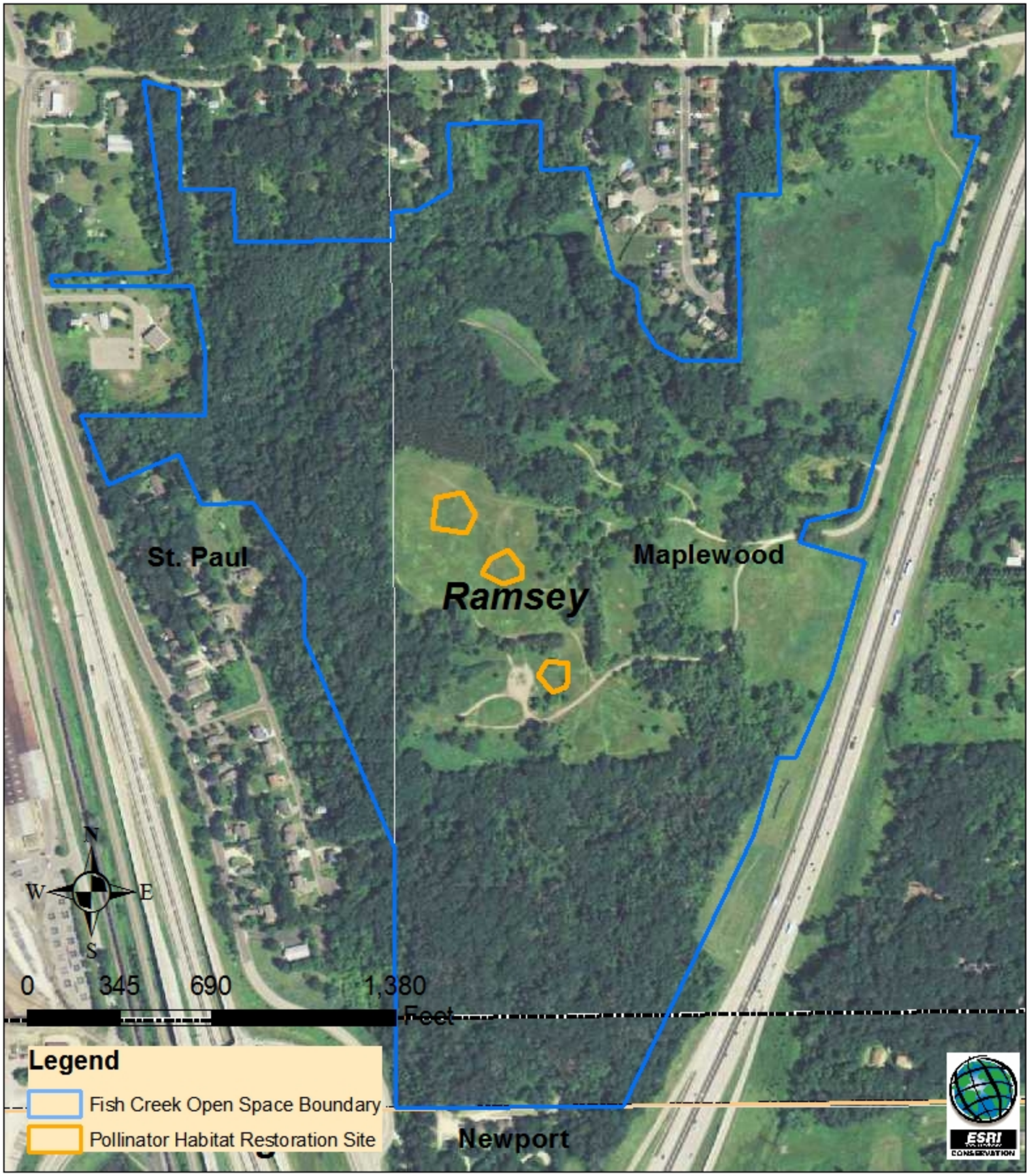
GREAT RIVER GREENING

Accelerated Migration of Bur Oak: Central Corridor Sites



GREAT RIVER GREENING

Accelerated Migration of Bur Oak: Fish Creek Open Space Site



Pollinator Citizen Monitoring and Habitat Restoration: Fish Creek Open Space

GREAT RIVER GREENING

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MAPLEWOOD Together We Can

Pollinator Citizen Monitoring and Habitat Restoration: Pilot Knob Hill

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Accelerated Migration of Bur Oak: Spring Lake Regional Park Site