

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
PROCUREMENT
P.O. BOX 30028, LANSING, MI 48909
OR
525 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 10
to
CONTRACT NO. 751B3200002
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF CONTRACTOR	PRIMARY CONTACT	EMAIL
Michigan State University Office of Sponsored Programs 426 Auditorium Rd., Rm2 301 Administration Building East Lansing, MI 48824-2601	Diane Cox	Coxd@osp.msu.edu
	PHONE	CONTRACTOR'S TAX ID NO. (LAST FOUR DIGITS ONLY)
	(517) 884-4243	5984/283

STATE CONTACTS	DIVISION	NAME	PHONE	EMAIL
CONTRACT MANAGER	Wildlife	Michael Donovan	(517) 284-6178	DonovanM@michigan.gov
CONTRACT ADMINISTRATOR	Finance and Operations	Lisa VanOstran	(517) 284-5975	VanOstranL@michigan.gov

CONTRACT SUMMARY			
DESCRIPTION: Conservation Planning Services			
INITIAL EFFECTIVE DATE	INITIAL EXPIRATION DATE	INITIAL AVAILABLE OPTIONS	EXPIRATION DATE BEFORE CHANGE(S) NOTED BELOW
11/1/12	10/31/15	3 – 1 year options	10/31/16
PAYMENT TERMS		DELIVERY TIMEFRAME	
Net 45		N/A	
ALTERNATE PAYMENT OPTIONS			EXTENDED PURCHASING
<input type="checkbox"/> P-card <input type="checkbox"/> Direct Voucher (DV) <input type="checkbox"/> Other			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
MINIMUM DELIVERY REQUIREMENTS			
N/A			

DESCRIPTION OF CHANGE NOTICE				
EXERCISE OPTION?	LENGTH OF OPTION	EXERCISE EXTENSION?	LENGTH OF EXTENSION	REVISED EXP. DATE
<input type="checkbox"/>	1 - year	<input type="checkbox"/>		
CURRENT VALUE		VALUE OF CHANGE NOTICE	ESTIMATED AGGREGATE CONTRACT VALUE	
\$4,099,602.18		\$0.00	\$4,099,602.18	
DESCRIPTION: Change Contract Administrator to Lisa VanOstran Increase budget and deliverables for FY-15 title # 8 project and extend date through 1/30/16. See attached work plan.				

REVISED : MNFI Work plan for WLD

Title (8) FY-15:	Western Lake Erie Integrated Ecological Framework		
Principal Investigator(s):	John Paskus		
Sponsor:	Joe Robison		
Project Begin Date:	10/1/13	Current Yr End Date:	Original 12/31/15 Revised 1/30/16
Current Year Begin Date:	10/01/14	Project End Date:	Original 12/31/15 Revised 1/30/16
Budget Request for Each Fiscal Year of Project:	Original Request = \$64,055 Revised Amount = \$69,685 Increase of \$5,630		
Statement of Needs:			
<p>MDOT has identified the SE gateway corridor into the Lower Peninsula as critical to transportation and economic development in Michigan. This corridor exists within an ecologically significant area of the state that includes globally imperiled ecosystems, several major river systems, and a productive Lake Erie coastal zone. Over the next several decades, MDOT will be reconstructing the freeways and state highways in this corridor and has recently targeted I-75 in Monroe County for a 20 year, multi-billion dollar full reconstruction.</p> <p>The corridor is located within the Maumee Lake plain Ecoregion. Over the past 200 years, this area's natural lands and waters have experienced a tremendous amount of stress including wetland loss, habitat degradation, invasive species, sedimentation, altered hydrology, and storm water runoff. Despite these impacts, this Ecoregion still harbors several globally imperiled natural communities including: lake-plain prairie, oak openings, wet mesic flat-woods, and Great Lakes marsh. These imperiled communities provide habitat for a number of threatened and endangered plant and animal species, including the state threatened eastern fox snake, federally threatened prairie white-fringed orchid and the federally endangered Indiana bat. Other potential federally listed species that might benefit from ecologically based transportation planning include the eastern massasauga rattlesnake and the northern long-eared bat.</p> <p>The coastal marshes in this area support world class freshwater fisheries, including perch and walleye, and some of the most significant stopover habitat for migratory birds in the Great Lakes region particularly for waterfowl. Other environmental concerns identified by our partners include the presence of prime farmland, parks and aesthetic opportunities and climate change effects within the corridor.</p> <p>Local watershed plans, Western Lake Erie plans and studies, and the International Lake Erie Biodiversity Conservation Strategy (2012) have identified the top priorities as:</p> <ul style="list-style-type: none"> • Reduce phosphorus from agricultural run-off via sedimentation control • Improve base flow and reduce flashiness of rivers and streams • Control invasive species (common reed is a particular concern) • Improve passage for migratory fish • Increase habitat for a globally significant migratory bird passageway • Protect and restore globally imperiled natural communities • Protect and restore priority plant and animal species habitat, particularly the state threatened 			

eastern fox snake and federally threatened prairie-white fringed orchid

In addition, a portion of the Lake Erie shoreline is controlled by a number of conservation agencies and organizations. The Nature Conservancy has numerous conservation interests in this region as does the USFWS with the Detroit River International Wildlife Refuge. The MDNR controls several parks and game areas, and the Michigan Department of Agriculture and Rural Development (MDARD) has strong interest in Western Lake Erie water quality improvements. Recently, the lake has experienced environmental problems (toxic algae blooms/large dead zones), calling on conservation groups, governments, and citizens to collaboratively develop plans that will improve lake conditions. Contact with these agencies has indicated enthusiasm for partnering with MDOT and SEMCOG on a Regional Ecosystem Framework project for the southern portion of the Maumee Lakeplain Ecoregion.

Objectives:

- Develop an effective partnership between MDOT and key state, federal, and regional resource agencies and conservation organizations with the goal of maximizing environmental outcomes through the transportation planning process associated with I-75 in Monroe County.
- Identify and prioritize regionally significant conservation targets and associated goals, objectives, indicators, strategies, and actions through the development of a robust, collaboratively based Regional Ecological Framework (REF) for the southern portion of Maumee Lakeplain Ecoregion, including its respective watersheds and the Lake Erie coastal zone.
- Geospatially identify specific places on the landscape for targeted restoration and/or protection actions based on the results of the REF.
- Effectively integrate conservation priorities, objectives, actions, and measures identified through this process into the MDOT transportation planning process for I-75 in Monroe County.

Expected Benefits:

There is strong interest in mutually beneficial partnerships that coordinate multiple efforts to improve natural resources protection and restoration in this ecological sensitive area bisected by I-75, US-24, and M-125. The purpose of the REF we are proposing is to identify spatially based priorities for avoidance, minimization and mitigation, resulting in increased regulatory certainty and more effective environmental outcomes in the southern portion of the Maumee Lake plain Ecoregion.

This collaboratively based REF will provide the framework and relationships necessary for implementing landscape scale strategies for effective conservation outcomes. Once implemented, this REF will aid in the long-term restoration, protection and maintenance of the globally significant natural features found in the southern Maumee Lake plain ecoregion while streamlining transportation project development of I-75.

By integrating the financial and timing components of the MDOT's transportation planning process with the decision making processes of key partners in the area, the Partnership will be better able to identify, develop, and capitalize on high priority mitigation and restoration opportunities for future projects. Early collaboration will lead to regulatory agency buy-in and help identify potential funding sources and partnerships for implementation of priority protection, enhancement, and restoration activities in the region.

Finally, the successful completion of this project will establish a protocol for integrating transportation and conservation planning in the state of Michigan that can be applied to other ecoregions where there are significant opportunities to advance transportation, economic, and ecological outcomes.

Work Plan/Approach:

The funds will be used to implement key steps of the Federal Highway Administration's (FHWA) new Integrated Ecological Framework (IEF) for the I-75 corridor that stretches from I-275 to the Ohio border. Specifically, we will develop a robust, collaborative Regional Ecosystem Framework (REF) for the southern Maumee Lake plain Ecoregion, including its respective watersheds and the Lake Erie coastal zone. The REF will be built on a foundation of collaborative decision-making, science, and robust geospatial analysis that identifies spatially based priorities for avoidance, minimization and mitigation of conservation targets (determined collaboratively), resulting in increased regulatory certainty and more effective environmental outcomes at the regional scale.

To facilitate the development of the REF, the project team will establish a Technical Advisory Committee (TAC) consisting of the following agencies: MDOT, Michigan Department of Natural Resources (MDNR), Michigan Department of Environmental Quality (MDEQ), Michigan Department of Agriculture and Rural Development (MDARD), Michigan Natural Features Inventory (MNFI), Federal Highway Administration (FHWA), National Oceanic and Atmospheric Administration (NOAA), United States Fish and Wildlife Services (USFWS), U.S. Army Corps of Engineers, Southeast Michigan Council of Governments (SEMCOG), Monroe County Planning and the Nature Conservancy. The purpose of the TAC is to build consensus on the development of the REF and the best means of avoidance, minimization, and mitigation of transportation impacts on the region's most significant natural resources. In recognition of the recent and ongoing conservation activities in the region, a key benefit and outcome of the TAC will be to gather, document, and assess all relevant conservation based efforts that target the southern portion of the Maumee Lake plain ecoregion.

To ensure local stakeholders are engaged in this initiative, SEMCOG will also organize several stakeholder meetings in Monroe County targeting local communities, landowners, and businesses. The purpose of these meetings will be to share information, gather local input, and raise awareness of the effort.

MNFI will take the lead on developing the REF based on our expertise in conservation planning and associated software tools such as NatureServe Vista. This tool allows for landscape level evaluation of an area for assessing impacts and developing strategic mitigation. MNFI also played a key role in the development of the Integrated Ecological Framework for AASHTO and is familiar with all of the nine steps. MNFI also has experience with utilizing the Adaptive Management or Conservation Action Planning (CAP) process. The CAP process contains four key components 1) Defining the project, 2) Developing strategies and measures, 3) Implementation, and 4) Adaptation. For this proposal, we will focus on the first two steps; the remaining two steps will be implemented SEMCOG, MDOT, and key stakeholders in the region including the MDNR. The CAP will assist with the identification of ecological priorities, key indicators, stressors, priority strategies, goals, and objectives. MNFI will monitor information, commitments and decisions made in the CAP process by utilizing the Miradi software tool and summarize the captured information in a final CAP report.

Once the REF is completed, SEMCOG and MDOT will make the information accessible on existing web resources, with plans to provide periodic updates on implementation and monitoring of the REF by TAC partners and other key stakeholders.

Timeline/Project Work Period:

Activity	Start	Finish
Form Technical Advisory Committee	08/15/2013	09/30/2013
Hold Technical Advisory Committee Meetings	08/15/2013	04/15/2015
Develop Draft Regional Ecosystem Framework/CAP	09/01/2013	09/30/2014
Stakeholder meeting #1 (preparation and hold meeting)	09/23/2013	02/10/2014
Stakeholder meeting #2 (preparation and hold meeting)	02/10/2014	06/30/2014
Develop Final Regional Ecosystem Framework/CAP	10/01/2014	10/30/2015
Project Web Site (SEMCOG)	02/01/2015	01/30/2016
Enhanced Final Report	12/01/2015	01/30/2016

Deliverables, Products, and Annual Milestones for MNFI:**FY15**

- Final set of TAC meetings are prepared and held
- Second stakeholder meeting is prepared and held
- Final report including information on the finalized REF, Conservation Action Plan, performance goals, and an implementation checklist is completed

Additional Deliverables

- Enhanced version of final report is completed
- Assistance is provided in development of user-friendly materials for the SEMCOG website
- Active participation in core team meetings and conference calls

Location: Lansing and Monroe County

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – Due within 2 months of completion of project.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by MDOT will have the MDOT logo and specifically acknowledge the MDOT's participation and support.

Any reports or products produced through a project funded by MDOT that was paid in part or in whole by a federal grant obtained by MDOT must contain the following acknowledgement: "(Partial) funding for this project was through the SHRP2 Lead Adopter Incentive Implementation Assistance program in cooperation with the Federal Highway Administration."

Budget: FY2015		
Cost Category	Original Cost	Revised Cost
Personnel	63,033	68,663
Travel	672	672
Supplies	350	350
Indirect Cost (Rate: 26%)	16,653	18,117
Budget Total	80,708	87,802
- Waived Indirect	16,653	18,117
Total Project Amount:	64,055	69,685
Contract Type/Payments:		
This is a fixed-price contract.		

Change Notice Number: 10
Contract Number: 751B3200002

FOR THE CONTRACTOR:

Michigan State University

Company Name

Kristy Smith

Authorized Agent Signature

JS
Kristy Smith
Contract & Grant Manager
Contract & Grant Administration
Michigan State University

Authorized Agent (Print or Type)

1/8/16

Date

FOR THE STATE:

Laurie Gyorkos

Signature

Laurie Gyorkos, Manager Procurement Services

Name & Title

Finance and Operations Division

Division

1/14/16

Date

STATE OF MICHIGAN
 DEPARTMENT OF NATURAL RESOURCES
 PROCUREMENT
 P.O. BOX 30028, LANSING, MI 48909
 OR
 525 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 09
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CONTRACT NO. 751B3200002
 between
THE STATE OF MICHIGAN
 and

NAME & ADDRESS OF CONTRACTOR	PRIMARY CONTACT	EMAIL
Michigan State University Office of Sponsored Programs 426 Auditorium Rd., Rm2 301 Administration Building East Lansing, MI 48824-2601	Diane Cox	Coxd@osp.msu.edu
	PHONE	CONTRACTOR'S TAX ID NO. (LAST FOUR DIGITS ONLY)
	(517) 884-4243	5984/283

STATE CONTACTS	DIVISION	NAME	PHONE	EMAIL
CONTRACT MANAGER	Wildlife	Michael Donovan	(517) 284-6178	DonovanM@michigan.gov
CONTRACT ADMINISTRATOR	Finance and Operations	Jana Harding-Bishop	(517) 284-5938	HardingJ3@michigan.gov

CONTRACT SUMMARY			
DESCRIPTION: Conservation Planning Services			
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MINIMUM DELIVERY REQUIREMENTS			
N/A			

DESCRIPTION OF CHANGE NOTICE				
EXERCISE OPTION?	LENGTH OF OPTION	EXERCISE EXTENSION?	LENGTH OF EXTENSION	REVISED EXP. DATE
<input checked="" type="checkbox"/>	1 - year	<input type="checkbox"/>		10/31/16
CURRENT VALUE		VALUE OF CHANGE NOTICE	ESTIMATED AGGREGATE CONTRACT VALUE	

\$4,099,602.18	\$0.00	\$4,099,602.18
DESCRIPTION: Exercise an option year to extend the end date from 10/31/15 to 10/31/16 Add Fiscal Year 2016 projects - No money needs to be added to the contract at this time. Add Fiscal Year 2016 wages Execute No-cost extensions to 6 fiscal year 2015 projects Extend the following FY-15 titles: Title 2 – 751P5500083 – 11/30/2015 Title 4 – 751P5500085 - 12/31/2015 Title 8 – 751P5500087 – 12/31/2015 Title 10- 751P5500089 – 9/30/2016 Title 12 - 751P5500306 - 9/30/2016 Title 13 – 751P5500309 - 1/31/2016		

2016 Michigan Natural Feature Inventory Work Plans

The project work plans in this document are used by the DNR to update the scope of work for the Contract agreement number 751B3200002 between the Michigan Department of Natural Resources (DNR) and Michigan State University’s Michigan Natural Features Inventory (MNFI).

In order for MNFI to begin work on any of these work plans, a purchase order must be released by the DNR referencing the specific work plan. The ability of the DNR to release a purchase order is impacted by the levels of State and Federal appropriations across a variety of programs. There is tremendous uncertainty in the appropriation levels at both the State and Federal levels of government.

The appearance of a project work plan in this document is not a guarantee that a purchase order will be released for that project work plan. It is critically important to remember that no work can proceed on a project work plan until the DNR releases a corresponding purchase order.

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Title (1):	Consultation, Administration and Database Management (CAD)		
Principal Investigator(s):	Brian Klatt		
Sponsor:	Mike Donovan		
Project Beginning Date:	1 October 2015	Project End Date:	30 September 2016
Budget Request for Each Fiscal Year of Project:	\$348,238		

Statement of Needs:

Part 365, Endangered Species Protection, of the Natural Resources and Environmental Protection Act (Act 451 of the Michigan Public Acts of 1994) requires the Department of Natural Resources to carry out the provisions of the Act with respect to protection of listed threatened and endangered species ("listed species"); the MDNR Wildlife Division (WLD) serves a central role in implementing the requirements of Part 365 of PA 451. Additionally, the State's Wildlife Action Plan (WAP) identified a number of Species of Greatest Conservation Need (SGCN) and Landscape Features that support Michigan's wildlife. The WAP serves as a guidepost to the MDNR in obtaining and wisely using Federal funding that furthers the purposes of the WAP.

The Michigan Natural Features Inventory (MNFI) maintains data, information and expertise on listed species, as well as other rare species and high quality natural communities in the Natural Heritage Database (NHD). The NHD is the single most comprehensive source of information on the location and condition of rare species and high quality natural communities in Michigan. As such, the NHD contains critical information on many of the SGCNs. The natural communities tracked in the NHD are linked to the Landscape Features contained in the WAP. Furthermore, MNFI is the designated Natural Heritage Program (NHP) for the state of Michigan and is part of the NatureServe network of Natural Heritage Programs and Conservation Data Centers throughout the United States, Canada, Latin America and Caribbean. As the Constituent Member of NatureServe for Michigan, MNFI coordinates through NatureServe to aggregate the NHD data at the national-level database that facilitates implementation of WAPs throughout the country and makes possible multi-state projects involving rare species, such as the on-going Multi-species Wind Habitat Conservation Plan for the Midwest.

The ability of the MDNR to manage Michigan's SGCNs is greatly enhanced by the availability of MNFI's data, information and staff expertise on Michigan's imperiled species and natural communities. Management activities planned by the MDNR are evaluated for their potential effects on the State's rare and protected plant and animal species. The MNFI's staff expertise and NHD are unique and invaluable tools to facilitate this evaluation. Consequently, MNFI resources are essential to the MDNR's effort to conserve SGCNs.

Access to MNFI's expertise and information is provided to the MDNR through consultation with the MNFI staff, application of MNFI staff expertise in the maintenance and enhancement of information entered into the NHD, and access to information products based on the NHD. Historically, the CAD project provides financial not only programmatic and administrative support but also access to MNFI staff (consulting), as well as the "value added" products based on the NHD and the functioning of MNFI as a NHP in good standing with NatureServe. Consulting services are provided in the form of scientific expertise on threatened and endangered species and expert advice on the management of natural communities.

Objectives:

1. Continue to maintain and add to the NHD database.
2. Assist WLD staff with the use of the NHD to support land management planning.

3. Clarify for WLD staff the nature and limits of Element Occurrences as represented in the NHD.

Expected Benefits:

The information, expertise and services that MNFI will provide to the MDNR WLD through this project are essential for the WLD to address its mission and in meeting its trust responsibilities and legal obligations. MNFI maintenance of the NHD, providing assistance with interpretation and application of NHD data, compiling and providing access to natural features information and providing technical consultation and assistance with biodiversity conservation efforts and issues, will provide critical information and a sound scientific basis for the Division's natural resource management, planning and protection efforts.

This work directly addresses important elements of the WAP. Specifically, this work provides information and assistance that addresses information gaps on SGCNs, particularly rare and imperiled species. Additionally, rare and high quality natural communities, as well as potential indicators of ecological integrity will be tracked and incorporated in management planning and species with specific requirements that are not assessed by landscape feature monitoring or otherwise of considerable interest (e.g., socially or economically important species, keystone species). This project will help address the following WAP elements:

1. The statewide priority threat of lack of scientific knowledge (WAP, pg. 64).
2. The priority issue of rarity (WAP pg. 75).
3. The priority conservation need of identification and elimination of significant information gaps for SGCN and landscape features (WAP, pg. 86) by assessing species status and trends using the NHD.

This project will aid in the revision of the Wildlife Action Plan. This project will also contribute to programmatic and administrative support of the Michigan Natural Features Inventory as the designated NatureServe network Natural Heritage Program for Michigan.

Work Plan/Approach:

1. Identify, prioritize and help facilitate surveys and data gathering to determine the distribution and status of SGCNs and associated habitats. Develop and deliver information products and services pertaining to SGCNs and their habitats to the WLD. Whenever possible and through separate agreements, make NHD information available to other state and Federal agencies, as well as other entities, including NatureServe, which aggregates state-level data into a national database that is of high value to Federal agencies managing resources within the State of Michigan, as well as making that information available to researchers and other partners of the MDNR.
2. Assist MDNR WLD with revision of the WAP, which may include consultation on species and habitat requirements, as well as review of draft WAP-related documents.
3. Work with WLD to better document program benefits to WLD functions, such as definition and documentation of significant consultation efforts.
4. Provide consultation and expertise on other MDNR WLD projects that could affect SGCNs and their habitats as requested.

5. Commensurate with available resources, maintain a statewide database on natural heritage elements (i.e. the NHD) and provide the DNR-WLD with both tabular and geospatial information products on those elements.
6. Administrate the MNFI as a Constituent Member in good standing within the NatureServe network.
7. Conduct planning activities with MDNR WLD, and other stakeholders, to enhance the quality, coverage, and distribution of natural heritage information in the state of Michigan.

Overall, the above activities can be divided into three broad categories: 1) consultation; 2) administration in maintaining MNFI as an effective member of the NatureServe network and member of the Michigan State University community; and 3) database management and information product development; effort among these categories is estimated to be 19%, 35%, and 45%, respectively.

Timeline/Project Work Period:

Work will continue throughout the project period of 1 October 2015 through 30 September 2016.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

Deliverables and products that will result from this project will include the following

1. Maintenance of a statewide database with information on the status and distribution of threatened, endangered, and special concern species and their habitats, maintained through Biotics5. Information products derived from the NHD and delivered to MDNR WLD consisting of tabular and geospatial information in BiotP and BiotX files.
2. Development, maintenance, and dissemination of NHD-derived, WAP-related information, products and services which may include natural feature surveys and technical consultation.
3. Documentation of significant consultations between WLD and MNFI staff.
4. Produce an annual report of the activities related to database management and use, consultation with DNR staff, and insuring effective participation in the NatureServe network of heritage programs.

Location: The work will be conducted in the field and at the MNFI offices located in Constitution Hall, the campus of Michigan State University, and locations statewide. Work may involve training, compiling information, providing technical consultation and assistance while participating in meetings, conferences, management and planning sessions.

Reporting:

1. Regular review meetings of this project and others awarded under the general contract (approximately, December, April, and July)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD's participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: "(Partial) funding for this project was through the Michigan State Wildlife Grants program grant T-9-T in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: FY16

	Cost Category	Cost
	Personnel	\$326,051
	Travel	\$4,837
	Supplies	\$17,350
	Indirect Cost (Rate: 53.5%)	\$186,307
	Budget Total	\$534,545
	- Waived Indirect	-\$186,307
	Total Project Amount:	\$348,238

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Title (2):	Southern Michigan Lands Integrated Inventory Project		
Principal Investigator(s):	Josh Cohen		
Sponsor:	Mike Donovan		
Project Beginning Date:	1 October 2015	Project End Date:	30 September 2016
Budget Request for Each Fiscal Year of Project:	\$272,629		
Estimated Budget for IFMAP Stage 1 Inventory:	\$151,316		
Estimated Budget for Natural Features Inventory:	\$121,313		

Statement of Needs:

In order for the DNR to fulfill its responsibility for managing Michigan's natural resources, their staff require thorough knowledge of both the landscape features and natural features on state lands. While the DNR has long performed inventories and kept detailed records for a diverse array of wildlife and other natural resources, thorough inventory of the natural features such as rare wildlife species and the full array of natural communities has not been completed. The goal of this project is to complete an integrated inventory of both the landscape features and natural features on DNR managed lands in southern Michigan.

This project will involve conducting both MIFI (formerly IFMAP) Stage 1 inventories and natural features inventories to identify and document the landscape features, rare species, and high-quality natural communities that occur on state lands in southern Lower Michigan. The 1938 aerial photograph mosaic produced by MNFI in 2014 will be used to help focus survey and restoration efforts for significant conservation targets including priority species and focal areas identified by the Wildlife Action Plan. In addition, MNFI ecologists will continue to work with WLD scientists to develop protocols for conducting vegetative monitoring in treated stands and implement these protocols in a subset of stands to test the methodology. Upon completion of the integrated inventories, reports for each management area will be produced that describe their landscape and natural features and conservation significance. In addition to written reports, MNFI scientists will meet with wildlife biologists at field offices to discuss the results of the inventory and to visit select sites in the field. For this year of the project, we are proposing to produce a report on the integrated inventory conducted in Flat River State Game Area. The information provided from these integrated inventories is needed for identifying opportunities for ecological restoration and biodiversity protection, and assessing the potential benefits and impacts of future land management, recreation, and development activities on state lands.

Michigan Natural Features Inventory has over 30 years of experience conducting natural features inventories and employs staff with expertise in identifying and documenting high-quality natural communities and terrestrial and aquatic rare species. In addition, MNFI staff has established strong working relationships with many of the state land managers through collaborations on various projects, ecological workshops, and day-to-day consultations. Consequently, MNFI is in an excellent position to perform biological inventories and convey information about recognition of natural features, survey methodology, and stewardship needs to DNR field staff.

Objectives:

- 1) To provide the Wildlife Division with critical information for making well-informed decisions on

the management of state lands.

- 2) To conduct MIFI Stage 1 inventories on state lands administered by the Wildlife Division to identify and delineate landscape features. These inventories provide the Wildlife Division with critically important information for natural resource planning and management.
- 3) To conduct natural features inventories on state lands administered by the Wildlife Division to document rare species, Species of Greatest Conservation Need, Featured Species, Focal Species, and exemplary natural communities. This information is critically important to land managers and planners for making well-informed land management decisions. In addition, this information is used for conservation planning by many other agencies including the Michigan Department of Environmental Quality, Michigan Department of Transportation, Michigan Department of Agriculture, US Fish and Wildlife Service, Natural Resource Conservation Service, The Nature Conservancy, regional and local land trusts and conservation organizations, universities, and private industry (e.g., environmental consultants, power companies, etc.).
- 4) To make the information collected through this integrated inventory processes available through two statewide databases, MIFI and Biotics. Both databases are widely used by DNR staff for resource assessment and management planning. In addition, information contained in the Biotics database is available to the organizations referenced above.
- 5) To complete Biotics data entry for the natural features identified during the 2015 field season in the Flat River State Game Area, Rogue River State Game Area, and Murphy Lake State Game Area.
- 6) To continue to use the 1938 aerial photograph mosaic produced by MNFI in 2014 to help focus survey and restoration efforts for significant conservation targets including priority species and focal areas identified by the WAP. In 2015, MNFI ecologists used the 1938 mosaic to identify over 500 potential survey targets. A subset of these survey targets were surveyed in the 2015 field season and data from these surveys will be processed in 2016.
- 7) To continue to work with WLD scientists to develop protocols for conducting vegetative monitoring in treated stands and implement these protocols in a subset of stands to test the methodology.

Expected Benefits:

Upon completion of this integrated inventory, DNR staff will have full access to critically important information for making well-informed decisions on planning and management. Completion of the MIFI Stage 1 inventory will provide accurate ownership boundaries of the state game areas, which will allow future maps made by the DNR and others to more accurately reflect current ownership boundaries. The delineation and classification of vegetation stands within the state game areas, along with the tabular data on wildlife habitat variables, will provide wildlife planners and biologists with valuable information for assessing potential habitat-management options and needs. Similarly, the natural features inventory data and reports will provide critical information for conservation planning and management to DNR staff as well as a broad suite of potential Biotics users (see item 3 in list of above). On-site reporting of MNFI's findings will allow for in-depth discussions of management opportunities. The use of the 1938 aerial photograph mosaic will help target surveys for high-quality natural communities and priority species in focal areas identified by the WAP and identify potential sites for restoration. In addition, vegetative monitoring protocols for evaluating treated stands will be developed and tested. Ultimately, this project

will continue to contribute to the conservation of wildlife and the sustainable management of wildlife habitat.

This project will address the following GPS objectives and Strategy Project Implements:

Objective 1: Address priority population management needs for non-game wildlife.

Objective 2: Develop coordinated statewide and regional approaches to managing habitat.

Objective 3: Enhance and coordinate how technical support is provided to land use planners.

Work Plan/Approach:

- 1) MIFI Stage 1 inventory to identify and delineate landscape features will be conducted on state lands administered by the Wildlife Division (e.g., State Game Areas, State Wildlife Areas and State Recreation Areas). This process will involve 1) determining management area ownership boundaries, 2) delineating and classifying vegetation stands using desktop GIS software, and 3) conducting field inventories to ground-truth stand delineations and classifications and record data on wildlife habitat variables. The management areas chosen for MIFI Stage 1 inventory will be identified by the Wildlife Division in consultation with MNFI project staff. MNFI staff will strive to complete Stage 1 inventory for 20,000-35,000 acres of state lands administered by the Wildlife Division.
- 2) Natural features inventories will focus on state lands where MIFI Stage 1 inventory has been completed and will be conducted concurrently with the Stage 1 inventory. Thus, Stage 1 inventories and natural features inventories will be conducted simultaneously but in different management areas. In 2016, natural features inventories will focus on identifying and documenting rare animal species at Murphy Lake State Game Area and Rogue River State Game Area, where natural communities surveys were completed in 2015, and surveys for natural communities will be conducted at Muskegon State Game Area and Petersburg State Game Area. During the following field season (2017), surveys for rare wildlife species will move to Petersburg State Game Area and Muskegon State Game Area and the natural community surveys will shift to the next management area identified for inventory. When possible, this rolling, tag-team approach in which natural community surveys are followed by rare animal surveys will be utilized in subsequent years of the project because it provides very specific habitat data useful for targeting rare wildlife surveys.
- 3) The timing of these integrated inventories will be sequenced to provide Wildlife Division staff with accurate and timely information for Wildlife Area Master Planning.
- 4) Planning for natural features inventories will utilize data collected during the MIFI Stage 1 inventory and the digital layer of the 1938 imagery to help focus the inventory efforts for natural communities and rare species.
- 5) The integrated inventories will provide recommendations for conservation planning, which will be recorded in the MIFI through the Stage 1 comments for Stands and/or the Unique Sites categories of Areas of Interest (AOI) layer.
- 6) The 1938 aerial photograph mosaic produced by MNFI in 2014 will continue to be used to help target surveys for priority species and natural communities in focal areas identified by the WAP.
- 7) MNFI staff will collaborate with WLD scientists to continue to develop and test vegetative monitoring protocols for treated stands.
- 8) A status report summarizing the work accomplished on both the MIFI and natural features inventories

will be produced. A final report for Flat River State Game Area will be produced that describe the natural features, conservation significance, and the associated management recommendations. MNFI staff will present the highlights of these reports to WLD staff at their field offices. With new funding in 2017 following the completion of the rare animal surveys, a report for Petersburg State Game Area and Muskegon State Game Area will be completed.

Timeline/Project Work Period:

October 2015 to March 2016: 1) Determine and adjust ownership boundaries of state game areas in preparation for conducting MIFI Stage 1 pre-inventory. 2) Conduct MIFI Stage 1 pre-inventory to delineate and classify vegetation stands on state game areas using desktop GIS software. 2) Process rare animal EOs from Flat River State Game Areas. Process natural community EOs from Murphy Lake and Rogue River State Game Areas. 4) Prepare for natural community surveys at Petersburg State Game Area and Muskegon State Game Area and rare animal surveys at Murphy Lake and Rogue River State Game Areas. 5) Complete final report for Flat River State Game Area. 6) Use 1938 imagery of all state game area to prioritize targeted surveys for rare species and high-quality natural communities.

February 2016 to September 2016: 1) Hire and train seasonal staff as needed to assist with MIFI Stage 1 inventories of state game areas. 2) Conduct MIFI Stage 1 inventories on state game areas. 3) Conduct natural features inventories of Petersburg State Game Area and Muskegon State Game Area with a focus on natural communities and Flat River State Game Area with a focus on rare animals.

October 2015 to September 2016: 1) Continue MIFI Stage 1 inventories on state game areas. 2) Process data collected during MIFI Stage 1 inventories. 4) Prepare and submit annual progress report.

Deliverables, Products, and Annual Milestones:

- 1) All ownership boundaries of state game areas receiving MIFI inventory will be delineated and entered into MIFI, where they will be available to DNR staff (October through March).
- 2) All vegetated stands of state game areas receiving MIFI inventory will be delineated and classified during the MIFI Stage 1 pre-inventory process. These stand delineations will be available to DNR staff upon completion of the pre-inventory of each compartment within a state game area (October through March).
- 3) Final ground-truthed and adjusted shapefiles of all stands, along with the associated data on wildlife habitat variables, will be available to DNR staff through MIFI upon completion of Stage 1 inventory of each compartment within a state game area (February through September).
- 4) All EOs at Flat River, Rogue River, and Murphy Lake State Game Areas will be available to DNR staff through MIFI and Biotics (March). In addition, the data from Biotics will also be available to other conservation organizations, academics, and private industry groups (March).
- 5) Final report for Flat River State Game Area that describes the natural features, conservation significance, and the associated management recommendations will be produced (March). MNFI staff will present the highlights of this report to WLD staff at their field offices and will engage in on-site discussions about management opportunities (May-September).
- 6) MNFI staff will continue to collaborate with WLD scientists to develop and test vegetative monitoring protocols for treated stands (April-September).

7) A status report summarizing the work accomplished during the current field season on both the MIFI and natural features inventories will be produced (September).

Location: This project will focus on state lands administered by the Wildlife Division (e.g., State Game Areas, State Wildlife Areas and State Recreation Areas). The MIFI Stage 1 inventories will be conducted on state lands identified by the Wildlife Division in consultation with MNFI project staff. This project may include attending professional conferences and trainings in Michigan or other states to gain new information and report on results.

Reporting:

1. Quarterly updates to sponsor: format to be decided with WLD Sponsor.
2. Annual progress report: to be submitted by September 30 to WLD Sponsor and MNFI Contact in an electronic format using a designated template.
3. Final report: Final report of the natural features inventory of Flat River State Game Area will be submitted by March 31, 2016. The format will follow that of the previously submitted state game area reports and will contain management recommendations. The report will be followed by on-site presentations to WLD staff of the highlights of the report and discussion of management opportunities.

Acknowledgement of Participation:

Any reports, products, or presentations produced through this project will contain the DNR logo and specifically acknowledge the Wildlife Division’s participation and support.

Any reports or products produced through this project will contain the following acknowledgement as appropriate: “(Partial) funding for this project was through the Michigan State Wildlife Grants program grant T-9-T in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: \$272,629

	Cost Category	Cost
	Personnel	\$232,576
	Travel	\$36,706
	Supplies	\$3,347
	Indirect Cost (Rate: 26%)	\$70,884
	Budget Total	\$343,513
	- Waived Indirect	-\$70,884
	Total Project Amount:	\$272,629

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Title (3):	CSWG Oak Savanna Restoration and Monitoring in Michigan and Ohio for Karner Blue Butterfly Population Recovery		
Principal Investigator(s):	Michael Monfils, David Cuthrell		
Sponsor:	Dan Kennedy		
Project Beginning Date:	1 October 2015	Project End Date:	30 November 2018
Budget Request for Each Fiscal Year of Project:	FY2016: \$50,000 FY2017: \$50,000 FY2018: \$50,000		
<p>Statement of Needs: Long-term surveillance of Karner Blue Butterfly (KBB) populations is a challenging endeavor due to multiple survey objectives, limited resources, and dynamic ecosystem conditions. A KBB survey program needs to provide data to address multiple goals: 1) track population status to evaluate progress toward recovery plan goals; 2) determine occupancy status of individual habitat patches to inform regulatory and management decisions; and 3) evaluate the response of KBB to management actions. Currently, the MDNR conducts annual surveys at four sites containing the greatest numbers of KBB using a distance-sampling approach. These surveys provide information to assist in tracking overall trends in Michigan's KBB population over time, but provide no information regarding the status of KBB at all remaining sites. Unfortunately, using a distance-sampling approach to survey all KBB sites is not feasible, given resource constraints and low KBB abundance. Distance sampling requires substantial labor to set up transects on an annual basis and transects must be modified over time as the size and shape of habitat patches change. The low abundance of KBB at many areas also precludes accurate density estimation using distance sampling, because at least 60-80 detections are needed to reliably estimate detection functions (Buckland et al. 2001).</p> <p>During 2014-2015, the MNFI worked with MDNR to evaluate the existing KBB surveillance program and expand surveys to address multiple survey goals. We expanded KBB surveys beyond those sites monitored via distance sampling using an occupancy-based approach (MacKenzie et al. 2006). Pilot surveys for the new program were conducted during the second KBB flight of 2015. An occupancy approach provides an efficient means of surveying a greater number of sites, because the amount of time required to set up and conduct surveys is lower than distance sampling. Furthermore, the systematic approach used to conduct surveys can be easily modified as the size and shape of habitat patches change. Over time, this approach will provide information regarding overall population status (i.e., survey goal 1 above), such as the number of sites occupied and probabilities of occupancy, extinction, and colonization (MacKenzie et al. 2002, 2003). This new survey approach will also provide a means of assessing the occupancy status of individual patches (i.e., survey goal 2 above), which is vitally needed information for making conservation decisions because more limitations are applied to management actions in occupied sites to minimize incidental take of KBB. However, neither distance sampling or the new occupancy-based approach, as currently structured, are adequate to evaluate the influence of management actions on KBB (i.e., survey goal 3 above). It is critical that we gain a better understanding of how our management actions impact KBB populations to meet recovery goals. This gap in our understanding was identified during a past Competitive State Wildlife Grant and the development of Michigan's Habitat Conservation Plan.</p>			
Objective:			
Develop and implement a monitoring framework to begin assessing the effects of prescribed fire and mowing on Karner blue butterfly in Michigan.			

Expected Benefits:

This project will build upon a new KBB monitoring program developed during 2014-2015 by MNFI in partnership with WLD. Expanded surveys will provide improved surveillance of populations on state lands and facilitate monitoring of KBB response to management implemented to improve conditions for the species. By implementing a long-term program to assess the effects of habitat manipulations, specifically mowing and burning, we will be able to assess the success of these efforts in improving conditions for Karner Blue. This new monitoring framework will facilitate an adaptive management process, whereby adjustments to conservation planning and implementation can be made if desired outcomes have not been achieved.

Work Plan/Approach:

We will design a survey to compare KBB use (i.e., occupancy, relative abundance) among untreated, burned, and mowed sites both before and after management (Figure 4). We will work with MDNR field staff to identify sites for the three strata, with a goal of having at least 10 sites within each stratum (minimum of 30 sites total). During the first field season, all sites will be surveyed for KBB prior to initiation of any management. Burning and mowing will take place in the winter or spring prior to the first flight of the second season. During the second and third field seasons, we will conduct post-management surveys at the burned and mowed sites, as well as continue surveys at the untreated sites (Figure 4). Because it may take multiple years for KBB populations to respond to management and the effects of management will decrease over time, we aim to continue monitoring these sites beyond the three years of this project to better understand the long-term influence of management on KBB.

We will conduct surveys using a systematic-transect approach (Pollard 1977, 1982), which is a commonly employed butterfly survey method that has been recommended over unrestricted meander surveys (Royer et al. 1998). We will conduct two surveys of each habitat patch within the second KBB flight period (approximately early July to early August). A survey will consist of a series of transects paralleling the outer boundary of the identified habitat patch. At a given site, the first transect will begin 5 m inward from the outer boundary of the habitat patch. The surveyor will slowly walk along the first transect until the entire periphery of the site has been surveyed. The second transect will then be located 10 m inward from the first transect and the observer will survey that transect until complete. Then a new transect will be started 10 m inward from the second, and so on, until the entire patch is surveyed. The surveyor will count butterflies within an area 5 m to either side of the transect, 5 m forward along the transect, and 5 m above the transect (i.e., a 10 m x 5 m x 5 m, box-shaped, survey area). The observer will walk at a steady, slow speed of approximately 35 m/min. Butterflies flying ahead of an observer will be ignored if the surveyor is certain that the individual was already counted. If an observer is uncertain as to whether or not a butterfly was counted, it will be recorded and considered a new individual. We will use GPS receivers to record transect locations and points where KBB individuals or groups of individuals are detected to examine butterfly distribution in relation to where management occurred. A list of other butterfly species detected within each habitat patch will also be recorded.

We will gather information about the habitat conditions at each survey site during each visit, which could be used as covariates in occupancy model analyses. Observers will rank the occurrence of lupine, invasive plant species, woody vegetation, and potential nectar sources. Plant species or groupings will be ranked as dominant, abundant, frequent, occasional, or rare (i.e., DAFOR scale).

We will estimate occupancy probabilities that incorporate imperfect detection (MacKenzie et al. 2002, 2003) using models developed in the program PRESENCE (Hines 2006). We will develop a candidate set of models that include covariates for detection probability (e.g., survey period, weather conditions) and occupancy (e.g., management type, abundance of lupine, nectar plants, etc.). The model best supported by our data will be identified using Akaike's Information Criterion (Burnham and Anderson 2002). We will also compare relative abundance of KBBs before and after management and among the three management strata (i.e., untreated, burned, and mowed) using mixed models (PROC MIXED; SAS Institute, Cary, North Carolina).

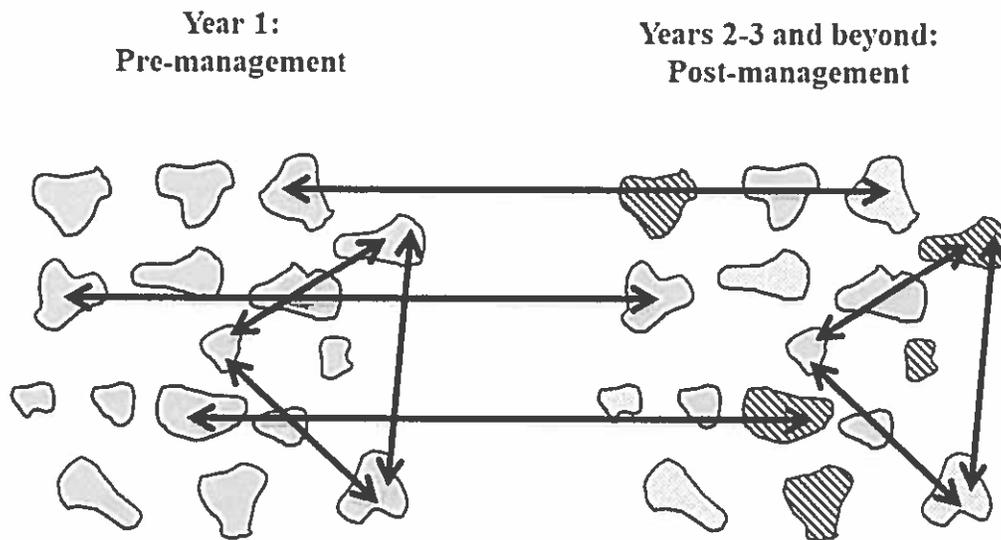


Figure 1. Conceptual design for a monitoring program to compare Karner Blue use of burned, mowed, and untreated sites in Michigan. Shading indicates management stratum (gray = untreated; stippling = burned; and cross-hatching = mowed). Arrows indicate comparisons to be made within each stratum before and after management, and among the three strata both before and after management.

Timeline/Project Work Period:

Work for this monitoring approach will occur during all three years. In year 1, sites will be selected in cooperation with WLD and surveyed for KBB prior to initiation of any management. In year 2, habitat management will take place in the winter or spring prior to the first flight of the second season. During the second and third field seasons, we will conduct post-management surveys at the burned and mowed sites, as well as continue surveys at the untreated sites. We will begin preliminary analyses during the late summer and fall of year 2 and will complete final analyses during the late summer of year 3. The final report will be completed by 30 November 2018.

Deliverables, Products, and Annual Milestones: Below are the products and milestones that will be completed by 30 September 2016. Target dates for each product/milestone are provided in parentheses:

- Meeting among MNFI and WLD staff to discuss recent KBB surveys, review goals for the expanded monitoring, and identify potential sites on state land that could be used for untreated, burned, and mowed survey strata (29 January 2016).
- ArcMap shapefile identifying the sample frame of potential KBB survey sites within untreated, burned, and mowed strata (29 April 2016).

- Plan for implementation of 2016 surveys (17 June 2016).
- Spreadsheet containing preliminary results of 2016 surveys (30 September 2016).
- Annual progress report submitted to WLD summarizing the study approach, sample frame, survey methodology, and preliminary results of 2016 surveys (30 September 2016).

Location: Allegan State Game Area and Flat River State Game Area

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – the final report will summarize all aspects of the project as described above and will also include a short (2-5 page) summary in the format of a scientific journal.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants program grant T-9-T in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY 2015

	Cost Category	Cost
	Personnel	\$ 46,004
	Travel	\$ 3,221
	Supplies	\$ 775
	Indirect Cost (Rate: 53.5%)	\$ 26,750
	Budget Total	\$ 76,750
	- Waived Indirect	\$ 26,750
	Total Project Amount:	\$ 50,000

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Title (4):	Lands Consultation for Southern Michigan 2016		
Principal Investigator(s):	Josh Cohen and Jesse Lincoln		
Sponsor:	Steven Chadwick and Mark MacKay		
Project Beginning Date:	1 October 2015	Project End Date:	30 September 2016
Budget Request for Each Fiscal Year of Project:	\$29,477		

Statement of Needs:

The Wildlife Division is responsible for management of the State Game Areas for wildlife habitat, long-term forest health, sustainability and myriad forest products and values, and ecosystem services including recreation. In addition, the Division is responsible for assuring that these management activities do not harm threatened and endangered species. To meet these requirements and develop integrated, ecologically sound management requires a knowledge base of information on the full range of native diversity. Vegetation of the state game areas is currently being mapped by Michigan Natural Features Inventory (MNFI) through the IFMAP Stage 1 inventories and the game areas are being systematically surveyed for rare elements of natural diversity (including threatened and endangered species, and high-quality natural communities).

In addition to participating in this inventory effort, MNFI maintains a database of known occurrences of threatened and endangered species and high-quality natural communities and is uniquely qualified to provide resource managers with information on rare elements of diversity, natural communities, and featured species that are the focus of conservation efforts. MNFI has over thirty years of experience in inventories of these elements of biodiversity; has developed an extensive database of over 18,000 records of sites where these elements have been observed; and employs staff with specialized knowledge of the state's flora, fauna, natural communities, and community and landscape ecosystem classification.

Through work on this project, MNFI will

- Provide comments to resource managers developing State Game Area compartment management plans. MNFI staff will participate in discussions with DNR staff during the pre-review process and provide compartment and game area level information about historical and landscape context, rare species including features species and focal species, high-quality natural communities, threats, restoration opportunities, and biodiversity management considerations.
- Conduct follow-up, on-site surveys to discuss restoration opportunities and clarify potential management concerns.
- Provide comments to resource managers developing management plans for specific sites or systems outside of the compartment review process. For example, in 2015, MNFI ecologists provided WLD staff from Barry, Muskegon, and Flat River specific recommendations about oak savanna/barrens restoration opportunities. This consultation can include written comments as well as on-the-ground management advice.
- Conduct natural community surveys in up to three compartments prior to providing comments. If MNFI staff are not engaged to provided compartment reviews and consultations, available funding will be used to conduct natural community surveys in up to ten compartments.

In 2015 these compartment reviews and consultation were focused in the southwest region. In 2016 we are proposing to expand this project throughout the Southern Lower Peninsula.

Objectives:

1. To provide the Wildlife Division with critical information for making well-informed

decisions on the management of state lands.

2. To provide comments to resource managers developing State Game Area compartment management plans and management plans for specific sites or systems outside the compartment review process.
3. To participate in discussions with DNR staff during the pre-review process and provide compartment and game area level information about historical and landscape context, rare species, high-quality natural communities, threats, restoration opportunities, and biodiversity management considerations.
4. To conduct follow-up, on-site surveys and consultations where necessary to discuss restoration opportunities and clarify potential management concerns.
5. To conduct natural community surveys in up to three compartments prior to providing comments. for compartments being reviewed that have yet to have MNFI natural community inventory work completed.
6. To make the information collected through the above survey available through two statewide databases, MIFI and Biotics. Both databases are widely used by DNR staff for resource assessment and management planning.

Expected Benefits:

Resource managers developing State Game Area compartment management plans and site or system management plans will receive compartment and game area level information about historical and landscape context, rare species, high-quality natural communities, threats, restoration opportunities, and biodiversity management considerations. Management decisions will also be informed by follow-up, on-site surveys, and where necessary, consultations will be conducted to discuss restoration opportunities and clarify potential management concerns.

Completion of this project will contribute to the sustainable management of wildlife habitat in game areas of southern Michigan. Specifically, this work addresses the need to identify and conserve areas that support featured species and focal species and the habitat that they rely upon.

This project will address the following GPS objectives and Strategy Project Implements:

Objective 1: Address priority population management needs for non-game wildlife.

Objective 2: Develop coordinated statewide and regional approaches to managing habitat.

Objective 3: Enhance and coordinate how technical support is provided to land use planners.

Work Plan/Approach:

1. MNFI will check up to 12 compartments, sites, and/or systems being reviewed for threatened and endangered species and high-quality natural communities, comparing reviewed locations against the MNFI Biotics Database.
2. MNFI scientists will engage with DNR staff during the pre-review process and provide compartment and game area level information about historical and landscape context, rare species, high-quality natural communities, threats, restoration opportunities, and

biodiversity management considerations to help inform management decisions.

3. MNFI scientists will conduct follow-up, on-site surveys and consultations where necessary to discuss restoration opportunities and clarify potential management concerns.
4. MNFI ecologists will conduct natural community surveys in up to three compartments prior to providing comments for compartments being reviewed that have yet to have MNFI natural community inventory work completed.
5. MNFI scientists will enter information collected through the above survey into two statewide databases, MIFI and Biotics.

Timeline/Project Work Period:

October 2015 to December 2015: Data generated from natural community surveys conducted during the 2015 growing season will be incorporated into MNFI's Biotics database.

October 2015 to September 2016: The workflow of this project will closely follow the schedule of the WLD compartment review process and requests from wildlife biologists for site or system management recommendations. MNFI scientists will provide written comments to DNR resource managers during the pre-review process. In addition, MNFI staff will attend pre-review meetings with DNR staff during the pre-review process at State Game Area offices. Follow-up, on-site surveys and consultations will be conducted where necessary to discuss restoration opportunities and clarify potential management concerns.

May 2016 to September 2016: If funding is available and if compartments are being reviewed that have yet to have MNFI natural community inventory work completed, MNFI ecologists will conduct natural community surveys in up to three compartments during the growing season. If MNFI staff are not engaged to provided compartment reviews and consultations, available funding will be used to conduct natural community surveys in up to ten compartments. The follow-up, on-site surveys and consultations noted above will also be conducted during the 2016 growing season.

Deliverables, Products, and Annual Milestones:

- 8) Written comments will be provided by MNFI to DNR resource managers developing State Game Area management plans for up to 12 compartments, sites, and/or systems. These comments will provide compartment and game area level information about historical and landscape context, rare species, high-quality natural communities, threats, restoration opportunities, and biodiversity management considerations to help inform management decisions.
- 9) All EOs documented during the course of this project will be available to DNR staff through MIFI and Biotics. In addition, the data from Biotics will also be available to other conservation organizations, academics, and private industry groups.
- 10) A status report summarizing the work accomplished during the project will be produced.

Location: This project will focus on state lands administered by the Wildlife Division (e.g., State Game Areas, State Wildlife Areas and State Recreation Areas) in southern Michigan.

Reporting:

1. Quarterly updates to sponsor: E-mail updates will be provided to the WLD sponsors upon request.
2. Annual progress report: to be submitted by September 30 to WLD Sponsor and MNFI Contact in an electronic format using a designated template.

Acknowledgement of Participation:

Any reports, products, or presentations produced through this project will contain the DNR logo and specifically acknowledge the Wildlife Division's participation and support.

Any reports or products produced through this project will contain the following acknowledgement as appropriate: "(Partial) funding for this project was through the Michigan State Wildlife Grants program grant T-9-T in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: FY \$29,477

	Cost Category	Cost
	Personnel	\$24,518
	Travel	\$4,684
	Supplies	\$275
	Indirect Cost (Rate: 26%)	\$7,663
	Budget Total	\$37,140
	- Waived Indirect	-\$7,663
	Total Project Amount:	\$29,477

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Title (5):	Rare Ecosystem Stewardship in Allegan State Game Area		
Principal Investigator(s):	Jesse Lincoln		
Sponsor:	Mark Mills		
Project Beginning Date:	1 October 2015	Project End Date:	30 September 2016
Budget Request for Each Fiscal Year of Project:	\$10,516		

Statement of Needs:

Recent survey efforts of state game areas have improved knowledge about the location and integrity of a variety of important natural areas. High-quality ecosystems provide a myriad of benefits to both game and non-game species and protecting existing systems is often more feasible than intensive restoration of degraded systems or the creation of a new ecosystem. The goal of this project is to collaborate with staff at Allegan State Game Area to create a list of natural areas to prioritize habitat management efforts in order to prevent further loss of unique habitat while engaging the community and partners to raise awareness for both the game area and wildlife conservation without increasing the strain on already busy staff.

For this project, information collected during the IFMAP surveys and data from MNFI's database will be used to guide the restoration of rare ecosystems in the game area. Sites will be selected based on their size, quality, and need for current management. Sites that have threats that can be addressed with basic stewardship activities will be prioritized. The project will target three rare natural community types found at Allegan State Game Area: oak-pine barrens, coastal plain marsh, and wet-mesic sand prairie. These habitats are unique and useful to many wildlife species – including numerous featured species (wood ducks, white-tailed deer, wild turkeys, red-headed woodpeckers, etc.). The project will focus on reducing invasive species and woody encroachment within these systems. The three work days at each of the three sites will be conducted with one MNFI employee and two seasonal DNR staff (DNR staff not accounted for in the budget and not specifically identified at this time).

Volunteer days will be organized, in part, by Justin Burchett from the Allegan Conservation District, a partnering organization. Other volunteer groups could include MDHA, NWTF, and MUCC. Work day activities will be strategically planned by MNFI staff and the biologists at ASGA to meet Master Plan, GPS (2.1), Bang For Your Buck (turkey), and Regional Habitat Priority (Savanna, grasslands, wetlands), and WAP goals. This is intended to be an innovative and collaborative approach to assisting the management of these critical habitats while engaging the public without significantly increasing the work load of the busy staff.

Objectives:

1. To collaborate with staff at Allegan State Game Area to develop a list of important oak-pine barrens, coastal plain marshes, and wet-mesic sand prairies and in order to prioritize habitat management efforts.
2. To conduct three work days at three target areas in each of the above mentioned community types. A total of nine work days will be conducted with one MNFI employee and with 2 DNR seasonal staff. The purpose of these work days will be to improve habitat for game and non-game species, reduce invasive species, and to set back woody

encroachment from grassland systems.

3. To collaborate with the Allegan Conservation District and other partners to conduct one volunteer work day at each of the three sites.
4. To raise the profile of the game area and conservation efforts by engaging local residents.
5. To create a model for stewardship activities for state game areas.

Expected Benefits:

The intent is to develop this project as a framework for similar actions across the Southern Lower Peninsula and any success could be scaled up for a regional effort to protect and expand important habitats, while engaging the public, and raising the profile of game areas all while supporting the role of the game areas to promote game species habitat.

This project will address the following GPS objectives and Strategy Project Implements:

Objective 1: Address priority population management needs for non-game wildlife.

Objective 2: Assist in developing coordinated statewide and regional approaches to managing habitat.

Objective 3: Assist in determining and prioritize needs to support biodiversity conservation at ecologically appropriate scales.

Objective 4: Enhance and coordinate how technical support is provided to land use planners.

Objective 5: Increase public understanding and awareness of wildlife management and Division programs

Objective 6: Increase collaborations with conservation partners and volunteers to implement wildlife goals

Work Plan/Approach:

1. October 2015: Meet with game area staff and Justin Burchett from Allegan Conservation district to discuss potential targets and dates for work days
2. October 2015: Site visits and management plans for final three target areas
3. November 2015 through June 2016: Conduct work days
4. June 2016 through September 2016: follow up visits, create presentation, and report writing

Timeline/Project Work Period:

October: 1) Develop list of target areas. 2) Prioritize areas and conduct field visits.

November to June: 1) Conduct three work days at three target sites. 2) Conduct one follow-up volunteer work day at each of the three sites.

June to September: 1) Complete poster. 2) Process data collected during MIFI Stage 1 inventories. 4) Prepare and submit annual progress report.

Deliverables, Products, and Annual Milestones:

1. 3 work days and one volunteer day on each of three separate, high-value natural communities in Allegan State Game Area. (Total of 12 activity days)

2. A detailed report summarizing the project.
3. A poster at the Wildlife Conference in 2016
4. A presentation at the 2016 Wildlife Division Meeting at the RAM Center

Location: Allegan State Game Area

Reporting:

1. Quarterly updates to sponsor: format to be decided with WLD Sponsor.
2. Annual progress report: to be submitted by September 30 to WLD Sponsor and MNFI Contact in an electronic format using a designated template.
3. Final report: A final report will be submitted by October 31, 2016

Acknowledgement of Participation: Any reports, products, or presentations produced through this project will contain the DNR logo and specifically acknowledge the Wildlife Division's participation and support.

Any reports or products produced through this project will contain the following acknowledgement as appropriate: "(Partial) funding for this project was through the Michigan State Wildlife Grants program grant T-9-T in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: FY16

	Cost Category	Cost
	Personnel	\$9,375
	Travel	\$941
	Supplies	\$200
	Indirect Cost (Rate: 26%)	\$2,734
	Budget Total	\$13,250
	- Waived Indirect	-\$2,734
	Total Project Amount:	\$10,516

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Title (6):	Ecological Assessments of MDNR Land Acquisitions		
Principal Investigator:	Brad Slaughter		
Sponsor:	Jennifer Olson		
Project Beginning Date:	1 October 2015	Project End Date:	30 September 2016
Budget Request for Each Fiscal Year of Project:	\$15,360 for FY16		
Statement of Needs:			
<p>Each year, the Michigan Department of Natural Resources Wildlife Division evaluates and prioritizes parcels as part of its land acquisition strategy. Of particular importance is the identification and assessment of important ecological features on these lands. The presence of rare and/or high quality natural communities and populations of plants and animals of conservation significance can assist with the justification and prioritization of potential land transactions. If new acquisitions are not pursued in FY2016, MNFI staff will visit recent acquisitions on Wildlife Division managed lands.</p>			
Objectives:			
<p>3.3: Update the strategic guidance for Wildlife Division's land acquisition of 2012.</p> <p>We propose to assist the MDNR by conducting surveys for rare and unique natural features on two to four parcels. These current parcels are between 35 and 300 acres. Two parcels are at Barry State Game Area including a 35 acre parcel and 300 acre parcel recent acquisition with mesic hardwoods and wetlands. The third parcel is a 100 acre recent acquisition at Wigwam Bay State Wildlife Area with coastal marsh and lowland hardwoods. Alternative tracts may also be identified and surveyed if Michigan Natural Resources Trust Fund (MNRTF) land acquisition proposals are submitted in April 2016. MNRTF parcels which lack natural community and/or rare species information would be surveyed prior to September 2016. Following the surveys, MNFI biologists will write and provide brief reports for each parcel, identifying significant ecological features (e.g., natural communities), populations of rare and sensitive species, populations of notable invasive plant species, and floristic quality assessments.</p>			
Expected Benefits:			
<p>By completing the objectives of this grant, progress will be made towards the overall goal of Michigan Department of Natural Resources Managed Public Land Strategy. Two of the three goals of the Department strategy include providing quality outdoor public recreation opportunities and protecting natural and cultural resources for future generations. The Wildlife Division Acquisition Strategy sits within the context of the Department's Managed Public Land Strategy. MNFI will help achieve Division acquisition goals by prioritizing and informing land acquisitions which may have key state and federal threatened and endangered species (Division land acquisition strategy 2.5) and representative natural communities (Division land acquisition strategy 2.6). The pattern and distribution of ownership and land use greatly affects the ability to manage and protect natural resources and implement land management plans. Land acquisitions that are prioritized and targeted reduce staff time spent on land management issues (trespass, leases, etc.) while improving natural resource protection and opportunities for public</p>			

outdoor recreation. MNFI will inform Division, Department and other land acquisition fund sources (e.g. Michigan Natural Resources Trust Fund, Land Exchange Facilitation Fund) as to the rare species present and floristic quality of proposed and/or recent acquisitions.

Work Plan/Approach:

FY16 work will begin on October 1, 2015 and end on September 30, 2016.

Oct – Dec 2015: Assist in identifying acquisition parcels for targeted surveys.

Jan – Mar 2016: Finalize list of acquisition parcels for targeted surveys.

Apr – June 2016: Conduct targeted surveys on 2 to 4 proposed or recent land acquisitions. [Ecological surveys will consist of meander surveys, focusing on areas with the highest potential to support high quality natural communities, based on interpretation of aerial photographs and input from WLD biologists. Point counts or other appropriate techniques will be used for marsh bird surveys at Wigwam Bay SWA. Other possible survey techniques include sweep netting for rare insects and meander surveys for rare herptiles.] Write brief report for each parcel.

July – Sep 2016: Conduct targeted surveys on 2 to 4 proposed or recent land acquisitions. Write (complete) brief report for each parcel.

Timeline/Project Work Period:

FY16 work will begin on October 1, 2015 and end on September 30, 2016 with periodic updates being provided to the WLD sponsor.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

Communicate with sponsor bi-monthly (once every two months). Land Transaction Applications may be proposed at any time of the year. Michigan Natural Resources Trust Fund acquisitions will be determined by April 1. Reports will be written for each parcel surveyed within 30 days of the last site visit. Reports will contain the following information:

- (1) Lists of natural communities present
- (2) Lists of natural community element occurrences, including element occurrence ranks
- (3) Floristic quality assessments (FQAs), including FQAs specific to natural community element occurrences
- (4) Lists of rare species identified during surveys
- (5) Digital photographs (some included within reports; others made available)

Location: Statewide but most likely in Southern Lower Peninsula

Reporting:

1. Bi-monthly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; November, February, April, June, August)
2. Parcel reports - are due within 30 days of last parcel site visit to WLD Sponsor and MNFI Contact (electronic version).
3. Final report – the final report will summarize accomplishments of the project. Monitoring data, tables, and photographs will be stored in a central location that can be accessed by WLD Lansing and field staff.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD's participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: "(Partial) funding for this project was through the Michigan State Wildlife Grants program grant T-9-T in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: FY 2014

	Cost Category	Cost
	Personnel	\$ 13,035
	Travel	\$ 1,925
	Supplies	\$ 400
	Indirect Cost (Rate: 26%)	\$ 3,994
	Budget Total	\$ 19,354
	Waived Indirect	-\$ 3,994
	Total Project Amount:	\$ 15,360

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Title (7):	Responding To Early Detections Of Aquatic Plants		
Sponsor(s):	Sue Tangora, Invasive Species Coordinator		
Principal Investigator(s):	Phyllis Higman, Sr. Conservation Scientist		
Project Beginning Date:	1 October 2015	Project End Date:	30 September 2016
Budget Request for Current Year:	\$30,000		
Statement of Needs:			
<p>In accordance with the Michigan's AIS State Management Plan and Interagency Policy and Procedure <i>Response Plan for Aquatic Invasive Species in Michigan</i>, DNR-WD will continue its work to prevent the establishment of new aquatic plants by conducting outreach and rapid response action. In order to accomplish this most effectively and efficiently, staff need to be well versed in the identification of priority invasive species, their modes of reproduction and dispersal, and potential control techniques. Further, they need to be able to distinguish between priority invasive species and other associated species, understand the potential for non-target impacts resulting from treatments and potential unintended consequences, implement appropriate detection sampling techniques, and understand the importance and means of measuring success. Once ready to respond, the Response Team needs to take action; however, best control practices are either not known or evolving for most priority species. The ability to adapt management strategies will be critical to success. This project will compile current information on the priority species and early detection and response efforts in the Great Lakes region and deliver training and technical expertise to support and maintain an informed and effective Response Team in Michigan.</p>			
Objectives:			
<ol style="list-style-type: none"> 1. Provide botanical training to staff coordinating and implementing responses 2. Provide technical assistance to staff coordinating and implementing responses 3. Provide adaptive management recommendations to staff coordinating and implementing responses 			
Expected Benefits:			
<p>Early detection, accurate identification and treatment of priority species will improve over time, resulting in more efficient and effective early response actions for new detections and significant reductions of priority species that already occur as large infestations.</p> <p>Cumulative data on the distribution and dispersal of priority species will grow, resulting in better methods for detecting new invasions and blocking pathways of dispersal.</p> <p>Cumulative data on the effectiveness of control techniques will result in better control of priority species.</p> <p>Technical assistance provided will increase effective outreach to stakeholders, resulting in increased stakeholder participation in early detection and reporting of priority species.</p>			
Work Plan/Approach:			
<p>The principle investigator (PI) will coordinate with the project sponsor (PI) during the first quarter to assess specific needs of the EDR Program and Response Team and assist with planning and</p>			

implementation of program activities. The PI will participate in weekly incident briefing meetings with the Response Team, as needed, and communicate with the PS at least twice a month to review and assess training, technical assistance and adaptive management needs to ensure their timely delivery. They will also assess costs of various assistance tasks to ensure they are within budget for the project.

Timeline/Project Work Period:

Work will begin October 1, 2015 to be completed by September 30, 2016.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

- Identify training and technical assistance needs by December 31, 2015.
- Compile current information on priority species, detection sampling methods, control techniques and monitoring protocols by March 31, 2016.
- Conduct start-up training for Response Team May 31, 2016.
- Participate in weekly briefing meetings as needed – on-going through Sept. 30, 2016.
- Provide technical assistance as needed to project team – on-going through September 30, 2016.

Location: Statewide

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – can be in whatever format makes sense for the project but must also include a short (2-5 page) summary in the format of a scientific journal. If the project is a research project it must also make management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD's participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: "(Partial) funding for this project was through the Michigan State Wildlife Grants program grant T-9-T in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: FY2016

	Cost Category	Cost
	Personnel	\$26,366
	Travel	\$3,359
	Supplies	\$275
	Indirect Cost (Rate: 26%)	\$7,800
	Budget Total	\$37,800
	Waived Indirect	-\$7,800
	Total Project Amount:	\$30,000

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Title (8):	Natural Community Surveys and MIFI Stage 1 Inventory of PRD Lands		
Principal Investigator(s):	Josh Cohen and Jesse Lincoln		
Sponsor:	DNR Parks & Recreation Division: Glenn Palmgren and Ray Fahlsing		
Project Begin Date:	October 1, 2015	Project End Date:	September 30, 2016
Budget Request for Each Fiscal Year of Project:	\$54,000		

Statement of Needs:

Michigan’s diverse terrestrial and aquatic systems provide critical habitat and are key to the conservation, protection, and sustainability of plant and animal species. Maintaining the ecological integrity of natural ecosystems requires long-term active and passive management of ecosystem structure and composition, ecological processes, and human interactions. Mapping ecological features provides resource managers with critical information for informing these management decisions.

Michigan Department of Natural Resources (DNR), Parks & Recreation Division (PRD) is responsible for management of Michigan’s State Parks, Recreation Areas, Boating Access Sites and Harbors. Part of PRD’s mission states that the division will “acquire, protect, and preserve the natural, historic, and cultural features of Michigan’s unique resources...” Within the division, the Stewardship Unit is charged with preserving, protecting, and restoring the natural and cultural features. Preservation and restoration (where necessary) of the natural communities within state parks and recreation areas, along with their constituent plants and animals, is a core part of the mission. PRD is in the process of writing and updating management plans for state parks and recreation areas. In these plans the land is zoned for various levels of protection and use based on the location and type of natural and cultural features on the ground.

To inform the PRD Management Planning process, and the overall protection, preservation, and restoration of natural communities throughout Michigan’s state parks and recreation areas, up-to-date information is needed on the boundaries, condition, landscape context, and current threats to the ecological integrity of natural communities. A baseline inventory of natural communities was conducted in all state parks and recreation areas in the late 1990s - early 2000s. However, this initial inventory did not include comprehensive boundary mapping, detailed condition assessments, or threat assessments. From 2009 to 2012, Michigan Natural Features Inventory (MNFI) conducted a multi-year survey and assessment on state park and recreation area lands of known natural community element occurrences. In addition, natural community surveys were recently conducted in some of the larger parks (e.g., Porcupine Mountains Wilderness and Craig Lake State Parks) and in recently acquired lands (e.g., Lime Island Recreation Area, Menominee River Recreation Area, and Rockport State Park).

MNFI proposes to synthesize data collected on high-quality natural communities documented in 2015 in the following PRD lands: Negwegon, Thompson’s Harbor, Wilderness, Tahquamenon Falls, Palms Book, and Fisherman’s Island. These natural community surveys targeted rare natural community types (Element Ranking of S1, S2, or S3) and focused on those with high estimated ecological viability (Element Occurrence Ranks A or B). Natural community surveys assessed the current condition of high-quality natural communities, delineated their boundaries and detailed the vegetative structure and composition, landscape and abiotic context, threats, management needs, and restoration opportunities. Results of these surveys will be incorporated into MNFI’s database and will be summarized in a brief report. Information

gathered from this survey effort will help the DNR prioritize protection, management, and restoration and facilitate the ongoing management planning.

In addition to targeted natural community surveys in select parks, MNFI proposes to continue to conduct MIFI Stage 1 inventories on lands administered by the Parks and Recreation Division. MIFI Stage 1 inventory involves the delineation and classification of vegetation and conducting interpretation of aerial photographs and field inventories to ground-truth these stand delineations and classifications. The information provided from these inventories in combination with the evaluation for high-quality natural communities and identifying threatened and endangered species' habitat is needed for identifying opportunities for ecological restoration and biodiversity protection, and assessing the potential benefits and impacts of future land management, recreation, and development activities on state lands. In 2014, Stage 1 IFMAP inventory was completed for approximately 8,000 acres of Waterloo State Recreation Area in four compartments. In 2015, we completed the Stage 1 Inventory in the remaining six compartments in Waterloo State Recreation Area. In 2016 we will target 8,000-10,000 acres in a State Park or Recreation Area to be determined in consultation with PRD staff.

Michigan Natural Features Inventory has over 30 years of experience conducting natural features inventories and employs staff with expertise in identifying and documenting high-quality natural communities and terrestrial and aquatic rare species and in aerial photographic interpretation and stand delineation. In addition, MNFI staff has established strong working relationships with many of the state land managers through collaborations on various projects, ecological workshops and day-to-day consultations. MNFI staff also collectively has over 10 years of experience conducting Stage 1 inventories on State Lands. Consequently, MNFI is in an excellent position to perform inventories and convey information about recognition of natural features, survey methodology, and stewardship needs to DNR field staff.

Completion of this project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), improve Michigan's natural community classification (p88), identify areas of high biodiversity (p72), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), and provide more information on what constitutes high-quality representative occurrences of landscape features (p88). Work on this project will contribute to the DNR's development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86), and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Objectives:

1. To provide the Parks and Recreation Division with critical information for making well-informed decision on the management of state lands.
2. To report on surveys for high-quality natural communities on targeted PRD lands conducted in 2015. Natural community surveys assessed the current condition of high-quality natural communities, delineated their boundaries and detailed the vegetative structure and composition, landscape and abiotic context, threats, management needs, and restoration opportunities. Information gathered from this survey effort will help the DNR prioritize protection, management, and restoration and facilitate

the ongoing management planning.

3. To conduct MIFI Stage 1 inventories on state lands administered by the Parks and Recreation Division to identify and delineate landscape features. These inventories provide the Parks and Recreation Division with critically important information for natural resource planning and management.
4. To make the information collected through this inventory processes available through the statewide MIFI database and MNFI's Biotics database. These databases are widely used by DNR staff for resource assessment and management planning.

Expected Benefits and Information Transfer:

Results from these surveys will help inform the PRD Management Planning process and the overall protection, preservation, and restoration of natural communities throughout Michigan's state parks and recreation areas. Information gathered from this survey effort will help the DNR prioritize protection, management, and restoration and facilitate the ongoing management planning. Completion of the MIFI Stage 1 inventory will provide accurate ownership boundaries of the lands administered by the Parks and Recreation Division, which will allow future maps made by the DNR and others to more accurately reflect current ownership boundaries. The delineation and classification of vegetation stands within the State Parks and Recreation Areas, along with the tabular data on wildlife habitat variables and vegetation, will provide stewardship ecologists, wildlife planners, and biologists with valuable information for assessing potential habitat-management options and needs.

Completion of this project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), improve Michigan's natural community classification (p88), identify areas of high biodiversity (p72), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), and provide more information on what constitutes high-quality representative occurrences of landscape features (p88). Work on this project will contribute to the DNR's development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86), and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Work Plan/Approach:

MNFI will complete the following:

I. NATURAL COMMUNITY SURVEYS

1. Incorporate survey results into MNFI's database.
2. Compile and provide all survey data listed above and produce a brief annual report summarizing findings, focusing on natural community condition and threats.

II. MIFI STAGE 1 INVENTORY

1. Conduct MIFI Stage 1 inventory to identify and delineate landscape features on state lands administered by the Parks and Recreation Division (i.e., State Parks and Recreation Areas). This

process will involve:

- a. Determine management area ownership boundaries
 - b. Delineate and classify vegetation stands using desktop GIS software and/or the web-based MIFI interface
 - c. Conduct field inventories to ground-truth stand delineations and classifications and record data on wildlife habitat variables and vegetation.
2. Provide recommendations for ecological restoration and biodiversity stewardship, which will be recorded in the MIFI GDSE through the Stage 1 comments for Stands. Comments will include natural community classification and relative quality scoring for all stands where it can reasonably be determined

Produce status report summarizing the work accomplished on the MIFI inventory.

Timeline/Project Work Period:

The timeline for the project extends from October 1, 2015 to September 30, 2016.

NATURAL COMMUNITY SURVEYS

1. Final report and incorporation of data in to MNFI database for the natural communities documented on PRD lands – Fiscal Year 2016

MIFI STAGE 1 INVENTORY

1. Determine and adjust ownership boundaries of state recreation area in preparation for conducting MIFI Stage 1 pre-inventory (October 1, 2015 to March 31, 2016)
2. Conduct MIFI Stage 1 pre-inventory to delineate and classify vegetation stands on state lands using desktop GIS software and/or MIFI web interface (October 1, 2015 to March 31, 2016)
3. Hire and train seasonal staff as needed to assist with MIFI Stage 1 inventories of state land (April, 2016 to September 30, 2016)
4. Conduct MIFI Stage 1 inventories on state lands (April, 2016 to September 30, 2016)

Prepare and submit annual progress report on MIFI Stage 1 Inventory- September 30, 2016

Deliverables and Products:

1. All ownership boundaries of State Parks and State Recreation Areas receiving MIFI inventory will be delineated and entered into MIFI, where they will be available to DNR staff (October through April).
2. All vegetation stands of State Parks and Recreation Areas receiving MIFI inventory will be delineated and classified during the MIFI Stage 1 pre-inventory process. These stand delineations will be available to DNR staff upon completion of the pre-inventory of each compartment within a State Park or State Recreation Area (October through April).
3. Final ground-truthed and adjusted polygons of all stands, along with the associated data on wildlife habitat variables and vegetation, will be available to DNR staff through MIFI upon completion of Stage 1 inventory of each compartment within a State Park or State Recreation Area (April through

September).

4. A status report summarizing the work accomplished during the current field season for the MIFI Stage 1 inventory will be produced (September 30, 2016).
5. For the natural community surveys, we will produce a final report, summarize the survey data, and incorporate the data into the MNFI database.

Location:

MNFI scientists will work closely with the DNR PRD staff based in Lansing.

The MIFI Stage 1 Inventory component of this project will focus on state lands administered by the Parks and Recreation Division (e.g., State Parks and State Recreation Areas). The MIFI Stage 1 inventories will be conducted on state lands identified by the Parks and Recreation Division in consultation with MNFI project staff.

Reporting:

Final report, survey data, and incorporation of data into MNFI database will be completed by September 30, 2016 in an electronic format.

Acknowledgement of Participation:

Any reports, products, or presentations produced through this project will contain the DNR logo and specifically acknowledge the Parks and Recreation Division's participation and support.

Budget: FY 2016

Cost Category	Cost
Personnel	\$46,587
Travel	\$6,253
Supplies	\$1,160
Indirect Cost (Rate: 26%)	\$14,040
Budget Total	\$68,040
- Waived Indirect	-\$14,040
Total Project Amount:	\$54,000

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Title (9):	CSWG Assessing Native Bumble Bee Diversity, Distribution, and Status for the Michigan Wildlife Action Plan		
Principal Investigator:	David Cuthrell		
Sponsor:	Amy Derosier		
Project Beginning Date:	1 October 2015	Project End Date:	30 September 2018
Budget Request:	FY2016: \$26,140		
<p>Work and funding mentioned in the project beyond FY-16 is subject to DNR approval and revision of the contract.</p> <p>Statement of Needs:</p> <p>Pollinators are an ecologically important group of organisms that were not adequately addressed in the original Wildlife Action Plan. Michigan currently has two species listed as species of greatest conservation need (SGCN), the rusty-patched bumble bee (<i>Bombus affinis</i>) and the yellow-banded bumble bee (<i>Bombus terricola</i>), both of which are also currently listed by the Michigan Natural Features Inventory as state special concern. The Michigan Natural Features Inventory Statewide Conservation Database has no records for these bees, and thus they have not been assigned a state conservation rank (Badra et al. 2014). In the past, these two species did occur throughout the state (Husband et al. 1980) and may still occur here but their status is unknown (Fig. 1). Two other Michigan bumble bee species (<i>Bombus ashtoni</i> and <i>B. fervidus</i>) have been documented to be declining as well (Colla et al. 2012) (Fig. 2).</p> <p>Our knowledge of bumble bees in Michigan is very limited and their conservation status has not been evaluated due to lack of data. No statewide surveys or comprehensive insect museum or private collection searches have been conducted in Michigan since the 1930s (Milliron 1939). The primary purpose of the conservation status assessment is to evaluate the potential extinction risk to elements of biodiversity, including regional extinction (Master et al. 2012). Conservation status consists of a series of ranks from “critically imperiled” to “secure,” and these ranks can be derived at the global, national, or state levels. These S-ranks have been completed for almost all SGCN for the state (Badra et al. 2014); the gaps are due to a lack of information on the insects’ current distributions and ecology. This project will fill one of those gaps by providing data on native bumble bees, which will be critical in updating the SGCN list.</p> <p>We propose to conduct a status review for 18 native Michigan bumble bees (Hymenoptera: Apidae), with particular focus on the two species that are currently listed as SGCN in the Michigan Wildlife Action Plan. Our approach will be both museum and field based research and will result in a publication (print or online) on the status and conservation of the bumble bee fauna in Michigan. This information will assist the Michigan DNR to either include or exclude these bumble bees as species of greatest conservation need in the State of Michigan’s Wildlife Action Plan during its next review.</p>			
<p>Objectives:</p> <ol style="list-style-type: none"> 1. Determine the current conservation status(S-ranks) of native bumble bees in Michigan 2. Determine habitat, or natural community, associations for native bumble bees in Michigan 			

Expected Benefits:

The results of this project will enhance the implementation of the Wildlife Action Plan, as well as inform the next revision of the plan. Michigan needs a better understanding of the status of bumble bees and their critical habitats. This project will also identify important sites for pollinator conservation that will help inform the implementation of the Wildlife Action Plan.

Work Plan/Approach: To determine the current conservation status of bumble bees, we will utilize the bee holdings in all of the major insect collections in the State of Michigan. Specimens will be viewed, identifications will be confirmed/verified, and collection label information will be tabulated into a collection data base (if not already automated – it varies by collection). Important fields include locality, date, and any additional collection information including technique or nectar plants collected from. It is anticipated that this portion of the project will result in over 20,000 individual bumble bees inspected. All pertinent information will be entered into the MNFI Conservation database.

Field sampling for bumble bees will occur throughout the summer (May – September) and will occur only if temperatures are above 15°C and winds speeds are below 32 km/h. We will utilize two techniques at each site: aerial-netting and pan-trapping. A minimum total of 60 sites, with representation throughout the state (Upper Peninsula – 20, northern Lower Peninsula – 20, and southern Lower Peninsula – 20) will be surveyed. For sake of efficiency, collection sites and habitats will be the same for both Approach 1 and 2, and are described in more detail under approach 2. All collection sites including natural communities, roadsides, old fields, other more anthropogenic habitats, and fortuitous collections will likely number over 150 sampling locations throughout Michigan.

To calculate the current S-ranks for the bumble bees of Michigan, we will use NatureServe’s Element Rank Calculator, version 2.0 (Faber-Langendoen et al. 2009, NatureServe 2009). The conservation rank calculator is a standardized tool that uses ten conservation status factors within three broad categories (rarity, trends, and threats) to develop an overall conservation rank. Experts input information on rarity, trends and threats, each of which has several components (e.g., range extent, area of occupancy, population size, number of occurrences, short-term trend, long-term trend, and threat impact). The calculator then performs a series of algorithms based on pre-defined or user-defined parameter weights to generate an S-rank. This is a widely used tool and is the tool that has been used to update most of Michigan’s SGCN S-ranks. For all 18 species of Michigan bumble bees, we will utilize museum specimens and field data to evaluate and assess the status factors in the calculator and produce S-ranks that will be provided in the final publication.

To assess the relationship between bumble bees and their habitats we will focus sampling in high-ranking (high-quality) natural communities that have been described in the MNFI Biodiversity Conservation Database. Natural communities to be sampled will include: prairie fens, lakeplain prairies, pine barrens, open dunes, and northern fens (Cohen et al. 2014). We believe many of these sites provide a season-long supply of pollen and nectar that are important for many pollinator species, and will be key habitats for bumble bees. Sampling sites will also be focused in priority or focal areas identified in the updated Wildlife Action Plan.

Timeline/Project Work Period: See Below

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

October 2015-March 2016

Coordination/Planning, Museum Searches

Finalize Grant Compliance; Coordination with land managers/ land owners/ University Research; Bumblebeewatch.org; Visit Museums/collections; Field Work Planning; Develop survey/Inventory Protocol and data sheets; Identify and Map Inventory Sites

April 2016- September 2016

First Field Season

Spring and Summer Surveys; Visit Sites; Install Collection Cups; Aerial Netting/Sweep Netting; Collect Field Data

Work Beyond September 2016 is not guaranteed until funding is added to the contract and a purchase order issued.

October 2016-March 2017

Lab and Identification Work

Sort/Prepare Museum quality Specimens and Identifications of First Season Catch; Coordinate among Project Leaders/ Principal Investigators; Complete First Interim Report; Continue with all tasks in preparation for second field season; Continue coordination and collaboration with Bumble Bee Watch.org.

April 2017-October 2017

Second Field Season

Spring and Summer Surveys; Visit Sites; Install Collection Cups; Aerial Netting/Sweep Netting; Collect Field Data

November 2017-March 2018

Lab and Identification Work

Sort/Prepare Museum quality Specimens and Identifications of First Season Catch; Coordinate among Project Leaders/ Principal Investigators; Begin data analysis; Complete Second Interim Report; Continue with all tasks in preparation for final mop-up field season; Produce outline for final publication.

April 2018-September 2018

Third Field Season and Final Report

Spring and Summer Surveys; Visit Sites; Install Collection Cups; Aerial Netting/Sweep Netting; Collect Field Data; Complete S-ranks for bumble bees; Complete data analysis; complete final project report; complete final publication(s).

Location: Statewide

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – can be in what ever format makes sense for the project but must also include a short (2-5 page) summary in the format of a scientific journal. If the project is a research project it must also make management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD's participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: "(Partial) funding for this project was through the Michigan State Wildlife Grants program grant T-9-T in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: FY2016

	Cost Category	Cost
	Personnel	\$ 18,790
	Travel	\$ 6,000
	Supplies	\$ 1,350
	Indirect Cost (Rate: 53.5%)	\$ 13,985
	Budget Total	\$ 40,125
	Waived Indirect	-\$ 13,985
	Total Project Amount:	\$ 26,140

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Title (10):	CSWG Upper Midwest Riverine Turtle Habitat Improvement		
Principal Investigator(s):	Yu Man Lee		
Sponsor:	Lori Sargent		
Project Beginning Date:	1 October 2015	Project End Date:	September 30, 2016
Budget Request for Each Fiscal Year of Project:	\$15,500		

Work scheduled beyond FY-16 is not guaranteed until added to the contract and issuance of a Purchase Order.

Statement of Needs: Several studies have documented that many turtle populations inhabiting rivers and streams in eastern North America are declining (Doroff and Keith 1990, Heppell 1998, Daigle and Jutras 2005). The Wood Turtle (*Glyptemys insculpta*) is one such freshwater turtle species that has declined significantly in eastern North America. Wood turtles are medium-sized turtles associated with clear, hard-bottomed (sandy) creeks, streams and rivers in spring, fall, and winter, and terrestrial habitats in the summer (Harding 1997). They prefer forested areas over open areas, although small openings in the streamside canopy are essential for nesting and feeding. The Wood Turtle is currently listed in a number of states including Minnesota, Wisconsin, and Iowa, and is a species of special concern in Michigan. The Wood Turtle also has been identified as a Species of Greatest Conservation Need (SGCN) by State Wildlife Action Plans (WAPs) in a number of states including Michigan, Minnesota, Wisconsin, and Iowa. The IUCN Red List classifies the wood turtle as a vulnerable species (Hilton-Taylor 2000).

Threats to Wood Turtle populations include habitat loss, degradation, and fragmentation due to development, roads, dams, streambank stabilization, and timber harvesting. Other threats include predation of nests, hatchlings, and adults; road mortality; removal of adults from populations by humans; and disturbance from intensive recreational use in and along rivers and streams. In Michigan, habitat loss and degradation has occurred in some wood turtle populations, but nest predation and lack of recruitment are probably more of an issue, particularly in the Upper Peninsula (Harding pers. comm.). Road mortality and availability of suitable and sufficient nesting habitat also are limiting factors in some populations.

In addition to the Wood Turtle, the Snapping Turtle (*Chelydra serpentina*), Northern Map Turtle (*Graptemys geographica*), and Eastern Spiny Softshell turtle (*Apalone spinifera spinifera*) inhabit rivers and streams in Michigan, and potentially occur in the same areas as wood turtles. The Blanding's Turtle (*Emydoidea blandingii*) and Eastern Box Turtle (*Terrapene carolina carolina*), which are both special concern species and SGCN in Michigan, also occur in some of the same areas as Wood Turtles. These species also face similar threats as the wood turtle, including habitat loss and fragmentation, nest predation, and road mortality.

This project is a multi-state, multi-year project that will involve four states, Minnesota, Wisconsin, Iowa, and Michigan, and multiple partners within each state. This project will improve turtle nesting and riverine habitats, improve turtle nesting success by managing nest sites and reducing nest predation, and reduce adult turtle mortalities along roads and bridges within the study watersheds. In Michigan, efforts will focus primarily on improving nesting success and habitat for the Wood Turtle. This project will also develop and initiate the first landscape-level monitoring approach for the Wood

Turtle and other riverine turtle species within the Upper Midwest region to assess the effectiveness of the conservation actions implemented as part of this project.

Objectives:

MNFI will help the MDNR meet the following objectives for Michigan's portion of the Competitive SWG Upper Midwest Riverine Turtle Habitat Improvement project:

- 1) Improve turtle nesting success by nest site management.
 - a) Identify locations of nesting habitats that are safe from frequent normal year flooding events along 2 river stretches considered for this project.
 - b) Increase turtle nesting success by reducing the effects of predation using nest cages and/or predator exclusion fences around 30 Wood Turtle nest sites along 2 river stretches (15 nest sites along each river stretch).
- 2) Reduce adult turtle mortality by increasing connectivity among habitats that turtles use to complete their life cycle.
 - a) Identify barriers to movements and pathways that pose a threat to turtle travel needed by Wood, Painted, and Snapping Turtles to complete their normal life cycle along 2 river stretches (or project sites).
- 3) Improve turtle habitat in river and stream corridors.
 - a) Improve the characteristics of potential turtle nesting sites in flood-safe areas to increase their suitability for nesting by riverine turtles. This work would be undertaken at 4 turtle nesting sites/areas.
- 4) Assess the effectiveness of conservation actions by monitoring turtle use, abundance, and habitat response.
 - a) Identify and measure at least 6 parameters that best evaluate the short term response of turtle populations to conservation actions implemented.
 - b) Identify 10 population and habitat parameters that would best evaluate the long term response of turtles and describe future habitat conditions at sites where conservation actions have occurred.

Expected Benefits:

This project addresses major identified threats to Wood Turtles and other riverine turtles in Michigan and other states in the Upper Midwest region. This project strives to improve turtle nesting success and reduce turtle mortality by reducing nest predation, enhancing nesting and other habitat, identifying nesting habitats/areas that are safe from frequent flooding, increasing connectivity among habitats by identifying barriers to movements and pathways that pose a threat to turtle travel, and reducing adult turtle road mortality in some states. This project also will help develop and initiate a landscape-level monitoring approach for the Wood Turtle and other riverine turtles in Michigan and the Upper Midwest, which will allow us to assess the effectiveness of the conservation actions undertaken by this project and provide additional information on populations of Wood Turtles and other riverine turtles in the Upper Midwest. If the conservation actions undertaken by this project prove to be successful, this project will help identify and provide examples of conservation actions that can be implemented at other sites to help conserve and manage populations of Wood Turtles and other riverine turtles in Michigan and the Upper Midwest. This project will benefit SGCN and address conservation issues identified in Michigan's and the other states' WAPs, helping Michigan and the other states' satisfy their major and common goal of stabilizing and increasing populations of SGCNs. This project also

helps implement goals of collaborative regional landscape and watershed plans (e.g., Lake Superior Bi-National Program).

Work Plan/Approach:

Selection of Project Sites – Project sites were selected where previous surveys or research had been undertaken and in many cases there is information indicating that these sites would be vital to the long term sustainability of the targeted riverine turtle species. In Michigan, Wood Turtle surveys, monitoring, and/or research have been conducted along the Au Sable River and several tributaries in Crawford, Oscoda, and Alcona counties, and the Ontonagon River and tributaries in Ontonagon, Gogebic, Houghton and/or Iron counties in Michigan. This project originally focused on these two areas, and considered additional project sites as needed and as time and funding allow. However, in 2014, we were not able to include the Ontonagon River in the nest protection efforts because, while nest predation is an issue for the wood turtle population in the Ontonagon River project area, the Ottawa National Forest which owns and manages the land and has been researching and monitoring the Wood Turtle population in this study area had concerns that nest protection efforts might bring attention to the wood turtle nesting areas and nests within the project area which might make the turtles and nests more vulnerable to illegal collection and/or human disturbance. They also feel that nest predation is not as significant of a threat to the wood turtle population in the project area compared to other threats such as road mortality. In discussions in winter of 2014, the Ottawa NF staff still expressed interest in collaborating on this project, but potentially only on the habitat restoration and identification of barriers and dangerous road crossings/road mortality components of the project. As a result, grant activities at the Ontonagon River site will be limited to habitat restoration, potentially installing fences along roads to prevent or reduce wood turtle mortality, and monitoring responses of the turtle population to these management activities. The Muskegon River has been identified as a replacement site for the nest site monitoring and protection activities that were initially planned for the Ontonagon River site. Work along the Muskegon River and tributaries will occur in Clare, Mecosta, Muskegon, Osceola, and/or Roscommon counties. This additional study area was approved by the MNDR and USFWS in 2015. Jim Harding with MSU has conducted some Wood Turtle surveys and monitoring along the Muskegon River in these counties, and is familiar with Wood Turtle occurrence and nesting sites along this stretch of river. Jim helped us identify nesting sites and potential areas for habitat restoration in 2015.

Surveys - Tracking Turtle Movements Telemetry will be used to track the movements of turtles at one of project sites in Michigan along the Au Sable River. Information on turtle movements is necessary to assess habitat use before and after habitat improvement work as a way to assess the effectiveness of habitat improvement conservation actions; and to identify barriers to travel and the degree of connectivity among habitats that turtles frequent during their annual cycle. A sufficient number of wood turtles (20-30) will be tracked within this study area. Early spring surveys in the selected watersheds will be undertaken to capture, measure, sex and age turtles following well established survey methodologies (Buech et al. 1997) to capture additional turtles for the telemetry study as needed (e.g., if less than 20 transmittered turtles in the study area). Turtles were tracked during the nesting and active seasons (i.e., primarily between late May – mid-August) in 2014 and 2015. This will continue in 2016. Tracking them through the active season and into the fall will reveal nesting sites, foraging sites as well as hibernation sites. At the other project sites, surveys will be conducted to identify and monitor existing turtle nesting sites and turtle use of enhanced nesting habitat areas included in the study.

Identifying and Mapping Flood-Safe Areas **Objective 1a** Hydrological models such as the U.S. Army Corps Models: HEC-GeoRAS (Ref # 12 and the HEC-RAS (Ref #13) can identify flooding

zones for any river stretch based on digital elevational models and river flow metered at gauging stations within or closest to that river stretch . Hydrological models will be used to map flood prone areas. Areas within 500m from the center of the river channels that are most secure from flooding, that could provide suitable nesting habitat, and that are well connected to the river channel and to potential foraging habitat will be delineated and mapped in GIS. Field surveys during high water periods also may be conducted to assist with identifying flood-safe areas.

Protecting Nests against Predation **Objective 1b.** We had initially planned to use two main methods to reduce the effects of predation on turtle nests. One method consists of placing wire cages over individual nests shortly after turtles have laid their eggs (Standing et al. 2000; Linck and Gillette (2009). This method requires the close monitoring of nests at the time turtles are nesting in late May through early to mid-June; and then again at hatching time in August. A second method to protect against nest predation consists of fencing an area that allows turtles to enter it but excludes larger predators, raccoon and fox. This method has successfully increased turtle nest success 74% in one study in southern Wisconsin (Geller 2012). To date, this method has not been used in this project. Additional methods to reduce nest predation may be considered and utilized. A minimum of 30 nests (15 at each project site) was initially proposed to be protected by cages and/or predator exclusion fences. Based on the results of the 2014 and 2015 field seasons of this project, it was determined that local wood turtle populations may not be sufficient to locate and protect 30 nests. We will continue efforts in 2016 to locate, protect, and monitor additional nests, but it may not be feasible to locate as many nests as originally proposed. We will continue nest protection efforts on all or the majority of wood turtle nests that are located (up to 30 nests total and ideally up to 15 nest per study area). Protected and unprotected nests will be monitored to assess effectiveness of the nest cages and predator exclusion fences.

Identifying Barriers and Dangerous Road Crossings **Objective 2a.** This effort will assess the threat from road mortality in the project areas and identify locations where efforts to reduce road mortality and enhance connectivity may be implemented in the future. In Michigan, the Natural Heritage database has been and will continue to be checked for locations of reported dead turtles that fall within project areas. The tracking of turtle movements using radio telemetry will indicate how they are negotiating barriers and road crossings. Road and trail layers superimposed on turtle travel routes will reveal locations where turtles could be encountering the greatest road mortality risks within the project areas.

Restoration of Nesting and Foraging Habitat **Objective 3a.** Nesting sites/habitat will be improved by removing encroaching woody vegetation, grass, and other vegetation. Sites of ¼ to ½ an acre that are south facing, have sandy soil, are well connected to river (no roads or ATV trails),and have a lower risk of flooding will be selected for habitat improvement. Encroaching vegetation will be removed mechanically; prescribed fire will not be used. Ideally, restoration of nesting sites will be done in late September to early October to lessen the likelihood of turtles still being on land. Removal of trees >3 inches dbh will be limited to November 1 – March 31.

Assessing the Effectiveness of Conservation Actions. **Objective 4.** Plans to measure the effectiveness of implemented conservation actions will be discussed and refined with state project partners and researchers at universities. Control sampling units will be paired with sampling units that will undergo a conservation action. In some cases, a before and after- treatment condition will apply. Parameters will be measured that best indicate the effect(s) that each conservation action is targeting.

For example, the number of hatchlings produced from protected nest sites could measure the effectiveness of nest protection. The feasibility of measuring particular parameters will be discussed with researchers who have previously utilized similar techniques. We will also discuss some parameters related to monitoring the long-term effectiveness of certain conservation actions with land managers. The final list of parameters for monitoring the effectiveness of the conservation actions and methods for data collection and analysis will be developed in conjunction with the other state and project partners. Methodologies will be coordinated among the 4 states to insure that the results can be validly compared.

Timeline/Project Work Period:

Work began on this project on October 1, 2013, and will continue until the project ends on September 30, 2016 with periodic updates via quarterly reports and annual progress reports to the WLD sponsor.

October 2013-March 2014

Coordination and Planning

Finalize Grant Compliance; Coordination with Land Managers/ Landowners/ University Research/ Volunteers/ Other Partners; Field Work and Habitat Work Planning/Visit to Project Sites; Equipment Acquisition; Contracting Habitat Work/ Surveys / Private Land Agreements (as needed); Ongoing Habitat Work (in other states); Identify and Map Safe Nesting Areas in Project Sites;

March/ April 2014- October 2014

First Field Season

Spring Surveys; Capture Turtles and Fit with Transmitters; Install Cameras to Monitor Nesting Sites at some sites, if possible; Install Predator Control; Telemetry Work; Monitoring to Assess Response to Conservation Actions; Initiate Habitat Improvement Work if possible;

November 2014-March 2015

Evaluation Period, Interim/Progress Report

Analyze First Season Data; Adjust Methodologies (as needed); Coordinate with Project Leaders/ Principal Investigators/Others; Initiate Habitat Improvement Work if possible; Complete First Interim Report

April 2015-October 2015

Second Field Season

Additional Spring Surveys and Capturing and Marking of Turtles; Repeat Telemetry Work (if needed); Install Cameras to Monitor Nesting Sites at some sites, if possible; Install Predator Control; Monitor to Assess Response to Conservation Actions; Initiate/Continue Habitat Improvement Work; Coordinate with Partner States; Complete 2nd Annual Progress Report for WLD;

November 2015-March 2016

Compiling Results/ Second Project Evaluation

Continue Habitat Improvement Work; Analyze and Summarize Data from Second Field Season; Enter New and/or Updated Element Occurrences of Wood Turtles and Other Rare Species into Michigan Natural Heritage Database; Revise Methodologies as needed; Coordinate with Project Leaders/ Principal Investigators and Other Partners in Michigan and Partner States; Continue Identification of Flood-safe Nesting Areas/Habitats, and Barriers and Dangerous Road Crossings; Work with Partner States to Revise and/or Identify Additional Parameters for Monitoring Effectiveness of Conservation Actions in the Short- and Long-Term; Complete Second Interim Report for USFWS; Prepare for 2016 Field Season;

April 2016-September 2016

Third Field Season, Data Analysis

Additional Nesting Turtle Surveys and Capturing and Marking of Turtles; Install Cameras to Monitor

Nesting Sites at some sites, if possible; Install Predator Control/Nest Protection Enclosures; Monitor to Assess Response to Conservation Actions; Complete Habitat Improvement Work, if needed; Complete Identification of Flood-safe Nesting Areas, and Barriers and Dangerous Road Crossings; Work with Partner States to Complete Identification of Parameters for Monitoring Effectiveness of Conservation Actions; Summarize and Analyze Data from Third and All Field Seasons; Coordinate with Partner States; Complete 3rd Annual Progress Report for WLD;

October 2016- November 2016

Compiling Results, Final Report

Compile All Results; Summarize Findings; Prepare and Submit Final Report for MDNR; Work with Partner States to Develop Recommendations for Adaptive Management, Discuss Future SWG for Long Term Monitoring, and Complete Final Report for Overall Project.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

- Map(s) indicating the locations of areas with suitable Wood Turtle nesting habitats and/or nest sites that are predicted to be safe from flooding events in both project areas/sites.
- Summary and map(s) of the Wood Turtles that are found and/or tracked during the survey and telemetry portions of the project, and the number and locations of Wood Turtle nesting sites that are found in the field, and are protected from predators and/or monitored.
- Map(s) identifying barriers or potential barriers to movements and pathways that pose a threat to Wood Turtle and other riverine turtle travel to complete their life cycle within the project sites.
- Summary and map(s) showing the locations and area of turtle nesting habitat that is enhanced for Wood Turtle and other riverine turtle use within the project sites.
- Updated Wood Turtle element occurrences in the Michigan Natural Heritage Database.
- Brief progress reports highlighting project activities and results will be provided after the first and second years of the project to the MDNR, USFWS, and partner states, and a final report will be provided after the end of the third year of the project.

Location: Office work will be conducted at the MNFI offices located in Constitution Hall, Lansing, MI, and on the campus of Michigan State University. Field/project sites will be located along the Au Sable River and tributaries in Crawford, Oscoda, and/or Alcona counties; along the Muskegon River and tributaries in Clare, Mecosta, Muskegon, Osceola, and/or Roscommon counties; and/or along the Ontonagon River and tributaries in Ontonagon, Gogebic, Houghton, and/or Iron counties.

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual/interim progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version) using template provided; and to the Minnesota DNR, lead state/agency for the

overall CSWG project, by the date requested.

3. Final report – will be in an appropriate format that makes sense for the project and agreed upon by the WLD Sponsor, collaborating states, and lead state (Minnesota) for the project.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD's participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: "(Partial) funding for this project was through the Michigan State Wildlife Grants program grant T-9-T in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: FY 2016

	Cost Category	Cost
	Personnel	\$ 12,800
	Travel	\$ 2,300
	Supplies	\$ 400
	Subcontract	-
	Indirect Cost (Rate: 26%)	\$ 4,030
	Budget Total	\$ 19,530
	- Waived Indirect	-\$ 4,030
	Total Project Amount:	\$ 15,500

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Title (11):	Ecosystem and Forestland Emergency Contingency Surveys		
Sponsor(s):	DNR FRD, Amy Clark Eagle DNR FRD, Deb Begalle		
Principal Investigator(s):	Joshua Cohen		
Project Beginning Date:	October 1, 2015	Project End Date:	September 30, 2016
Budget Request for Current Year:	\$10,000		

Statement of Needs:

Michigan's diverse terrestrial and aquatic systems provide habitat for a spectrum of wildlife. Forested ecosystems cover more than half of Michigan and are key to the conservation, protection, and sustainability of wildlife species. The health of these ecosystems relies on long-term active management and our understanding of the interaction between biotic and abiotic factors as well as ecological processes and human interactions.

The Forest Resources Division (FRD) and Wildlife Division (WD) are jointly responsible for management of the State Forests for long-term forest health, sustainability and myriad forest products and values, ecosystem services including recreation, and wildlife habitat. The Divisions are responsible for assuring that these management activities do not harm threatened and endangered species. Through this project Michigan Natural Features Inventory (MNFI) will conduct emergency surveys of sites where there is an imminent conflict between proposed management or active timber sales and known occurrences of threatened or endangered species or high-quality natural communities. These surveys will occur following a formal request from the Michigan Department of Natural Resources for MNFI assistance. If no survey requests have been made by April 30, 2016, the funds will be utilized by MNFI to conduct natural community surveys within new FRD acquisitions, existing Ecological Reference Areas to evaluate boundary delineation and current condition, and un-surveyed state forest land. MNFI staff will work with FRD staff to prioritize which sites to survey. This prioritization will occur by May 31, 2016.

Completion of this project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), provide more information on what constitutes high-quality representative occurrences of landscape features (p88), and monitor species that are highly imperiled (p83). Work on this project will contribute to the development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86) and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Work Plan/Approach:

Following a formal request by the DNR, MNFI will conduct no more than six surveys of state forest compartments where there is a conflict between proposed management or active timber sales and known occurrences of threatened or endangered species or high-quality natural communities. The surveys will be followed by a brief report of findings and recommendations.

If no survey requests have been made by April 30, 2016, the funds will be utilized by MNFI to conduct natural community surveys within new FRD acquisitions, existing Ecological Reference Areas to evaluate boundary delineation and current condition, and un-surveyed state forest land. MNFI staff will work with FRD staff to prioritize which sites to survey. This prioritization will occur by May 31, 2016.

Timeline/Project Work Period:

The timeline for this project extends from October 1, 2015 to September 30, 2016.

Expected Benefits and Information Transfer:

Completion of this project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), provide more information on what constitutes high-quality representative occurrences of landscape features (p88), and monitor species that are highly imperiled (p83). Work on this project will contribute to the development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86) and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Deliverables and Products:

The surveys will be followed by a brief report of findings and recommendations.

Location:

Field surveys could potentially occur on state forest lands in the northern Lower Peninsula and Upper Peninsula. Synthesis of data and reporting will be conducted in Lansing.

Reporting:

A brief year-end activity report will be produced following completion of FY16 work in September 2016.

Budget:

	Task or Direct Cost Category	Cost
	Personnel	\$8,528
	Travel	\$1,271
	Supplies	\$201
	Indirect Cost (Rate: 26%)	\$2,600
	Budget Total	\$12,600
	Waived Indirect	-\$2,600
	Total Project Amount:	\$10,000

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Title (12):	Application of Strategic GIS Modeling and Federally Listed Species Information to Support Land Acquisition		
Principal Investigator(s):	Helen Enander		
Sponsor:	Dan Kennedy		
Project Beginning Date:	1 October 2015	Project End Date:	30 September 2016
Budget Request for Each Fiscal Year of Project:	\$8,624 (plus MNFI match of \$8,624, total project is \$17,248)		

Statement of Needs: The Michigan Department of Natural Resources (DNR) Wildlife division (WLD) manages 360,000 acres in designated state game areas. The DNR pursues targeted investments in land within its priority areas as a critical component of the Public Land Management Strategy, south of the Mason/Arenac County line. A stated goal of the DNR's public land strategy is to "protect natural and cultural resources for future generations." As opportunities become available for the DNR to acquire land, population targets for federally listed species are a measurable objective of this goal. The entire State of Michigan has not been surveyed for federally listed species. Modeling has become a critical, data-driven tool for decision-making in the face of incomplete information.

Models play a critical role in decision-making and ecological or biogeographical inference, but must be carefully crafted to suit the underlying intention. Geographic Information System modeling has become fundamental in decision support systems, allowing large amounts of data and many competing criteria to be considered efficiently in a sophisticated spatial analysis. Models for high quality functioning ecosystems can be set to restrict a minimum core area size, determine connectivity requirement, rank by size and additional measures of quality (Paskus et al. 2002). While setting standards for quality habitat, the current the Element Occurrence (EO) records from MNFI's Biotics spatial database can be queried for information on listed species. Biotics contains approximately 273 listed vertebrate animals, 46 vascular plants, and 356 invertebrate animals south of the Mason/Arenac County line. Incorporating proximity to these spatial locations in the model and considering potential habitat needs will provide a means to further rank acquisition priority. Finally, previous MNFI projects have prioritized areas for listed and high priority species, and these results can also be incorporated into the modeling strategy: 1) The Preliminary Focal Areas and Priority Focal Areas layers that were developed for the WAP project (Cohen et al. 2014), and 2) the Eastern Massasauga Rattle Snake Population Modeling Study (Lee 2015).

Alternatively to the EO data, we offer an option to model Inferred Extent (IE). IE expands the EO, which is based strictly on where an animal was actually observed, to include the surrounding area that is likely occupied based on home range and/or habitat. This adds a new level of biologically meaningful information to the EOs, designed and reviewed by species experts. The spatial representation of IE can be modeled from known occupied habitat (EO) plus knowledge of the biology of the species and a cost-weighted distance analysis of potential habitat and possible barriers, a methodology recently developed, tested and reviewed for Eastern Massasauga (Lee 2015). Developing IE for listed animal species will directly guide land acquisition in areas that have not been thoroughly inventoried.

In this project option we propose to produce IE for the eight listed terrestrial animal species known to occur south of the Mason/Arenac line: Copperbelly water snake, Piping plover, Kirtland's warbler, Indiana Bat, Northern Long-eared bat, Karner Blue, Mitchell's satyr, and Poweshiek skipperling. A model for Eastern Massasauga rattlesnake has been completed earlier this year, and several other Lower Peninsula listed species only occur north of the study area. A species distribution model for Copperbelly water snake using maximum entropy (Phillips et al. 2006) statistical modeling was completed in 2003 and will be reviewed and included if deemed useful. Note that an added benefit is that these models will be run for the entire Lower Peninsula, not just the DNR Project Boundary Area, and as such will guide and advance other endeavors.

As part of this option for finer-scaled analysis, we proposed the incorporation of historical imagery. Using scanned and rectified digital 1938 imagery to interpret the former ecology and land use of the landscape allows ecologists to better predict the suitability of the current land for potential high quality habitat for communities and ecosystems.

When land acquisition is whittled down to competing parcels, interpretation of 1938 aerial imagery would be a cost effective method to infer the benefits of acquisition in terms of listed plants and animals. Aerial imagery could be used to create a qualitative variable of estimated probability of occurrence of the select species (a score of 0 could be not likely to occur and a 5 could be a high probability of occurring). The interpreter could use the temporal aerial imagery to gauge whether or not there is suitable habitat, how much suitable habitat there is, and if that suitable habitat has been there continuously. This low-cost, efficient process is to include the rectification and possible mosaic of 1938 imagery to existing state game area mosaicked images, and interpretation of up to six sections or 3840 acres.

Completion of this project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to identify and conserve representative areas, high-quality areas, (p86), areas with urgent conservation needs (p86), and areas of high biodiversity (p72). Work on this project can contribute to the development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86).

References:

Cohen, et al. 2014. Development of a Preliminary Focal Area Network for the Wildlife Action Plan. Michigan Natural Features Inventory Report Number 2014-26, Lansing, MI. 25 pp. Digital Appendix 2 - Shapefile of proposed Focal Areas. Digital Appendix 3 - Shapefile of proposed Priority Focal Areas.

Lee, Yu Man. 2015. Developing an Eastern Massasauga Conservation Plan in Michigan – Phase I. MNFI Report.

Paskus et al. 2002. Oakland County Potential Conservation/Natural Areas Report. Prepared for Oakland County Planning & Economic Development Services. 14 pp.

Phillips et al. 2006. Maximum entropy modeling of species geographic distributions. *Ecological Modeling* 190:231-259

Objectives:

1. To provide the Wildlife Division with critical spatial information on listed species and potential habitat for making well-informed decisions on the acquisition of land parcels below the Mason-Arenac County line, using the MNFI Biotics database and GIS modeling techniques.
2. To leverage existing spatial data products from previously funded projects such as the Focal Areas Network, the Eastern Massasauga Rattle Snake Population Study.
3. To optionally develop Inferred Extent for eight federally listed animal species
4. To optionally rectify and interpret 1938 and current aerial imagery and score the probability for listed species.
5. To produce a brief report summarizing the modeling methods, and produce metadata for the spatial data products.

Expected Benefits:

The creation of a Land Acquisition Priority Layer will assist resource managers in evaluating potential land acquisitions in a cost effective manner over a large spatial area with multiple objectives while focusing on prioritizing populations of listed species.. Option two will more rigorously further the knowledge of potential listed species locations, populations and habitat in Southern Michigan.

This project will help implement the Wildlife Action Plan and will address the following GPS objectives and Strategy Project Implements:

Objective 1: Assist in addressing priority population management needs for non-game wildlife.

Objective 2: Assist in determining and prioritize needs to support biodiversity conservation at ecologically appropriate scales.

Objective 3: Enhance and coordinate how technical support is provided to land use planners.

Objective 4: Assist in updating the strategic guidance for Wildlife Division's land acquisition by 2012

Work Plan/Approach:

1. MNFI will meet with Wildlife personnel to finalize acquisition prioritization criteria.
2. MNFI to incorporate prioritization criteria and EO data on listed species into a GIS-based model.
3. MNFI will optionally develop inferred extent layers and/or update distribution models for eight listed animal species using cost-weighted distance analysis modeling or species distribution modeling, depending on the species.
4. MNFI will produce a brief report summarizing the model methods, a spatial dataset of the model results, and optionally the inferred extent layers. All spatial data will have ISO19115 compliant metadata.

Timeline/Project Work Period:

October 2015 to March 2016: MNFI with consultation from WLD to confirm prioritization criteria, and MNFI to define modeling methods for inferred extent or distribution modeling.

April 2016 to June 2016: MNFI to model and review inferred extents/distributions if optioned, and assemble existing data for land acquisition priority model.

July 2016 to September 2016: Land acquisition priority modeling, analysis and report. 1938 imagery acquisition and interpretation if optioned.

September 2016: Metadata production.

Deliverables, Products, and Annual Milestones:

- 1) A spatial layer of prioritized land units within the DNR management boundaries south of the Mason/Arenac County line.
- 2) Optionally a digital mosaic of 1938 imagery for specified potential acquisition areas.
- 3) Optionally inferred extent and/or species distribution layers for each of eight animal species as possible.
- 4) MNFI will produce a brief report, spatial data and metadata.

Location: Work for this project will be based in Lansing, MI

Reporting:

1. Quarterly updates to sponsor: format to be decided with WLD Sponsor.
2. Annual progress report: to be submitted by September 30 to WLD Sponsor and MNFI Contact in an electronic format using a designated template.

Acknowledgement of Participation:

Any reports, products, or presentations produced through this project will contain the DNR logo and specifically acknowledge the Wildlife Division's participation and support.

Any reports or products produced through this project will contain the following acknowledgement as appropriate: "(Partial) funding for this project was through the Michigan State Wildlife Grants program grant T-9-T in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: (MNFI will provide documentation of \$8,624 in salary/fringe match at the end of FY2016 via employee labor reports.)

	Cost Category	Cost
	Personnel	\$16,708
	Travel	\$0
	Supplies	\$270
	Indirect Cost (Rate: 26%)	\$4,344
	Budget Total	\$10,866
	- Waived Indirect	-\$4,344
	- Match provided by MNFI	-\$8,624
	Total Project Amount:	\$8,624

Contract Type/Payments: This is a fixed-price contract. Contractor may bill 25% of the annual budget quarterly based on project progression.

Use of Costs as Non-federal Match Portion for US Fish and Wildlife Administered Grants to DNR Wildlife Division

All of the costs association with each of the titles described in the above work plan are eligible for reimbursement through federal awards received by the Department and administered by the US Fish and Wildlife Service (US FWS). Through this agreement, some of these costs are being used by the Department to satisfy the non-federal match portion of these federal awards. As a vendor for this contract, MNFI and Michigan State University are not sub recipients of these federal awards and are not subject to the terms in these federal awards. MNFI and MSU, however, may not use those portions of the costs in these work plans the Department is using as non-federal match as non-federal match for any federal award MNFI and MSU may have. The portion of costs for each work plan the Department is using as non-federal match and the federal award to which this match is applied are summarized as follows:

Title (#)	Costs used as Non-federal Match	Federal Award Name	Sponsor	Requested Funds
(1)	Indirect Cost (Rate: 53.5%)	State Wildlife Grant	Mike Donovan	\$348,238
(2)	Indirect Cost (Rate: 26%)	Federal Aid in Wildlife Restoration	Mike Donovan	\$272,629
(3)	Indirect Cost (Rate: 53.5%)	Competitive SWG	Dan Kennedy	\$50,000
(4)	Indirect Cost (Rate: 26%)	Federal Aid in Wildlife Restoration	Steven Chadwick Mark MacKay	\$29,477
(5)	Indirect Cost (Rate: 26%)	Federal Aid in Wildlife Restoration	Mark Mills	\$10,516
(6)	Indirect Cost (Rate: 26%)	Federal Aid in Wildlife Restoration	Jen Olsen	\$15,360
(7)	Indirect Cost (Rate: 26%)	DEQ/EPA	Sue Tangora	\$30,000
(8)	Indirect Cost (Rate: 26%)	DNR Parks & Recs Division	Glenn Palmgren Ray Fahlsing	\$54,000
(9)	Indirect Cost (Rate: 53.5%)	CSWG	Amy Derosier	\$26,140
(10)	Indirect Cost (Rate: 26%)	CSWG	Lori Sargeant	\$15,500
(11)	Indirect Cost (Rate: 26%)	DNR FRD Division	Amy Clark Eagle Deb Begalle	\$10,000
(12)	Indirect Cost (Rate: 26%)	State Wildlife Grant	Dan Kennedy	\$8,624

FY - 2016 Wage Rates

Name	Area of Expertise	Hourly Rate*
Badra, Peter	Aquatic Ecology; Project Management Oversight	\$ 39.47
Cohen, Joshua	Terrestrial Ecology; Botanical Expertise; Project Management Oversight	\$ 42.41
Cuthrell, David	Zoological Expertise; Project Management Oversight	\$ 44.19
Enander, Helen	Database Management and Information Technology	\$ 43.29
Higman, Phyllis	Conservation Education; Botanical Expertise; Project Management Oversight	\$ 54.88
Hyde, Daria	Conservation Planning and Education; Project Management Oversight	\$ 42.33
Klatt, Brian	Project Management Oversight; Zoological Expertise; Botanical Expertise; Terrestrial Ecology; Conservation Planning	\$ 70.91
Korroch, Kraig	Database Management and Information Technology	\$ 42.11
Kortenhoven, Aaron	Terrestrial Ecology; Botanical Expertise; Zoological Expertise	\$ 28.81
Lee, Yuman	Zoological Expertise; Conservation Education; Project Management Oversight	\$ 46.25
Lincoln, Jesse	Terrestrial Ecology; Botanical Expertise; Project Management Oversight	\$ 29.11
Monfils, Michael	Zoological Expertise; Aquatic Ecology; Project Management Oversight	\$ 44.78
Paskus, John	Conservation Planning; Conservation Education; Project Management Oversight	\$ 52.75
Penskar, Michael	Botanical Expertise; Terrestrial Ecology; Project Management Oversight	\$ 47.67
Ridge, Sue	Project Management Oversight	\$ 38.11

Rogers, Becca	Database Management and Information Technology	\$ 42.60
Sanders, Mike	Database Management and Information Technology	\$ 37.36
Schools, Edward	Database Management and Information Technology; Project Management Oversight	\$ 56.23
Slaughter, Brad	Botanical Expertise; Terrestrial Ecology; Project Management Oversight	\$ 36.30
Toben, Nancy	Project Management Oversight	\$ 45.04
For Academic Staff, the university does not recognize hourly rates. Thus, the rates presented are estimates based on annual salaries divided by 2080 hours.		
Anticipated Hirings and Seasonal Employees		
Associate botanist		\$ 33.86
Associate ecologist		\$ 33.86
Associate zoologist		\$ 37.90
Seasonal - Aq Ecology		\$ 17.55
Seasonal - Botany		\$ 17.55
Seasonal - Cons Planning		\$ 17.55
Seasonal - Ecology		\$ 17.55
Seasonal - Zoology		\$ 17.55
Seasonal-CGIS		\$ 17.55

Change Notice Number: 09
Contract Number: 751B3200002

FOR THE CONTRACTOR:

Michigan State University

Company Name

*Stacy
Raymond*

Stacy Raymond

Authorized Agent Signature *SR*
10/26/15

for Diane Cox

Authorized Agent (Print or Type)

10/26/15

Date

FOR THE STATE:

Laurie L. Gyorkos

Signature

Laurie Gyorkos, Manager Procurement Services

Name & Title

Finance and Operations Division

Division

10/27/15

Date



Michigan Department of Natural Resources – Procurement Services
 P.O. Box 30028, Lansing, MI 48909
 OR
 525 W. Allegan, Lansing, MI 48933

CHANGE NOTICE NO. 07 TO CONTRACT NO. 751B3200002

**Between
 STATE OF MICHIGAN**

and

Required by authority of 1984 PA 431, as amended.

Name and Address of Contractor Michigan State University Office of Sponsored Programs 426 Auditorium Rd., Rm 2 301 Administration Building Lansing, MI 48824-2601	Primary Contact	
	Diana Cox	
	Email	
	Coxd@osp.msu.edu	
	Telephone	Contractor #, Mail Code
	(517) 884-4243	2****5984/283

State Contact	Agency	Name	Telephone	Email
Contract Compliance Inspector	DNR	Michael Donovan	(517) 284-6178	Donovanm@michigan.gov
Buyer	DNR	Jana Harding-Bishop	(517) 284-5938	HardingJ3@michigan.gov

Initial Contract Summary

Description (Provide a basic but comprehensive description of services)			
Conservation Planning Services			
Effective Date	Initial Expiration Date	Initial Available Options	Current Expiration Date
November 1, 2012	October 31, 2015	3 - 1 yr options	October 31, 2015
Payment Terms	F.O.B.	Shipped	Shipped From
Net 45	N/A	N/A	N/A
Minimum Delivery Requirements		Alternate Payment Options	Available to MiDeal Participants
N/A		<input type="checkbox"/> P-Card <input type="checkbox"/> Direct Voucher (DV)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Description of Change Notice

Option Exercised: Yes No If Yes, New Expiration Date: _____

Provide the detail of the Change Notice
 Revise Title # 12 and increase by \$3,000 (751P4300931) and extending end date to 11/30/14- See attached REVISED work plan
 No-Cost extensions to the following Titles for fiscal year 2014 from 9/30/14 to:
 Title 2 - 751P4300322 - 11/30/14
 Title 3 - 751P4300323 - 12/31/14
 Title 7 - 751P4300327 - 3/30/15
 Title 13 - 751P4300330 - 9/30/15
 Title 15 - 751P4301077 - 12/31/14

Value/Cost of Change Notice	Estimated Revised Aggregate Contract Value
\$0.00	\$4,099,602.18

FOR THE CONTRACTOR:

Michigan State University

Diane Cox
 Authorized Agent Signature

Diane Cox, Manager

Authorized Agent (Print or Type)

3 Sept 14
 Date

FOR THE STATE:

Department of Natural Resources

Sharon M. Schaefer for
 Authorized Buyer Signature

Laura Gyrokos, Manager

Authorized Buyer (Print or Type)

9/4/2014
 Date

Title (12):	Ecosystem and Forestland Emergency Contingency Surveys		
Sponsor(s):	DNR FRD, Amy Clark Eagle DNR FRD, Deb Begalle		
Principal Investigator(s):	Joshua Cohen		
Project Beginning Date:	October 1, 2013	Project End Date:	November 30, 2014
Budget Request for Current Year:	\$7,000		

Statement of Needs:

Michigan's diverse terrestrial and aquatic systems provide habitat for a spectrum of wildlife. Forested ecosystems cover more than half of Michigan and are key to the conservation, protection, and sustainability of wildlife species. The health of these ecosystems relies on long-term active management and our understanding of the interaction between biotic and abiotic factors as well as ecological processes and human interactions.

The Forest Resources Division (FRD) and Wildlife Division (WD) are jointly responsible for management of the State Forests for long-term forest health, sustainability and myriad forest products and values, ecosystem services including recreation, and wildlife habitat. The Divisions are responsible for assuring that these management activities do not harm threatened and endangered species. Through this project Michigan Natural Features Inventory (MNFI) will conduct emergency surveys of sites where there is an imminent conflict between proposed management or active timber sales and known occurrences of threatened or endangered species or high-quality natural communities. These surveys will occur following a formal request from the Michigan Department of Natural Resources for MNFI assistance. If no survey requests have been made by April 30, 2014, the funds will be utilized by MNFI to conduct natural community surveys within proposed Biodiversity Stewardship Areas or begin development of a natural community abstract (e.g., emergent marsh, submergent marsh, or Great Lakes barrens).

Completion of this project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), provide more information on what constitutes high-quality representative occurrences of landscape features (p88), and monitor species that are highly imperiled (p83). Work on this project will contribute to the development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86) and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Work Plan/Approach:

Following a formal request by the DNR, MNFI will conduct no more than 3 surveys of state forest compartments where there is a conflict between proposed management or active timber sales and known occurrences of threatened or endangered species or high-quality natural communities. The surveys will be followed by a brief report of findings and recommendations.

If no survey requests have been made by April 30, 2014, the funds will be utilized by MNFI to conduct natural community surveys within proposed Ecological Reference Areas (ERA) or begin development of a natural community abstract (e.g., emergent marsh, submergent marsh, or Great Lakes barrens).

Up to an additional 4 ERAs will be surveyed by October 30, 2014.

Timeline/Project Work Period:

The timeline for this project extends from October 1, 2013 to November 30, 2014.

Expected Benefits and Information Transfer:

Completion of this project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), provide more information on what constitutes high-quality representative occurrences of landscape features (p88), and monitor species that are highly imperiled (p83). Work on this project will contribute to the development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86) and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Deliverables and Products:

The surveys will be followed by a brief report of findings and recommendations. If no surveys are conducted, MNFI will begin development of a natural community abstract (e.g., emergent marsh, submergent marsh, or Great Lakes barrens).

Location:

Field surveys could potentially occur on state forest lands in the northern Lower Peninsula and Upper Peninsula. Work on natural community abstracts would be conducted in Lansing.

Reporting:

A brief year-end activity report will be produced following completion of FY14 work in November 2014.

Budget:

	Task or Direct Cost Category	Original Cost	Revised Cost
	Personnel	\$2,308	\$4,039
	Travel	\$1,692	\$2,961
	Supplies	\$0	\$0
	Indirect Cost (Rate: 26%)	\$1,040	\$1,820
	Budget Total	\$5,040	\$8,820
	Waived Indirect	\$1,040	-\$1,820
	Total Project Amount:	\$4,000	\$7,000

Contract Type/Payments:

This is a fixed price contract.



Michigan Department of Natural Resources – Procurement Services
 P.O. Box 30028, Lansing, MI 48909
 OR
 530 W. Allegan, Lansing, MI 48933

CHANGE NOTICE NO. 06 TO CONTRACT NO. 751B3200002

**Between
 STATE OF MICHIGAN
 and**

Required by authority of 1984 PA 431, as amended.

Name and Address of Contractor Michigan State University Office of Sponsored Programs 426 Auditorium Rd., Rm 2 301 Administration Building Lansing, MI 48824-2601	Primary Contact Diane Cox	
	Email Coxd@osp.msu.edu	
	Telephone (517) 884-4243	Contractor #, Mail Code 2****5984/283

State Contact	Agency	Name	Telephone	Email
Contract Compliance Inspector	DNR	Michael Donovan	(517) 373-7027	Donovanm@michigan.gov
Buyer	DNR	Jana Harding-Bishop	(517) 373-1190	HardingJ3@michigan.gov

Initial Contract Summary

Description (Provide a basic but comprehensive description of services) Conservation Planning Services			
Effective Date November 1, 2012	Initial Expiration Date October 31, 2015	Initial Available Options 3 - 1 yr options	Current Expiration Date October 31, 2015
Payment Terms Net 45	F.O.B. N/A	Shipped N/A	Shipped From N/A
Minimum Delivery Requirements N/A		Alternate Payment Options <input type="checkbox"/> P-Card <input type="checkbox"/> Direct Voucher (DV)	Available to MiDeal Participants <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Description of Change Notice

Option Exercised: Yes No If Yes, New Expiration Date: _____

Provide the detail of the Change Notice
 Add two FY-14 Projects to the contract.
 Title # 14 Finalizing the Fen Habitat Conservation Plan
 Title # 15 Identifying and Mapping Vernal Pools on State Forest Lands

Value/Cost of Change Notice \$0.00	Estimated Revised Aggregate Contract Value \$4,099,602.18
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FOR THE CONTRACTOR:

Michigan State University

On-file in DNR Procurement

 Authorized Agent Signature
 Diane Cox

 Authorized Agent (Print or Type)
 3/12/14

 Date

FOR THE STATE:

Department of Natural Resources

On-file in DNR Procurement

 Authorized Buyer Signature
 Sharon Walenga-Maynard

 Authorized Buyer (Print or Type)
 3/14/14

 Date

Title (14):	Finalizing the Fen Habitat Conservation Plan		
Principal Investigator(s):	Daria Hyde		
Sponsor:	Dan Kennedy		
Project Beginning Date:	1 March 2014	Project End Date:	30 September 2014
Budget Request for Each Fiscal Year of Project:	\$5,000 for FY 2014		
Statement of Needs:			
<p>The Fen Habitat Conservation Plan and the associated plans for the Mitchell's Satyr Butterfly and Poweshiek skipperling are in the final stage of completion. This is an important document that needs to be completed in a timely manner. We propose to assist the MNDR's efforts by incorporating edits to the plan and making final revisions to this document.</p>			
Objectives:			
<p>1) Complete the Fen Habitat Conservation Plan and associated Mitchell's Satyr and Poweshiek Skipperling Habitat Conservation Plans by incorporating necessary edits.</p>			
Expected Benefits:			
<p>Completion of the Fen Habitat Conservation Plan will provide important guidance to partner's that wish to implement conservation actions in fens and to benefit the Mitchell's satyr and Poweshiek skipperling.</p>			
Work Plan/Approach:			
<ol style="list-style-type: none"> 1) Arrange a meeting with Dan Kennedy and USFWS staff Barb Hosler and Tameka Dandridge to receive their input on the Fen HCP and associated Mitchell's satyr butterfly and Poweshiek skipperling plan and incorporate this input as Dan and I decide is appropriate into the final HCP. 2) Incorporate edits which have already been received into the text version of the Fen Habitat Conservation Plan and submit a final draft of the text to Dan Kennedy. 3) After the final draft of the HCP is reviewed, incorporate any edits that are provided. 4) If budget/time allows, incorporate finalized text into the In Design Document with tables and figures, insuring proper labeling and position of these elements. 			
Timeline/Project Work Period:			
<p>Work will begin on March 1, 2014 with updates via monthly reports being provided to the WLD sponsor. WLD has requested a draft report by March 28, 2014, with the final report submission by the project end date of September 30, 2014.</p>			
Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):			
<ol style="list-style-type: none"> 1. A rough draft of the Fen HCP will be completed/submitted to the DNR by March 7th for review. 2. The final draft of the Fen HCP incorporating edits from the DNR will be submitted in text format 			

by March 28th.

3. If time/budget allows, a formatted version of the HCP in InDesign will be submitted to DNR for review and approval by April 18th.

Location: The work will be conducted at the MNFI offices located in Constitution Hall, Lansing, MI, and through a meeting at the USFWS East Lansing Office.

Reporting:

1. Monthly progress report to sponsor – A brief progress report will be provided to the sponsor outlining what has been accomplished and what remains to be completed.
2. Final Report – A brief final report summarizing project activities and results (see above) will be provided to the WLD at the end of the project.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD's participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: "(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: FY 2014

	Cost Category	Cost
	Personnel	\$ 5,000
	Travel	\$ 0
	Supplies	\$ 0
	Indirect Cost (Rate: 26%)	\$1,300
	Budget Total	\$ 6,300
	- Waived Indirect	\$1,300
	Total Project Amount:	\$ 5,000

Contract Type/Payments:

This is a fixed-price contract. Invoices may be submitted at the end of each quarter (April 1st, July 1st and October 1st) for 1/3rd of the project cost as long as work and deliverables are progressing satisfactorily.

Title (15):	Identifying and Mapping Vernal Pools on State Forest Lands		
Principal Investigator(s):	Yu Man Lee		
Sponsor(s):	Deborah Begalle and Amy Clark Eagle		
Project Beginning Date:	March 1, 2014	Project End Date:	September 30, 2014
Budget Request for Each Fiscal Year of Project:	\$5,000		
<p>Statement of Needs:</p> <p>Vernal pools are small, temporary bodies of water that form in shallow depressions primarily in forested areas throughout Michigan. They fill with water from rainfall, snowmelt, and/or groundwater between late fall and spring, and usually dry up by mid- to late summer. Vernal pools are generally isolated depressions, and/or lack permanent connections to permanent water bodies. The periodic drying of vernal pools prevents fish from establishing populations in these wetlands.</p> <p>Despite their small size and temporary nature, vernal pools provide important habitat for animals and plants. Because they are free of fish that might otherwise eat their eggs and/or young, vernal pools provide critical breeding habitat for a host of forest-dwelling amphibians (i.e., frogs and salamanders) and invertebrates. These include some species that are specialized for life in vernal pools and depend on these unique habitats for their survival. Vernal pools also provide food, water and/or habitat for a number of other animal and plant species, including several endangered, threatened or rare species in Michigan. As wetlands, vernal pools contribute other important ecosystem services including nutrient cycling, water storage and infiltration, groundwater recharge, and flood control.</p> <p>Due to increased awareness of the ecological significance of vernal pools, there has been growing interest in identifying, mapping, monitoring, and protecting these small but valuable wetlands. Vernal pools can be impacted during forest management activities, and, as a result, have been afforded some protection under the State of Michigan's recommended sustainable soil and water quality practices on forest land and the Sustainable Forestry Initiative® (SFI®) forest certification standard. However, because vernal pools are small, isolated, and dry for part of the year, they can be difficult to identify in the field, and easily overlooked and unintentionally damaged or destroyed. Tree harvesting equipment also can get damaged if they are inadvertently used in vernal pool depressions when they are dry and difficult to identify on the landscape.</p> <p>This collaborative project will conduct a targeted effort to identify and map vernal pools on state forest lands in Michigan's Upper Peninsula on which Verso Paper Corporation procures wood. This project also will continue efforts to evaluate different approaches for identifying and mapping vernal pools remotely. Information on the locations and ecological characteristics of vernal pools in the study area will be compiled in a spatial database.</p>			
<p>Objectives:</p> <ol style="list-style-type: none"> 1) Identify and map potential vernal pools across approximately 15,000 acres of state forest land in Michigan's Upper Peninsula in the study area using remote sensing and/or ecological modeling using GIS. Project will focus on lands under active forest management. 2) Verify and map actual vernal pools in the field across a portion of the study area (at least 250 acres). This will include verifying potential vernal pools mapped remotely and additional vernal pools encountered during field sampling. Collect some initial information on the physical/biological 			

characteristics of vernal pools identified in the field.

- 3) Evaluate the effectiveness of identifying and mapping vernal pools remotely using different approaches. Examine if and how forest type, soil type, and/or vernal pool type impact the effectiveness of identifying vernal pools remotely.
- 4) Compile information on the locations and some initial physical/biological characteristics of vernal pools identified and mapped for this project in a spatial database.

Expected Benefits:

This project represents a unique collaboration between Verso Paper Corporation, the Michigan Department of Natural Resources (MDNR), the Michigan Forest Products Council, (MFPC) and the Michigan Natural Features Inventory (MNFI), a program of Michigan State University Extension (MSUE). Verso Paper Corporation, the Michigan DNR, and the Michigan Forest Products Council (MFPC) promote protection and encourage their partners to protect vernal pools as part of sustainable forestry practices. This project will greatly assist Verso, the MDNR, the MFPC, and their partners with forest planning and harvesting efforts, and help facilitate sustainable forest management practices including efforts to protect vernal pools on lands on which Verso procures wood. Currently, vernal pools are often identified incidentally during forest harvesting operations, which can be challenging at times, particularly when the pools are dry. This project would provide enhanced information regarding vernal pools prior to forest management operations. Locations of vernal pools could be incorporated into IFMAP which would help the MDNR with forest planning and management efforts.

This partnership/project will help Verso Paper Corp and Michigan's forest industry continue to develop and thrive in a sustainable manner, which will help with Michigan's economic development and recovery. Verso Paper Corporation's mill in Quinnesec, Michigan is a state-of-the-art facility that manufactures hardwood kraft pulp and high-quality coated printing paper. The Quinnesec Mill represents a \$1 billion investment in the Upper Peninsula of Michigan. With nearly \$50 million in annual payroll & benefits, Verso directly employs 475 at the Quinnesec Mill and nearly 50 contractors. The Mill purchases goods and services from the local community including 1.6 million tons of wood annually. The vernal pools project supports Verso's position on procuring wood fiber from sustainably managed forests. At the heart of Verso's sustainability philosophy is their commitment to assure that they procure fiber only from forests that are sustainably managed to remain healthy, productive and biologically diverse for generations to come. Verso's customer base expects such a position, and by proactively seeking improvements, Verso believes this may grow their preferred supplier status. Sustainable forest management helps to assure long-term productivity and the overall health of Michigan's forest ecosystems, securing a future wood supply in Michigan and Great Lakes region.

This project provides an opportunity for the MDNR and MNFI to collaborate with Michigan's commercial forest industry by working with Verso Paper Corp and the Michigan Forest Products Council. This project also provides potential for future collaborations with Michigan's forest industry as well as government agencies, academic institutions, conservation organizations, and other commercial or private entities/businesses. The Michigan Forest Products Council is supportive of and interested in partnering on efforts to identify, map, and assess vernal pools in Michigan. In a letter of support for a vernal pools proposal, the Michigan Forest Products Council stated "determining the feasibility of integrating remote sensing (radar and air photos), ecological modeling (e.g., GIS modeling), and field data collection to identify, map, and assess vernal pools is going to be a great asset for our state. It will help to provide enhanced information about vernal pools enabling and improving conservation and our ability manage and protect vernal pools. This data will be extremely useful in carrying out silvicultural practices and in

forest planning.” The MNFI also has been collaborating with an array of partners and stakeholders as part of its current vernal pools project and a vernal pools work group developed as part of the project, including the MDEQ, MDNR, Michigan Tech Research Institute, The Nature Conservancy, Michigan Nature Association, and Herpetological Resource and Management.

This project will complement and build upon MNFI’s current vernal pools project to develop an effective and efficient approach for identifying, mapping, and assessing vernal pools, and initiate efforts to map, assess, and monitor vernal pools throughout Michigan. This project will allow MNFI to continue efforts to evaluate the feasibility of identifying and mapping vernal pools remotely and to map and assess vernal pools in the field in the state, particularly in the Upper Peninsula. This project will provide additional data on vernal pool locations and ecological characteristics in the Upper Peninsula, which will enhance our knowledge and understanding of vernal pool distribution and ecology in the state and facilitate management and protection of these important wetland ecosystems.

Work Plan/Approach:

5) *Identify and map potential vernal pools in the study area using remote sensing and/or ecological modeling using GIS.*

We will work with FRD, Verso, and MFPC to identify the study area, which will be located in the Upper Peninsula on state forest lands under active forest management. We will identify and map potential vernal pools across approximately 15,000 acres in the study area using remote sensing through air photo interpretation and/or radar/lidar, and ecological modeling using GIS. We will compile and utilize leaf-off air photos to identify and delineate potential vernal pools in GIS. We will work with Michigan Tech Research Institute to delineate potential vernal pools based on radar and/or lidar imagery. We will develop or use an existing ecological/GIS model developed from our current vernal pools project to identify potential vernal pools in the study area.

6) *Verify and map actual vernal pools in the field across a portion of the study area (at least 250 acres).* We will randomly select potential vernal pools to verify and map in the field. We also will identify and map additional vernal pools encountered in the field. We will map vernal pools verified or encountered in the field using GPS. Vernal pools will be visited in the field in the spring when pools are wet and in the summer or early fall when pools should be dry or drawn down. We also will collect some initial information on the physical/biological characteristics of vernal pools in the field.

7) *Evaluate the effectiveness of identifying and mapping vernal pools remotely using different approaches.* We will compare the effectiveness of the different approaches for mapping vernal pools (i.e., air photo interpretation, radar/lidar, and/or ecological modelling) by determining and comparing their accuracy rates and commission and omission error rates for identifying vernal pools remotely compared to field sampling results. We also will examine if and how forest type, soil type, and/or vernal pool type impact the effectiveness of identifying vernal pools remotely.

8) *Compile information on the locations and some initial physical/biological characteristics of vernal pools identified and mapped for this project in a spatial database.* Information on the locations and initial physical and biological characteristics of vernal pools identified and mapped remotely and in the field will be compiled in a spatial database and GIS shapefiles. The information will be compiled in a statewide vernal pools spatial database and GIS shapefiles being developed as part of MNFI’s current vernal pools project. A map/GIS shapefile of potential vernal pools and a map/shapefile of vernal pools that have been verified in the field will be developed and provided.

Timeline/Project Work Period:

The project work period will be from March 1, 2014 to September 30, 2014.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually:

4. A spatial database and map/GIS shapefile of potential vernal pools identified from remote sensing and/or ecological/GIS modelling in the study area will be developed and provided or made available to MDNR, Verso, and the MFPC. A preliminary version of the database and map/GIS shapefile of potential vernal pools will be provided by May 2014. A final version will be provided at project end.
5. A spatial database and map/GIS shapefile with information on the locations and ecological characteristics of vernal pools verified and mapped in the field in the study area will be provided or made available to MDNR, Verso, and the MFPC at project end.
6. A final report summarizing project activities and results will be developed and provided to MDNR, Verso, and the MFPC at project end. A brief progress report will be provided by the end of July 2014.

Location:

The project will be conducted at the MNFI offices in downtown Lansing and on the campus of Michigan State University, and in the study area which will be located on state forest lands in the Upper Peninsula that are under active forest management. MNFI will work with Verso, the MDNR, and the MFPC to identify the specific study area.

Reporting:

A final report summarizing project activities and results will be developed and provided to MDNR, Verso, and the MFPC at project end. A brief progress report will be provided by the end of July 2014.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by FRD will have the DNR logo and specifically acknowledge the FRD's participation and support.

Budget: FY 2014

Note: The total budget/cost for the project is \$42,700. The MDNR FRD's portion of the project budget is \$5,000. The remaining funds for the project will be provided by Verso Paper Corp, the Michigan Forest Products Council, and MNFI.

	0000Cost Category	Cost
	Personnel	\$ 5,000
	Travel	\$ 0
	Supplies	\$ 0
	Indirect Cost (Rate: 26%)	\$ 1,300
	Budget Total	\$ 6,300
	- Waived Indirect	\$ 1,300
	Total Project Amount:	\$ 5,000

Contract Type/Payments:

This is a fixed-price contract. Invoices may be submitted at the end of each quarter (April 1st, July 1st and October 1st) for 1/3rd of the project cost as long as work and deliverables are progressing satisfactorily.



Michigan Department of Natural Resources – Procurement Services
 P.O. Box 30028, Lansing, MI 48909
 OR
 530 W. Allegan, Lansing, MI 48933

CHANGE NOTICE NO. 05 TO CONTRACT NO. 751B3200002
Between
STATE OF MICHIGAN
and

Required by authority of 1984 PA 431, as amended.

Name and Address of Contractor Michigan State University Office of Sponsored Programs 426 Auditorium Rd., Rm 2 301 Administration Building Lansing, MI 48824-2601	Primary Contact Diane Cox	
	Email Coxd@osp.msu.edu	
	Telephone (517) 884-4243	Contractor #, Mail Code 2****5984/283

State Contact	Agency	Name	Telephone	Email
Contract Compliance Inspector	DNR	Michael Donovan	(517) 373-7027	Donovanm@michigan.gov
Buyer	DNR	Jana Harding-Bishop	(517) 373-1190	HardingJ3@michigan.gov

Initial Contract Summary

Description (Provide a basic but comprehensive description of services)			
Conservation Planning Services			
Effective Date November 1, 2012	Initial Expiration Date October 31, 2015	Initial Available Options 3 - 1 yr options	Current Expiration Date October 31, 2015
Payment Terms Net 45	F.O.B. N/A	Shipped N/A	Shipped From N/A
Minimum Delivery Requirements N/A	Alternate Payment Options <input type="checkbox"/> P-Card <input type="checkbox"/> Direct Voucher (DV)		Available to MiDeal Participants <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Description of Change Notice

Option Exercised: Yes No If Yes, New Expiration Date: _____

Provide the detail of the Change Notice
 Add FY-14 Projects to the contract
 Update Salaries/Wages for FY-14

 Add the following language to become a permanent part of the contract:
 When calculating travel costs for any given project, the costs must be in compliance with MSU's travel policy and rates as allowed under OMB Circular A-21 for reimbursement for the fiscal year of the project.

Value/Cost of Change Notice \$0.00	Estimated Revised Aggregate Contract Value \$4,099,602.18
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FOR THE CONTRACTOR:

Michigan State University

 On-file in DNR Procurement

 Authorized Agent Signature
 Diane Cox

 Authorized Agent (Print or Type)
 11/14/13

 Date

FOR THE STATE:

Department of Natural Resources

 On-file in DNR Procurement

 Authorized Buyer Signature
 Sharon Walenga-Maynard

 Authorized Buyer (Print or Type)
 11/15/13

 Date

2014 Michigan Natural Feature Inventory Work Plans

The project work plans in this document are used by the DNR to update the scope of work for the Contract agreement number 751B3200002 between the Michigan Department of Natural Resources (DNR) and Michigan State University's Michigan Natural Features Inventory (MNFI).

In order for MNFI to begin work on any of these work plans, a purchase order must be released by the DNR referencing the specific work plan. The ability of the DNR to release a purchase order is impacted by the levels of State and Federal appropriations across a variety of programs. There is tremendous uncertainty in the appropriation levels at both the State and Federal levels of government.

The appearance of a project work plan in this document is not a guarantee that a purchase order will be released for that project work plan or that all years of the work plan will be funded.. It is critically important to remember that no work can proceed on a project work plan until the DNR releases a corresponding purchase order.

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Title (1):	Consultation, Administration and Database Management (CAD)		
Principal Investigator(s):	Brian Klatt		
Sponsor:	Mike Donovan		
Project Beginning Date:	1 October 2013	Project End Date:	30 September 2014
Budget Request for Each Fiscal Year of Project:	\$310,745		
Statement of Needs:			
<p>Part 365, Endangered Species Protection, of the Natural Resources and Environmental Protection Act (Act 451 of the Michigan Public Acts of 1994) requires the Department of Natural Resources to carry out the provisions of the Act with respect to protection of listed threatened and endangered species (“listed species”); the MDNR Wildlife Division (WLD) serves a central role in implementing the requirements of Part 365 of PA 451. Additionally, the State’s Wildlife Action Plan (WAP) identified a number of Species of Greatest Conservation Need (SGCN) as well as Landscape Features that support Michigan’s wildlife. The WAP serves as a guidepost to the MDNR in obtaining and wisely using Federal funding that furthers the purposes of the WAP.</p> <p>The Michigan Natural Features Inventory (MNFI) maintains data, information and expertise on listed species, as well as other rare species and high quality natural communities in the Natural Heritage Database (NHD). The NHD is the single most comprehensive source of information on the location and condition of rare species and high quality natural communities in Michigan. As such, the NHD contains critical information on many of the SGCNs and the natural communities tracked in the NHD are linked to the Landscape Features contained in the WAP. Furthermore, MNFI is the designated Natural Heritage Program (NHP) for the state of Michigan and is part of the system of Natural Heritage Programs and Conservation Data Centers throughout the United States coordinated by NatureServe. As the NHP for Michigan, MNFI coordinates through NatureServe to aggregate the NHD data into a national-level database that facilitates implementation of WAPs throughout the country and makes possible multi-state projects involving rare species, such as the on-going Multi-species Wind Habitat Conservation Plan for the Midwest.</p> <p>The ability of the MDNR WLD to manage Michigan’s SGCNs is greatly enhanced by the availability of MNFI’s data, information and staff expertise on Michigan’s imperiled species and natural communities. Management activities planned by the MDNR WLD are evaluated for their potential effects on the State’s rare and protected plant and animal species. The MNFI’s staff expertise and NHD are unique and invaluable tools to facilitate this evaluation. Consequently, MNFI resources are essential to the MDNR WLD’s effort to conserve SGCNs.</p> <p>Access to MNFI’s expertise and information is provided to the MDNR WLD through consultation with the MNFI staff, application of MNFI staff expertise in the maintenance and enhancement of information entered into the NHD, and access to information products based on the NHD. Historically, the CAD project provides financial support for access to MNFI staff (consulting), as well as the “value added” products based on the NHD and the functioning of MNFI as a NHP in good standing with NatureServe. Consulting services are provided in the form of scientific expertise on threatened and endangered species and expert advice on the management of natural communities.</p>			
Objectives:			
<ol style="list-style-type: none"> 1. Continue to maintain and add to the NHD database. 2. Assist WLD staff with the use of the NHD to support land management planning. 3. Clarify for WLD staff the nature and limits of Element Occurrences as represented in the NHD. 			

Expected Benefits:

The information, expertise and services that MNFI will provide to the MDNR WLD through this project are essential for the WLD to address its mission while meeting its trust responsibilities and legal obligations. Maintaining the NHD, providing assistance with interpretation and application of NHD data, compiling and providing access to natural features information and providing technical consultation and assistance with biodiversity conservation efforts and issues will provide critical information and a sound scientific basis for the Division's natural resource management, planning and protection efforts.

This work directly addresses important elements of the WAP. Specifically, this work provides information and assistance that addresses information gaps on SGCNs, particularly rare and imperiled species. Additionally, rare and high quality natural communities, as well as potential indicators of ecological integrity will be tracked and incorporated in management planning and species with specific requirements that are not assessed by landscape feature monitoring or otherwise of considerable interest (e.g., socially or economically important species, keystone species). This project will help address the following WAP elements:

1. The statewide priority threat of lack of scientific knowledge (WAP, pg. 64).
2. The priority issue of rarity (WAP pg. 75).
3. The priority conservation need of identification and elimination of significant information gaps for SGCN and landscape features (WAP, pg. 86) by assessing species status and trends using the NHD.

This project will aid in the revision of the Wildlife Action Plan. This project will also contribute to programmatic and administrative support of the Michigan Natural Features Inventory as the designated Natural Heritage Program for Michigan.

Work Plan/Approach:

1. Identify, prioritize and help facilitate surveys and data gathering to determine the distribution and status of SGCNs and associated habitats. Develop and deliver information products and services pertaining to SGCNs and their habitats to the WLD. Whenever possible and through separate agreements, make NHD information available to other land management agencies, including NatureServe, which aggregates state-level data into a national database that is of high value to Federal agencies managing resources within the State of Michigan, as well as making that information to researchers.
2. Assist MDNR WLD with revision of the WAP, which may include consultation on species and habitat requirements, as well as review of draft WAP-related documents.
3. Attendance by select staff at WLD Partner meetings in the January to March timeframe. It is anticipated that individual staff may attend 2-3 meetings.
4. Work with WLD to better document program benefits to WLD functions, such as definition and documentation of significant consultation efforts.
5. Provide consultation and expertise on other MDNR WLD projects that could affect SGCNs and

their habitats as requested.

6. Commensurate with available resources, maintain a statewide database on natural heritage elements (i.e. the NHD) and provide the DNR-WLD with both tabular and geospatial information on those elements.
7. In cooperation with the WLD, continue to assess the current process of receiving and processing natural heritage information. Assessment will include identification of information sources, such as establishment of an observational database in addition to, or incorporation into, the NHD.
8. Administrate the MNFI as a Constituent Member in good standing within the NatureServe network.

Overall, the above activities can be divided into three broad categories: 1) database management and information product development; 2) consultation; and 3) functioning as an effective member of the NatureServe network; effort among these categories is estimated to be 55%, 30%, and 15%, respectively.

Timeline/Project Work Period:

Work will continue throughout the project period of 1 October 2013 through 30 September 2014.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

Deliverables and products that will result from this project will include the following

1. A statewide database with information on the status and distribution of Michigan's SGCNs and their habitats that are tracked in the NHD.
2. Development, maintenance, application and dissemination of NHD-derived, WAP-related information, expertise, products and services which may include natural feature surveys and technical consultation.
3. Review and provide written comments on draft WAP-related documents.
4. Provision of expert information and opinion through participation in the WLD Partner meetings.
5. Pilot system for documenting significant consultations between WLD and MNFI staff.
6. Produce an annual report of the activities related to database management and use, consultation with DNR staff, and insuring effective participation in the NatureServe network of heritage programs.

Location: The work will be conducted at the MNFI offices located in the Mason Building, the campus of Michigan State University, and locations statewide. Work may involve training, compiling information, providing technical consultation and assistance while participating in meetings, conferences, management and planning sessions.

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY14

	Cost Category	Cost
	Personnel	\$290,703
	Travel	\$3,042
	Supplies	\$17,000
	Indirect Cost (Rate: 52%)	\$161,587
	Budget Total	\$471,702
	- Waived Indirect	-\$161,587
	Total Project Amount:	\$310,745

Contract Type/Payments: This is a fixed-price quarterly invoiced project.

Title (2):	Southern Michigan Lands Integrated Inventory Project		
Principal Investigator(s):	Josh Cohen		
Sponsor:	Mike Donovan		
Project Beginning Date:	1 October 2013	Project End Date:	30 September 2014
Budget Request for Each Fiscal Year of Project:	\$272,629		
Statement of Needs:			
<p>In order for the DNR to fulfill its responsibility for managing Michigan’s natural resources, their staff require thorough knowledge of both the landscape features and natural features on state lands. While the DNR has long performed inventories and kept detailed records for a diverse array of wildlife and other natural resources, thorough inventory of the natural features such as rare wildlife species and the full array of natural communities has not been completed. The goal of this project is to facilitate implementation of the Michigan Wildlife Action Plan (WAP) by completing an integrated inventory of both the landscape features and natural features on DNR managed lands in southern Michigan. This project will involve conducting both IFMAP Stage 1 inventories and natural features inventories to identify and document the landscape features, rare species, and high-quality natural communities that occur on state lands in southern Lower Michigan. Upon completion of the integrated inventories, reports for each management area will be produced that describe their landscape and natural features and conservation significance. The information provided from these integrated inventories is needed for identifying opportunities for ecological restoration and biodiversity protection, and assessing the potential benefits and impacts of future land management, recreation, and development activities on state lands.</p> <p>Michigan Natural Features Inventory has over 25 years of experience conducting natural features inventories and employs staff with expertise in identifying and documenting high-quality natural communities and terrestrial and aquatic rare species. In addition, MNFI staff has established strong working relationships with many of the state land managers through collaborations on various projects, ecological workshops and day-to-day consultations. Consequently, MNFI is in an excellent position to perform biological inventories and convey information about recognition of natural features, survey methodology, and stewardship needs to DNR field staff.</p> <p>This work also addresses important elements of the Michigan Wildlife Action Plan (WAP). Specifically, this work addresses the need for surveys to locate additional high-quality natural communities, because the spatial extent and condition of these communities may be valuable indicators of landscape feature condition (p. 80). In addition, this work addresses the need for surveys that will address gaps in knowledge related to threats, landscape features, species and the relationships among them (p. 79).</p>			
Objectives:			
<ol style="list-style-type: none"> 1) To provide the Wildlife Division with critical information for making well-informed decision on the management of state lands. 2) To conduct IFMAP Stage 1 inventories on state lands administered by the Wildlife Division to identify and delineate landscape features. These inventories provide the Wildlife Division with critically important information for natural resource planning and management. 3) To conduct natural features inventories on state lands administered by the Wildlife Division to document rare species, Species of Greatest Conservation Need, and exemplary natural 			

communities. This information is critically important to land managers and planners for making well-informed land management decisions. In addition, this information is used for conservation planning by many other agencies including the Michigan Department of Environmental Quality, Michigan Department of Transportation, Michigan Department of Agriculture, US Fish and Wildlife Service, Natural Resource Conservation Service, The Nature Conservancy, regional and local land trusts and conservation organizations, universities, and private industry (e.g., environmental consultants, power companies, etc.).

- 4) To make the information collected through this integrated inventory processes available through two statewide databases, IFMAP and Biotics. Both databases are widely used by DNR staff for resource assessment and management planning. In addition, information contained in the Biotics database is available to the organizations referenced above.
- 5) To complete Biotics data entry for the natural features identified during the 2013 field season in the Barry State Game Area, Lost Nation State Game Area, and Middleville State Game Area.
- 6) To create a digital layer of the 1938 imagery for all State Game Area Lands.

Expected Benefits:

Upon completion of this integrated inventory, DNR staff will have full access to critically important information for making well-informed decisions on planning and management. Completion of the IFMAP Stage 1 inventory will provide accurate ownership boundaries of the state game areas, which will allow future maps made by the DNR and others to more accurately reflect current ownership boundaries. The delineation and classification of vegetation stands within the state game areas, along with the tabular data on wildlife habitat variables, will provide wildlife planners and biologists with valuable information for assessing potential habitat-management options and needs. Similarly, the natural features inventory data and report will provide critical information for conservation planning and management to DNR staff as well as a broad suite of potential Biotics users (see item 3 in list of above). In addition, the creation of a digital layer of 1938 imagery for all the state game area lands will provide a useful tool for evaluating changes in land cover, targeting surveys for high-quality natural communities, and identifying potential sites for restoration.

This project will address the following GPS objectives and Strategy Project Implements:

1.2 Objective: Address priority population management needs for non-game wildlife.

Strategy 1.2.3: Develop and implement nongame species management plans, as needed.

Strategy 1.2.4: Annually meet responsibilities under both Federal and State Threatened and Endangered Species laws.

Strategy 1.2.5: Conduct research and monitoring to support biodiversity conservation.

Strategy 1.2.6: Work with partners to promote and improve management of non-game wildlife populations.

2.1 Objective: Develop coordinated statewide and regional approaches to managing habitat.

Strategy 2.1.4: Address priority invasive species management needs.

Strategy 2.1.5: Conduct habitat research to inform habitat management decisions.

3.1 Objective: Enhance and coordinate how technical support is provided to land use planners.

Strategy 3.1.2: Work with partners to develop or implement land use planning tools that help facilitate wildlife and habitat information into land use decisions.

Work Plan/Approach:

- 1) IFMAP Stage 1 inventory to identify and delineate landscape features will be conducted on state lands administered by the Wildlife Division (e.g., State Game Areas, State Wildlife Areas and State Recreation Areas). This process will involve 1) determining management area ownership

boundaries, 2) delineating and classifying vegetation stands using desktop GIS software, and 3) conducting field inventories to ground-truth stand delineations and classifications and record data on wildlife habitat variables. The management areas chosen for IFMAP Stage 1 inventory will be identified by the Wildlife Division in consultation with MNFI project staff. MNFI staff will strive to complete Stage 1 inventory for 30,000-35,000 acres of state lands administered by the Wildlife Division.

- 2) Natural features inventories will focus on state lands where IFMAP Stage 1 inventory has been completed and will be conducted concurrently with the Stage 1 inventory. Thus, Stage 1 inventories and natural features inventories will be conducted simultaneously but in different management areas. In 2014, natural features inventories will focus on identifying and documenting rare animal species at Lost Nation State Game Area and Middleville State Game Area, where natural communities surveys were completed in 2013, and surveys for natural communities will be conducted at Flat River State Game Area. During the following field season (2015), surveys for rare wildlife species will move to Flat River State Game Area, and the natural community surveys will shift to the next management area identified for inventory. When possible, this rolling, tag-team approach in which natural community surveys are followed by rare animal surveys will be utilized in subsequent years of the project because it provides very specific habitat data useful for targeting rare wildlife surveys.
- 3) Scanned 1938 (600 dpi) aerial photos will be digitally rectified and a mosaic of this imagery will be created.
- 4) The timing of these integrated inventories will be sequenced to provide Wildlife Division staff with accurate and timely information for Wildlife Area Master Planning.
- 5) Planning for natural features inventories will utilize data collected during the IFMAP Stage 1 inventory and the newly created digital layer of the 1938 imagery to help focus the inventory efforts for natural communities and rare species.
- 6) The integrated inventories will provide recommendations for conservation planning, which will be recorded in the IFMAP GDSE through the Stage 1 comments for Stands and/or the Unique Sites categories of Areas of Interest (AOI) layer.
- 7) A status report summarizing the work accomplished on both the IFMAP and natural features inventories will be produced. A final report for Barry State Game Area will be produced that describes its natural features, their conservation significance, and the associated management recommendations. With new funding in 2015 following the completion of the rare animal surveys, reports for Middleville State Game Area and Lost Nation State Game Area will be completed.

Timeline/Project Work Period:

October to March: 1) Determine and adjust ownership boundaries of state game areas in preparation for conducting IFMAP Stage 1 pre-inventory. 2) Conduct IFMAP Stage 1 pre-inventory to delineate and classify vegetation stands on state game areas using desktop GIS software. 3) Process rare animal EOs from Barry State Game Area. 4) Prepare for natural community surveys at Flat River State Game Area and rare animal surveys at Lost Nation State Game Area and Middleville State Game Area. 5) Complete final report for Barry State Game Area. 6) Create digital layer of 1938 imagery for all state game area lands accessible for use by DNR personnel through the digital data library.

April to September: 1) Hire and train seasonal staff as needed to assist with IFMAP Stage 1 inventories of state game areas. 2) Conduct IFMAP Stage 1 inventories on state game areas. 3) Conduct natural

features inventories of Flat River State Game Area with a focus on natural communities and Lost Nation State Game Area and Middleville State Game Area with a focus on rare animals. 4) Prepare and submit annual progress report.

Deliverables, Products, and Annual Milestones:

- 1) All ownership boundaries of state game areas receiving IFMAP inventory will be delineated and entered into IFMAP, where they will be available to DNR staff (October through March).
- 2) All vegetations stands of state game areas receiving IFMAP inventory will be delineated and classified during the IFMAP Stage 1 preinventory process. These stand delineations will be available to DNR staff upon completion of the preinventory of each compartment within a state game area (October through March).
- 3) A digital layer of 1938 imagery for all State Game Area lands will be created and made accessible for use by DNR personnel through the digital data library (October through March).
- 4) Final ground-truthed and adjusted shapefiles of all stands, along with the associated data on wildlife habitat variables, will be available to DNR staff through IFMAP upon completion of Stage 1 inventory of each compartment within a state game area (April through September).
- 5) All EOs at Barry State Game Area will be available to DNR staff through IFMAP and Biotics (March). In addition, the data from Biotics will also be available to other conservation organizations, academics, and private industry groups (March).
- 6) A final report for Barry State Game Area that describes its natural features, their conservation significance, and the associated management recommendations will be produced (March).
- 7) A status report summarizing the work accomplished during the current field season on both the IFMAP and natural features inventories will be produced (September).

Location: This project will focus on state lands administered by the Wildlife Division (e.g., State Game Areas, State Wildlife Areas and State Recreation Areas). The IFMAP Stage 1 inventories will be conducted on state lands identified by the Wildlife Division in consultation with MNFI project staff. This project may include attending professional conferences and trainings in Michigan or other states to gain new information and report on results.

Reporting:

1. Quarterly updates to sponsor: format to be decided with WLD Sponsor.
2. Annual progress report: to be submitted by September 30 to WLD Sponsor and MNFI Contact in an electronic format using a designated template.
3. Final report: A final report of the natural features inventory of Barry State Game Area will be submitted by March 31, 2014. The format will follow that of the previously submitted state game area reports and will contain management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through this project will contain the DNR logo and specifically acknowledge the Wildlife Division’s participation and support.

Any reports or products produced through this project will contain the following acknowledgement as appropriate: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name(s)*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY\$225,000

	Cost Category	Cost
	Personnel	\$227,534
	Travel	\$30,490
	Supplies	\$14,605
	Indirect Cost (Rate: 26%)	\$70,885
	Budget Total	\$343,514
	- Waived Indirect	-\$70,885
	Total Project Amount:	\$272,629

Contract Type/Payments:

This is a fixed-price quarterly invoiced project.

Title (3):	Developing Conservation Opportunity Areas for the Wildlife Action Plan		
Principal Investigator(s):	Joshua Cohen and Dave Cuthrell		
Sponsor:	Amy Derosier and Mike Donovan		
Project Beginning Date:	1 October 2013	Project End Date:	30 September 2014
Budget Request for Each Fiscal Year of Project:	\$75,000		
Statement of Needs:			
<p>The goal of this multi-year project is to contribute to the ongoing development of conservation opportunity areas (COAs) for the Wildlife Action Plan. Identifying COAs allows resource managers and conservation planners to focus finite resources on priority landscape, increase the likelihood of long-term success of conservation efforts, and promote cooperative efforts across land ownership boundaries. During the initial year of the project, the development of COAs will be based on existing data for a set of umbrella priority species and associated natural communities. In subsequent years, the network of COAs will be evaluated and modified following species distribution modeling for those priority species for which available data is limited.</p> <p>Michigan Natural Features Inventory has over 25 years of experience conducting natural features inventories and employs staff with expertise in identifying and documenting high-quality natural communities and terrestrial and aquatic rare species. In addition, MNFI staff has established strong working relationships with many of the state land managers through collaborations on various projects, ecological workshops and day-to-day consultations. Consequently, MNFI is in an excellent position to help develop potential conservation opportunity areas.</p>			
Objectives:			
<ul style="list-style-type: none"> 7) To develop COAs based on available element occurrence data. COAs will be developed by finding the union of high-quality species and natural community element occurrences. 8) To review and update priority (umbrella and beneficiary) species element occurrence ranks 9) To review and update natural community element occurrence ranks for those natural communities tied to areas with priority species with high viability. 10) To conduct surveys for species and natural communities at historic sites and sites that cannot be evaluated remotely to update element occurrence ranks. 11) To provide information about each COA describing species occurrences and viability, natural community occurrences, and relationship of the COA to potential Biodiversity Stewardship Areas (BSAs). 			
Expected Benefits:			
<p>The identification of Conservation Opportunity Areas will facilitate the implementation of large scale and efficient conservation actions that will benefit the maximum number of species of greatest conservation need.</p> <p>This project will help implement the Wildlife Action Plan and address the following GPS objectives and Strategy</p>			

Project Implements:

1.2 Objective: Address priority population management needs for non-game wildlife.

Strategy 1.2.1: Revise the Wildlife Action Plan

Strategy 1.2.5: Conduct research and monitoring to support biodiversity conservation

Strategy 1.2.6: Work with partners to promote and improve management of non-game wildlife populations.

2.1 Objective: Develop coordinated statewide and regional approaches to managing habitat.

Strategy 2.1.4: Address priority invasive species management needs.

Strategy 2.1.5: Conduct habitat research to inform habitat management decisions.

3.1 Objective: Enhance and coordinate how technical support is provided to land use planners.

Strategy 3.1.2: Work with partners to develop or implement land use planning tools that help facilitate wildlife and habitat information into land use decisions.

Work Plan/Approach:

- 8) Review and update priority (umbrella and beneficiary) species element occurrence ranks in MNFI's Biotics database. EO ranks will be completed for all element occurrences for approximately 50-70 species.
- 9) Review and update natural community element occurrence ranks in MNFI's Biotics database for those natural communities tied to areas with priority species with high viability.
- 10) Conduct surveys for species and natural communities at historic sites and sites that cannot be ranked remotely to evaluate element occurrence ranks. These surveys will occur only at sites where there is a high likelihood for conservation. The conservation ownership data compiled during the potential Biodiversity Stewardship Areas (BSAs) analyses will be used as a major decision tool for selecting survey locations.
- 11) Develop COAs based on available element occurrence data. COAs will be developed by finding the union of high-quality species and natural community element occurrences. COA boundaries will be evaluated and refined depending on how they relate to existing BSA boundaries.
- 12) Provide information about each COA describing species occurrences and viability, natural community occurrences, and relationship of the COA to potential Biodiversity Stewardship Areas.

Timeline/Project Work Period:

October to March: 1) Review and update priority (umbrella and beneficiary) species element occurrence ranks. 2) Review and update natural community element occurrence ranks for those natural communities tied to areas with priority species with high viability. 3) Begin development of COAs based on available element occurrence data.

April to September: 1) Conduct surveys for species and natural communities at historic sites and sites that cannot be ranked remotely to evaluate element occurrence ranks. 2) Continue development of initial network of COAs based on existing data for a set of umbrella priority species and associated natural communities 3) Begin updating element occurrence ranks for species and natural communities surveyed during the field season of 2014 in MNFI's Biotics database (some element occurrence data may need to be processed during the 2015 fiscal year if the surveys are conducted in the late field season).

October 2014 to September 2015: 1) Complete updating element occurrence ranks for occurrences surveyed in late field season of 2014. 2) Continue development and refinement of initial network of COAs based on species distribution models for those priority species for which available data is limited.

Deliverables, Products, and Annual Milestones:

- 8) Quarterly reports will detail the number of element occurrence updates completed and the number of element occurrence surveys completed.
- 9) A shapefile of the initial network of COAs will be produced and attributed with information about each COA including species occurrences and viability, natural community occurrences, and relationship of the COA to potential Biodiversity Stewardship Areas.
- 10) A brief annual report will be provided that summarizes the methodology and results and presents the network of potential COAs.

Location: The majority of the work for this project will be based in Lansing. Field surveys to evaluate element occurrence ranks may occur throughout the state on public lands and lands managed by conservancies that have the potential for being incorporated into potential COAs.

Reporting:

- 1. Quarterly updates to sponsor: format to be decided with WLD Sponsor.
- 2. Annual progress report: to be submitted by September 30 to WLD Sponsor and MNFI Contact in an electronic format using a designated template.

Acknowledgement of Participation:

Any reports, products, or presentations produced through this project will contain the DNR logo and specifically acknowledge the Wildlife Division’s participation and support.

Any reports or products produced through this project will contain the following acknowledgement as appropriate: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name(s)*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY \$75,000

	Cost Category	Cost
	Personnel	\$75,000
	Travel	\$5,308
	Supplies	\$359
	Indirect Cost (Rate: 26%)	\$19,500
	Budget Total	\$94,500
	- Waived Indirect	-\$19,500
	Total Project Amount:	\$75,000

Contract Type/Payments:

This is a fixed-price quarterly invoiced project.

Title (4):	Assessment of SGCN Animal Conservation Status Ranks To Aid Delisting		
Principal Investigator(s):	David Cuthrell, Peter Badra		
Sponsor:	Amy Derosier		
Project Beginning Date:	1 October 2013	Project End Date:	30 September 2014
Budget Request for Each Fiscal Year of Project:		\$52,000 for FY 2014	

Statement of Needs:

NatureServe and its member programs use a suite of factors to assess the extinction or extirpation (regional extinction) risk of plants, animals, and ecosystems. By researching and recording information on a set of conservation status factors, biologists can assign a conservation status rank to these elements at both global (G-rank) and regional scales (S-rank). The current protocol for assigning a conservation status rank is based on scoring an element against ten conservation status factors, which are grouped into three categories: rarity (six factors), trends (two factors), and threats (two factors). The conservation status factors that comprise each category help guide the consistent and rigorous recording of information to facilitate the assignment of a conservation status.

It has been over a decade since any of the animal groups in Michigan have been thoroughly and systematically evaluated in terms of their conservation status. In fact, some of the animals that were listed in the Wildlife Action Plan made their way onto the SGCN list because they did not even have status ranks, or their ranks were outdated. Over the last few years MNFI has acquired new information on the distribution and status of many animal species by related SWG funding. Both newly discovered species for the state have been located as well as many new sites were documented through dedicated, special surveys in appropriate habitat.

In addition, the S-ranks will be an extremely valuable tool used by all of the technical committees during the next T & E list review. We believe some of the SCGN species would be delisted if a bit of dedicated, systematic surveys were conducted in Michigan to further understand their full distribution and conservation status. For example, some of the rare land snails and some of the more specialized, and secretive insects are likely much more common than currently documented due to their specialized habits and ephemeral activity patterns. With some dedicated surveys we might be able to prove this.

Through this project MDNR WLD will have some consistent, documented, rationale for species listed as Species of Greatest Conservation Need (SCGN).

Objectives:

- 1) All 404 SGCN animals (for which there is sufficient information) will be run through the NatureServe calculator for consistent and accurate assessments of conservation status ranks.
- 2) MNFI will provide the WLD a list of species for which targeted surveys could have the potential to occur more frequently than documented, e.g., land snails, pondmussel, pea clams, and selected insects.
- 3) Provide the WLD a set of recommendations in terms of how often the lists should be reviewed by animal groups/guilds (e.g., fish, amphibians, raptors, neotropical migrants).
- 4) In consultation with WLD we will begin developing species-specific criteria for removal from the SGCN list.

Expected Benefits:

The newly updated S-ranks will be extremely useful for a number of reasons. With over 400 animals listed as SGCN, conservation decisions will need to be made on protecting a subset of the most critically imperiled species. The S-ranks will also be extremely valuable to the technical committees during the next T & E list reviews. And finally the S-ranks can point to success stories by looking at those species that may have made progress during the first decade of SWG funding, and establishing criteria for species removal from the SGCN and in some cases even the state endangered species list.

Work Plan/Approach:

MNFI will work through all SGCN animals and review/revise their associated conservation status rank (S-rank and G-rank where we have that responsibility). This new rank will be available on our webpage via our Rare Species Explorer as well as on our lists of rare elements. This list will be readily available to our conservation partners, the general public, and the rare animal technical committees to be used during the next session of the state list review.

For the systematic survey recommendations portion of the project, we will identify those species that we feel we can quickly add information to their distribution and status within the state. One such group where we feel this can happen is within the rare land snails and a second group is within the terrestrial insects. We will review all known occurrences and determine appropriate new places to survey for the elements and provide specific survey recommendations in terms of survey type, survey timing, appropriate weather conditions, and any other special instructions for increasing the likelihood of locating the animal. This information will be provided in the final report and summarized on the rare species explorer portion of MNFI webpage.

Timeline/Project Work Period:

Work will begin on October 1, 2012 and end on March, 30 2015 with periodic updates via quarterly reports being provided to the WLD sponsor.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

1. A detailed list of the SGCN animals with pre-project and post-project conservation ranks will be submitted, along with the associated criteria and standards by species. All this information will be provided to WLD directly from the excel calculator developed by NatureServe.
2. We will also do a minimum of one brown bag highlighting the changes of the S- and G-ranks as part of this project.
3. A brief report highlighting the results of the project will be provided each year.

During year one will provide conservation ranks on 1/2 of the animals. FY2012 – 202 animals ranked, FY2013 – 202 animals ranked. During years 2 and 3 of the project, in consultation with WLD, if applicable we will begin developing recommendations for removal of species from the SGCN list. A final report detailing survey results will be produced during year three of the project.

Location: The work will be conducted at the MNFI offices located in the Mason Building, Lansing, MI, and on the campus of Michigan State University.

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – can be in what ever format makes sense for the project but must also include a short (2-5 page) summary in the format of a scientific journal. If the project is a research project it must also make management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY 2014

	Cost Category	Cost
	Personnel	\$ 50,005
	Travel	\$ 0
	Supplies	\$ 1,995
	Indirect Cost (Rate: 26%)	\$ 13,520
	Budget Total	\$ 65,520
	- Waived Indirect	\$ 13,520
	Total Project Amount:	\$ 52,000

Contract Type/Payments:

This is a fixed-price quarterly invoiced project.

Title (5):	DNR-WD Best Control Practices 2014		
Principal Investigator(s):	Phyllis Higman		
Sponsor:	Sue Tangora		
Project Beginning Date:	October 1, 2013	Project End Date:	September 30, 2014
Budget Request for Each Fiscal Year of Project:		\$35,000	
Statement of Needs:			
<p>The Michigan Wildlife Action Plan (WAP) identifies invasive species as one of the highest priority threats to wildlife and landscape features in the State (MDNR 2005). A Framework for Action to address impacts from invasive plants was developed and approved in 2009 and MNFI has been working with the DNR-WD and many partners to systematically address its goals and objectives. We have established a framework that focuses on detecting the highest threat species in new regions of the state and prioritizing efforts in other regions to address important sites where success is likely.</p> <p>A key ingredient for implementing the Framework is the establishment of current Best Control Practices for priority species, which provide guidance for treatment of infestations. We have compiled Best Control Practices for eight species that include general background information on each species and detailed, current information on alternative control methods and the advantages and disadvantages of each. These have been very useful to WD staff and partners and Best Control Practices are needed for additional priority species.</p>			
Objectives:			
<ol style="list-style-type: none"> 1. Identify six priority species with project sponsor to develop Best Control Practice summaries for. 2. Review literature and consult field practitioners and other relevant parties regarding control practices. 3. Draft Best Control Practice summaries using previously established format. 4. Submit drafts to DNR-WD for review. 5. Finalize and submit Best Control Practice summaries for six species to DNR-WD. 			
Expected Benefits:			
<p>Systematic implementation of the goals and objectives set forth in “Meeting the Challenge of Invasive Plants: A Framework for Action” will advance the DNR-WD’s effort to address impacts from invasive plants across multiple ownerships cost-effectively. It will:</p> <ul style="list-style-type: none"> ▪ reduce the introduction and spread of invasive plants ▪ expand early detection and treatment of priority invaders ▪ enhance featured species mgmt and other WD management goals be reducing invasive species impacts, where appropriate and feasible ▪ coordinate statewide invasive species data collection ▪ increase the ability of staff to implement site and landscape level strategies ▪ leverage funding for additional invasive species work 			
Work Plan/Approach:			
<p>The principle investigator will meet with the project sponsor in October 2013 to identify six priority species. Tasks and timeline for completion will be developed and assigned to MNFI project staff. The PI will work closely with the project staff and project sponsor and to resolve any issues or concerns that arise</p>			

and ensure that assigned tasks are within budget and are satisfactorily completed.

Timeline/Project Work Period:

Work will begin October 1, 2013 to be completed by September 30, 2014.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

Monthly meetings will be held with the project sponsor to review progress on each Best Control Practice Summary.

Deliverables:

- Best Control Practice summaries for six priority invasive plant species.

Location: Statewide

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – can be in what ever format makes sense for the project but must also include a short (2-5 page) summary in the format of a scientific journal. If the project is a research project it must also make management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY 2012

	Cost Category	Cost
	Personnel	33,980
	Travel	745
	Supplies	275
	Indirect Cost (Rate: 26%)	9,100
	Budget Total	44,100
	- Waived Indirect	9,100

	Total Project Amount:	35,000
Contract Type/Payments:		
This is a fixed-price quarterly invoiced project.		

Title (6):	Oak Savanna, Pine Barrens, and Jack Pine Forest Restoration in Michigan and Ohio for Species of Greatest Conservation Need		
Principal Investigator:	Brad Slaughter		
Sponsor:	Mark Sargent		
Project Beginning Date:	1 October 2013	Project End Date:	30 September 2014
Budget Request for Each Fiscal Year of Project:	\$50,000 for FY14		

Statement of Needs:

Oak savanna, pine barrens, and jack pine forest are considered conservation priorities due to their rarity, biodiversity value and their dependency on private land management. Approximately 90% of Michigan's oak savannas and barrens have been converted to forest, agriculture or urban development (MI-WAP p. 29). Only a few hundred acres of high quality savanna and barrens habitat remain across both States. Historically, wildfire maintained savannas, barrens and dense stands of jack pine. As naturally occurring wildfires have been suppressed, these habitats have converted to mature closed canopy forest. As a result, many species that depend on these relatively open fire-dependent communities have declined. Combined, oak savanna, pine barrens, and jack pine forest are inhabited by the federally endangered Kirtland's warbler (*Dendroica kirtlandii*) and Karner blue butterfly (*Lycaeides melissa samuelis*), in addition to the federal candidate eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*) (MI WAP p.SLP-60). These habitats also harbor 20 state endangered or threatened species and 97 species of greatest conservation need (SGCN).

Michigan's Wildlife Action Plan (WAP) identifies jack pine forest, pine barrens and oak savanna as critically important habitats for at-risk species (MI-WAP p. SLP-60, NLP-61, SLP-29). Seven globally rare (G3 or rarer) species are associated with these three communities (Appendix B). For these globally rare species, 54% of occurrences are found on private land, despite the fact that private lands have largely been neglected in targeted surveys. The most imperiled of these species is the federally endangered Kirtland's warbler. This species' nesting habitat is concentrated in only a few counties in Michigan.

The proposed conservation actions of this proposal constitute a substantial effort to improve the status of the Kirtland's warbler, Karner blue butterfly and 118 other rare species and SGCN in Ohio and Michigan. The status of many of these species is uncertain, and they are listed because their jack pine, oak savanna or pine barren habitats are rare and degraded. Thus, in addition to implementing specific conservation actions, surveys and monitoring associated with the grant will provide much needed data to better define and improve the status of these species. This proposed work is driven by two primary conservation strategies:

- **Conservation of areas facing serious threats/best management practices** through exotic/invasive species control, prescribed fire, setting back succession, and maintenance and rehabilitation of natural corridors
- **Assist private landowners** through protection and conservation of unique habitats and communities and implementation of the landowner incentive program to manage and monitor natural features

Objectives:

Work will be driven by three main objectives:

- (1) Restore or enhance at least **600 acres** of oak savanna for the federally endangered Karner blue

butterfly, eastern massasauga rattlesnake, wild turkey, and a diverse array of SGCN. Work will be conducted on at least 10 sites currently occupied by Karner blue butterfly and 5 sites that support suitable habitat but do not currently support Karner blue butterfly.

- (2) Restore or enhance at least **400 acres** of pine barrens and jack pine forests for the federally endangered Kirtland's warbler, sharp-tailed grouse, wild turkey and a diverse array of SGCN. Work will be conducted on at least 10 sites in northern Michigan.
- (3) For each of the 25 sites identified in the first two objectives, develop a conservation plan that identifies potential threats to savannas, pine barrens, or jack pine forests. The purpose of these plans will be to recommend conservation actions that abate, mitigate, or eliminate threats and improve the long-term sustainability of target animals and plant communities.

MNFI will work to meet these objectives through the following activities:

- (1) Assistance with the development and refinement of restoration and management strategies as requested.
- (2) Placement and monitoring of photo points at key project sites to monitor coarse changes in vegetative structure and composition.
- (3) Participation in the annual Kirtland's warbler census.
- (4) Monitoring of Karner blue butterfly and SGCN populations through the use of presence/absence surveys, counts, or transect surveys.
- (5) Surveys for targeted SGCN at sites where the species are not known to be present.
- (6) Attendance at relevant meetings (e.g., Karner Blue Working Group).

Expected Benefits:

By completing the objectives of this grant, progress will be made towards the overall goal of Michigan's WAP to conserve and restore SGCN. Surveys and monitoring activities identified in this workplan will inform and assess conservation actions that will benefit over 100 rare species and SGCN found in oak savanna, pine barrens, and jack pine forest. By restoring 600 acres of occupied and potential habitat for Karner blue butterfly and eastern massasauga rattlesnake, we will benefit these species over the short term by improving habitat quality at several sites in the cores of those species' ranges. This will result in the long-term benefit of improved population viability at these sites, the prevention of imminent extirpation of these species at one or more sites, complementation of the eastern massasauga rattlesnake CCAA, and prevention of federal listing for eastern massasauga rattlesnake. Restoring 400 acres of habitat for other species such as the Kirtland's warbler will result in the short-term benefit of improved breeding habitat quality in the stronghold of its range. Over the long term, Kirtland's warbler will benefit through improved population viability. Similar short term and long-term benefits are expected for the other species of greatest conservation need associated with oak savannas and pine barrens.

Work Plan/Approach:

FY14 work will begin on October 1, 2013 and end on September 30, 2014.

Oct – Dec 2013: Process data collected in FY13. Refine habitat monitoring plans.

Jan – Mar 2014: Process data collected in FY13. Refine habitat monitoring plans. Attend annual Karner

Blue Recovery Working Group Meeting.

Apr – June 2014: Survey Karner blue butterfly, Kirtland’s warbler, and SGCN through the use of presence/absence surveys, counts, or transect surveys. Survey for targeted SGCN at historical sites and/or sites where the species are not known to be present.

July – Sep 2014: Implement habitat monitoring strategy. Take photographs at photo points established in FY12 and FY13. Survey Karner blue butterfly and SGCN through the use of presence/absence surveys, counts, or transect surveys. Survey for targeted SGCN at historical sites and/or sites where the species are not known to be present. Compile data for final report.

Timeline/Project Work Period:

FY14 work will begin on October 1, 2013 and end on September 30, 2014 with periodic updates being provided to the WLD sponsor.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

Deliverables will be driven by the following targets:

- (1) Assistance with the development and refinement of restoration and management strategies as requested.
- (2) Placement and monitoring of photo points at key project sites to monitor coarse changes in vegetative structure and composition.
- (3) Participation in the annual Kirtland’s warbler census.
- (4) Monitoring of Karner blue butterfly and SGCN populations through the use of presence/absence surveys, counts, or transect surveys.
- (5) Surveys for targeted SGCN at sites where the species are not known to be present.
- (6) Attendance at relevant meetings (e.g., Karner Blue Working Group).

Habitat and species monitoring data will be compiled into a final report at the end of the project that documents progress towards meeting management goals. Photographs, habitat and species data, and field notes will be compiled and made available to project partners.

Location: Lower Michigan

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – the final report will summarize accomplishments over the course of the three-year project. Monitoring data, tables, and photographs will be stored in a central location that can be accessed by WLD Lansing and field staff.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD's participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: "(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: FY 2012

	Cost Category	Cost
	Personnel	\$ 40,956
	Travel	\$ 7,429
	Supplies	\$ 1,615
	Indirect Cost (Rate: 52%)	\$ 26,000
	Budget Total	\$ 76,000
	Waived Indirect	-\$ 26,000
	Total Project Amount:	\$ 50,000

Contract Type/Payments:

This is a fixed-price quarterly invoiced project.

Title (7):	Developing an Eastern Massasauga Conservation Plan in Michigan		
Principal Investigator(s):	Yu Man Lee		
Sponsor:	Dan Kennedy		
Project Beginning Date:	1 October 2013	Project End Date:	30 September 2014
Budget Request for Each Fiscal Year of Project:		\$22,000 for FY 2014	
<p>Statement of Needs:</p> <p>The Eastern Massasauga is a federal candidate species, as well as a species of special concern and a Species of Greatest Conservation Need (SGCN) in Michigan. The species faces a number of threats and continues to decline in many states, including Michigan. Michigan is considered to be the last stronghold for this species. Thus, the long-term viability and persistence of this species in Michigan has important implications for conservation of this species across its range.</p> <p>The Michigan DNR is interested in maintaining Eastern Massasaugas in Michigan. Developing an Eastern Massasauga conservation plan for the state that identifies priority populations and management actions needed to maintain those populations would greatly inform and facilitate efforts to sustain this species in Michigan. Eastern Massasaugas have been documented from over 200 sites or element occurrences (EOs) in Michigan. However, some sites or occurrences may not be viable or may be less viable than other sites/occurrences. Additionally, some sites or occurrences may actually comprise or represent the same population. Available resources for conservation and management efforts also are limited. Identifying priority populations and management needs at the statewide level would help focus resources and help ensure that a core set of viable massasauga populations are maintained and protected to sustain the species in Michigan.</p> <p>We propose to assist the MDNR's efforts to develop an Eastern Massasauga Conservation Plan for Michigan by identifying and delineating extant massasauga populations in Michigan and assessing the condition and/or viability of these populations. If additional funding for this project becomes available in the future, we also propose to develop a habitat or ecological niche model for the Eastern Massasauga in Michigan, identify priority or "core" massasauga populations to manage and conserve to sustain the species in perpetuity in the state, identify management needed to protect and maintain priority or "core" populations in the state, and/or develop a management plan for each "core" population.</p>			
<p>Objectives:</p> <ol style="list-style-type: none"> 1) Identify and delineate known extant massasauga populations in Michigan. 2) For delineated populations with sufficient information, assess the condition or estimated viability of the populations. For remaining populations, develop and apply criteria based on expert opinion to assess condition and/or estimate viability. 			
<p>Expected Benefits:</p> <p>This project will provide enhanced information on the status and distribution of Eastern Massasauga populations in Michigan, which will help inform and guide management and conservation efforts for this species including the development of an Eastern Massasauga Conservation Plan for Michigan. This</p>			

project also will help identify massasauga populations in Michigan which may be priority sites for conservation and management efforts to maintain the species in the state. These may include sites that are in better condition and more viable or potentially more viable, and/or sites that may particularly benefit from management or increased management. This information will help the MDNR and its partners prioritize and focus conservation and management efforts to sustain the Eastern Massasauga in Michigan in perpetuity and better determine and secure resources needed to accomplish this.

Work Plan/Approach:

1) *Identify and delineate known extant massasauga populations in Michigan.*

We will examine known massasauga EOs in Michigan's Natural Heritage Database, air photos, topo maps, inferred extent and/or potential habitat identified by an ecological niche model for the massasauga (if available). We will work with the WLD project sponsor develop and apply criteria, and consult with species and site experts to identify and delineate the extent and potential boundaries of known extant massasauga populations in Michigan.

2) *Assess condition or estimated viability of delineated massasauga populations.*

We will work with the project sponsor and other species and/or site experts to develop criteria, utilize existing EO information and other available information, identify threats, and/or utilize a massasauga population viability analysis or demographic model developed by Lincoln Park Zoo and U.S. Fish and Wildlife Service to assess and compare the condition or potential/relative viability of delineated massasauga populations in Michigan. For sites with sufficient information, a population viability model, such as the one developed by Lincoln Park Zoo, will be used to assess condition or viability, if possible. If this is not feasible and/or for sites with insufficient information, we will work with the project sponsor and consult with species experts to develop and apply criteria based on expert opinion to assess the condition or viability of the populations. We will conduct two weeks of field visits to some populations as needed to identify and assess habitat condition and/or threats to the population to obtain additional information needed to assess population condition or estimated viability.

Timeline/Project Work Period:

Work will begin on October 1, 2013 and end on September 30, 2014 with periodic updates via quarterly reports being provided to the WLD sponsor.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

1. A GIS-based map/shapefile of delineated extant massasauga populations in Michigan.
2. A brief final report summarizing project activities and results, including a list/table of extant massasauga populations in Michigan and the condition or estimated viability of extant populations that were assessed, and a brief description or explanation of each viability ranking.

Location:

The work will be conducted at the MNFI offices located in the Mason Building, Lansing, MI, on the campus of Michigan State University and at various sites throughout the state.

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Final report – A brief final report summarizing project activities and results (see above) will be provided to the WLD at the end of the project.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY 2014

	Cost Category	Cost
	Personnel	\$ 19,600
	Travel	\$ 2,000
	Supplies	\$ 400
	Indirect Cost (Rate: 26%)	\$ 5,720
	Budget Total	\$ 27,720
	- Waived Indirect	\$ 5,720
	Total Project Amount:	\$ 22,000

Contract Type/Payments:

This is a fixed-price quarterly invoiced project.

Title (8):	Diverse Grassland Complexes for Species of Greatest Conservation Need		
Principal Investigator:	Brad Slaughter		
Sponsor:	Mark Sargent		
Project Beginning Date:	1 October 2013	Project End Date:	30 September 2014
Budget Request for Each Fiscal Year of Project:	\$50,000 for FY14		

Statement of Needs:

General Land Office surveys conducted in Michigan from 1816 to 1856 estimate that prairies and savannas occupied 7% of the state, over 10 million acres. Since the settlement of southern Michigan, it is estimated that over 99 percent of these original native grasslands have been lost. Prairies, savannas and created grasslands provide critical habitat for a variety of SGCN, including:

- Birds, such as the grasshopper sparrow (state special concern), Henslow’s sparrow (state endangered), northern harrier (state special concern), short-eared owl (state endangered), dickcissel (state special concern), and western meadowlark (state special concern);
- Insects, such as Karner blue butterfly (federally endangered), persius duskywing (state threatened), Henry’s elfin (state special concern), and frosted elfin (state threatened);
- Amphibians and reptiles, such as eastern massasauga (state special concern and federal candidate) and spotted turtle (state threatened); and
- Mammals, such as the prairie vole (state endangered).

Grassland birds are among the most imperiled birds in North America; 48% of species are of conservation concern and 55% are showing decline. Major threats to grassland birds include habitat loss and fragmentation due to agriculture and energy demand for biofuels and global warming. Conservation practices aimed at reversing this decline and stabilizing populations of grassland birds include restoring and maintaining grasslands, agricultural management that is compatible with birds, restoration of wetlands adjacent to grasslands, and managing public lands to benefit grassland birds.

The proposed conservation actions of this proposal constitute a substantial effort to improve prairie, savanna and grassland habitats to benefit Karner blue butterflies, Henslow’s sparrow, grasshopper sparrow, northern harrier and 111 other SGCN in Michigan. These species are rare or of conservation concern because their prairie, savanna and grassland habitats are rare and degraded. The proposed work directly implements conservation strategies identified in the Michigan WAP, MDNR Wildlife Division Guiding Principles and Strategies, MDNR Wildlife Featured Species Approach and the Michigan Pheasant Initiative.

Objectives:

Work will be driven by three main objectives:

- (4) Restore or enhance at least 400 acres of prairie, savanna and low quality grasslands for the federally endangered Karner blue butterfly, Henslow’s sparrow, grasshopper sparrow, Northern harrier, and a diverse array of grassland SGCN. Suitable habitat will be improved on at least 5 sites in Michigan known to harbor Karner blue butterfly. In addition, 5 sites that offer high potential for Karner blue butterfly, but do not currently support populations, will be restored.

- (5) Plant at least 1,350 acres of native grasses and forbs for grassland birds such as Henslow's sparrow, grasshopper sparrow and northern harrier and a diverse array of SGCN. Suitable habitat for grassland birds will be improved on at least 55 sites in southern Michigan. At least 10 sites will be adjacent to or within occupied habitats for our priority SGCN.
- (6) Conservation plans will be developed, where necessary, for the 65 sites identified in the first two objectives, to identify the potential threats to each site. In cases where a management plan already exists, it will be reviewed and updated as needed to address grassland threats and management. It is expected that at least 35 sites will require management plans either written or revised. The purpose of these management plans will be to recommend conservation actions that abate, mitigate, or eliminate threats and improve the long-term sustainability of Karner blue butterfly, Henslow's and grasshopper sparrows, northern harrier, and a diverse array of grassland SGCN and their associated habitats.

MNFI will work to meet these objectives through the following activities:

- (7) Assistance with the development and refinement of restoration and management strategies as requested.
- (8) Placement and monitoring of photo points at key project sites to monitor coarse changes in vegetative structure and composition.
- (9) Floristic quality assessments and qualitative abundance assessments at key project sites to monitor finer-scale changes in vegetative structure and composition.
- (10) Monitoring of Karner blue butterfly, grassland birds, and other SGCN through the use of presence/absence surveys, counts, transect surveys, or other sampling techniques.
- (11) Survey for targeted SGCN at sites where the species are not known to be present.
- (12) Attendance at relevant meetings (e.g., Karner Blue Working Group).

Expected Benefits:

By completing the objectives of this grant, progress will be made towards the overall goal of Michigan's WAP to conserve and restore SGCN. Surveys and monitoring activities identified in this workplan will inform and assess conservation actions that will benefit over 100 rare species and SGCN found in grassland ecosystems. By restoring 400 acres of occupied and potential habitat for Karner blue butterfly and other SGCN, we will benefit these species over the short term by improving habitat quality at several sites in the cores of those species' ranges. This may result in the long-term benefit of improved population viability at these sites, and the prevention of imminent extirpation of these species at one or more sites. Planting of 1,350 acres of native grasses and forbs for other species such as the Henslow's sparrow, grasshopper sparrow, and northern harrier should improve the long-term sustainability of birds and other SGCN that utilize grassland habitats in southern Michigan.

Work Plan/Approach:

FY13 work will begin on October 1, 2013 and end on September 30, 2014.

Oct – Dec 2013: Assist in the identification and selection of sites. Assist in the development of restoration and management plans for identified sites. Identify monitoring approaches for target sites.

Jan – Mar 2014: Assist in the identification and selection of sites. Assist in the development of

restoration and management plans for identified sites. Identify monitoring approaches for target sites. Attend annual Karner Blue Recovery Working Group Meeting.

Apr – June 2014: Survey Karner blue butterfly, grassland birds, and other SGCN through the use of presence/absence surveys, counts, or transect surveys. Survey for targeted SGCN at historical sites and/or sites where the species are not known to be present. Place photo monitoring points within target sites and collect baseline photos. Conduct floristic quality assessments where appropriate.

July – Sep 2014: Survey Karner blue butterfly, grassland birds, and other SGCN through the use of presence/absence surveys, counts, or distance surveys. Survey for targeted SGCN at historical sites and/or sites where the species are not known to be present. Place photo monitoring points within target sites and collect baseline photos. Conduct floristic quality assessments where appropriate. Compile data for annual performance report.

Timeline/Project Work Period:

FY14 work will begin on October 1, 2013 and end on September 30, 2014 with periodic updates being provided to the WLD sponsor.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

Deliverables will be driven by the following targets:

- (1) Assistance with the development and refinement of restoration and management strategies as requested.
- (2) Placement and monitoring of photo points at key project sites to monitor coarse changes in vegetative structure and composition.
- (3) Floristic quality assessments and qualitative abundance assessments at key project sites to monitor finer-scale changes in vegetative structure and composition.
- (4) Monitoring of Karner blue butterfly, grassland birds, and other SGCN through the use of presence/absence surveys, counts, transect surveys, or other sampling techniques.
- (5) Survey for targeted SGCN at sites where the species are not known to be present.
- (6) Attendance at relevant meetings (e.g., Karner Blue Working Group).

Habitat and species monitoring data will be compiled into a final report at the end of the project that documents progress towards meeting management goals. Photographs, habitat and species data, and field notes will be compiled and made available to project partners.

Location: Lower Michigan

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – the final report will summarize accomplishments over the course of the three-year project. Monitoring data, tables, and photographs will be stored in a central location that can be accessed by WLD Lansing and field staff.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY 2014

	Cost Category	Cost
	Personnel	\$ 43,147
	Travel	\$ 5,315
	Supplies	\$ 1,538
	Indirect Cost (Rate: 52%)	\$ 26,000
	Budget Total	\$ 76,000
	Waived Indirect	-\$ 26,000
	Total Project Amount:	\$ 50,000

Contract Type/Payments:

This is a fixed-price quarterly invoiced project.

Title (9):	IFMAP Stage 1 Inventory of Parks and Recreation Division Lands		
Principal Investigator(s):	Josh Cohen		
Sponsor:	Glenn Palmgren and Ray Fahlsing		
Project Beginning Date:	January 1, 2014	Project End Date:	September 30, 2014
Budget Request for Each Fiscal Year of Project:	\$37,615		

Statement of Needs: Michigan’s diverse terrestrial and aquatic systems provide critical habitat and are key to the conservation, protection, and sustainability of plant and animal species. Maintaining the ecological integrity of natural ecosystems requires long-term active and passive management of ecosystem structure and composition, ecological processes, and human interactions. Mapping ecological features provides resource managers with critical information for informing these management decisions.

Michigan Department of Natural Resources (DNR), Parks and Recreation Division (PRD) is responsible for management of Michigan’s State Parks, Recreation Areas, Boating Access Sites and Harbors. Part of PRD’s mission states that the division will “acquire, protect, and preserve the natural, historic, and cultural features of Michigan’s unique resources...” Within the division, the Stewardship Unit is charged with preserving, protecting, and restoring the natural and cultural features. Preservation and restoration (where necessary) of the natural communities within state parks and recreation areas, along with their constituent plants and animals, is a core part of the mission. PRD is in the process of writing and updating management plans for state parks and recreation areas. In these plans the land is zoned for various levels of protection and use based on the location and type of natural and cultural features on the ground.

MNFI proposes to conduct IFMAP Stage 1 inventories on lands administered by the Parks and Recreation Department. IFMAP Stage 1 inventory involves the delineation and classification of vegetation and conducting interpretation of aerial photographs and field inventories to ground-truth these stand delineations and classifications. The information provided from these inventories in combination with prior work evaluating high-quality natural communities and identifying threatened and endangered species’ habitat is needed for identifying opportunities for ecological restoration and biodiversity protection, and assessing the potential benefits and impacts of future land management, recreation, and development activities on state lands.

Completion of this inventory project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), improve Michigan’s natural community classification (p88), identify areas of high biodiversity (p72), and monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88). Work on this project will contribute to the DNR’s development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86), and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Michigan Natural Features Inventory has over 25 years of experience conducting natural features inventories and employs staff with expertise in identifying and documenting high-quality natural communities and terrestrial and aquatic rare species and in aerial photographic interpretation and stand delineation. In addition, MNFI staff has established strong working relationships with many of the state land managers through collaborations on various projects, ecological workshops and day-to-day

consultations. Consequently, MNFI is in an excellent position to perform inventories and convey information about recognition of natural features, survey methodology, and stewardship needs to DNR field staff.

Objectives:

- 12) To provide the Parks and Recreation Division with critical information for making well-informed decision on the management of state lands.
- 13) To conduct IFMAP Stage 1 inventories on state lands administered by the Parks and Recreation Division to identify and delineate landscape features. These inventories provide the Parks and Recreation Division with critically important information for natural resource planning and management.
- 14) To make the information collected through this inventory processes available through the statewide IFMAP database. This database is widely used by DNR staff for resource assessment and management planning.

Expected Benefits:

Through work on this inventory, DNR staff will have full access to critically important information for making well-informed decisions on planning and management. Completion of the IFMAP Stage 1 inventory will provide accurate ownership boundaries of the lands administered by the Parks and Recreation Division, which will allow future maps made by the DNR and others to more accurately reflect current ownership boundaries. The delineation and classification of vegetation stands within the State Parks and Recreation Areas, along with the tabular data on wildlife habitat variables and vegetation, will provide stewardship ecologists, wildlife planners, and biologists with valuable information for assessing potential habitat-management options and needs.

Work Plan/Approach:

- 13) IFMAP Stage 1 inventory to identify and delineate landscape features will be conducted on state lands administered by the Parks and Recreation Division (i.e., State Parks and Recreation Areas). This process will involve 1) determining management area ownership boundaries, 2) delineating and classifying vegetation stands using desktop GIS software, and 3) conducting field inventories to ground-truth stand delineations and classifications and record data on wildlife habitat variables and vegetation. The management areas chosen for IFMAP Stage 1 inventory will be identified by the State Parks and Recreation Division in consultation with MNFI project staff. In 2014, MNFI staff will focus IFMAP Stage 1 Inventory work in the Waterloo State Recreation Area. MNFI staff will strive to complete Stage 1 inventory for approximately half of the Waterloo State Recreation Area.
- 14) The IFMAP inventory will provide recommendations for ecological restoration and biodiversity stewardship, which will be recorded in the IFMAP GDSE through the Stage 1 comments for Stands and/or the Unique Sites categories of Areas of Interest (AOI) layer.
- 15) A status report summarizing the work accomplished on the IFMAP inventory will be produced.

Timeline/Project Work Period:

January to March: 1) Determine and adjust ownership boundaries of state game areas in preparation for conducting IFMAP Stage 1 pre-inventory. 2) Conduct IFMAP Stage 1 pre-inventory to delineate and

classify vegetation stands on state lands using desktop GIS software.

April to September: 1) Hire and train seasonal staff as needed to assist with IFMAP Stage 1 inventories of state lands. 2) Continue conducting IFMAP Stage 1 inventories on state lands. 3) Prepare and submit annual progress report.

Deliverables, Products, and Annual Milestones:

- 11) All ownership boundaries of State Parks and State Recreation Areas receiving IFMAP inventory will be delineated and entered into IFMAP, where they will be available to DNR staff (January through April).
- 12) All vegetation stands of State Parks and Recreation Areas receiving IFMAP inventory will be delineated and classified during the IFMAP Stage 1 preinventory process. These stand delineations will be available to DNR staff upon completion of the preinventory of each compartment within a State Park or State Recreation Area (January through April).
- 13) Final ground-truthed and adjusted shapefiles of all stands, along with the associated data on wildlife habitat variables and vegetation, will be available to DNR staff through IFMAP upon completion of Stage 1 inventory of each compartment within a State Park or State Recreation Area (April through September).
- 14) A status report summarizing the work accomplished during the current field season for the IFMAP Stage 1 inventory will be produced (September).

Location: This project will focus on state lands administered by the Parks and Recreation Division (e.g., State Parks and State Recreation Areas). The IFMAP Stage 1 inventories will be conducted on state lands identified by the Parks and Recreation Division in consultation with MNFI project staff. In 2014, MNFI staff will focus IFMAP Stage 1 Inventory work in the Waterloo State Recreation Area.

Reporting:

- 1. Quarterly updates to sponsor – format to be decided with PRD Sponsor (email or meeting; December, March, June)
- 2. Annual progress report: to be submitted by September 30 to PRD Sponsor in an electronic format.

Acknowledgement of Participation:

Any reports, products, or presentations produced through this project will contain the DNR logo and specifically acknowledge the Parks and Recreation Division’s participation and support.

Budget: FY \$37,615

	Cost Category	Cost
	Personnel	\$25,927
	Travel	\$4,426

	Supplies	\$993
	Indirect Cost (Rate: 20%)	\$6,269
	Total Project Amount:	\$37,615
Contract Type/Payments:		
This is a fixed-price quarterly invoiced project.		

Title (10):	Western Lake Erie Integrated Ecological Framework		
Principal Investigator(s):	John Paskus		
Sponsor:	Joe Robison		
Project Beginning Date:	October 1, 2013	Project End Date:	September 30, 2013
Budget Request for Each Fiscal Year of Project:	FY14 \$68,565		

Statement of Needs:

MDOT has identified the SE gateway corridor into the Lower Peninsula as critical to transportation and economic development in Michigan. This corridor exists within an ecologically significant area of the state that includes globally imperiled ecosystems, several major river systems, and a productive Lake Erie coastal zone. Over the next several decades, MDOT will be reconstructing the freeways and state highways in this corridor and has recently targeted I-75 in Monroe County for a 20 year, multi-billion dollar full reconstruction.

The corridor is located within the Maumee Lake plain Ecoregion. Over the past 200 years, this area's natural lands and waters have experienced a tremendous amount of stress including wetland loss, habitat degradation, invasive species, sedimentation, altered hydrology, and storm water runoff. Despite these impacts, this Ecoregion still harbors several globally imperiled natural communities including: lake-plain prairie, oak openings, wet mesic flat-woods, and Great Lakes marsh. These imperiled communities provide habitat for a number of threatened and endangered plant and animal species, including the state threatened eastern fox snake, federally threatened prairie white-fringed orchid and the federally endangered Indiana bat. Other potential federally listed species that might benefit from ecologically based transportation planning include the eastern massasauga rattlesnake and the northern long-eared bat.

The coastal marshes in this area support world class freshwater fisheries, including perch and walleye, and some of the most significant stopover habitat for migratory birds in the Great Lakes region particularly for waterfowl. Other environmental concerns identified by our partners include the presence of prime farmland, parks and aesthetic opportunities and climate change effects within the corridor.

Local watershed plans, Western Lake Erie plans and studies, and the International Lake Erie Biodiversity Conservation Strategy (2012) have identified the top priorities as:

- Reduce phosphorus from agricultural run-off via sedimentation control
- Improve base flow and reduce flashiness of rivers and streams
- Control invasive species (phragmites is a particular concern)
- Improve passage for migratory fish
- Increase habitat for a globally significant migratory bird passageway
- Protect and restore globally imperiled natural communities
- Protect and restore priority plant and animal species habitat, particularly the state threatened eastern fox snake and federally threatened prairie-white fringed orchid

In addition, a portion of the Lake Erie shoreline is controlled by a number of conservation agencies and organizations. The Nature Conservancy has numerous conservation interests in this region as does the USFWS with the Detroit River International Wildlife Refuge. The MDNR controls several parks and game areas, and the Michigan Department of Agriculture and Rural Development (MDARD) has strong interest in Western Lake Erie water quality improvements. Recently, the lake has experienced environmental

problems (toxic algae blooms/large dead zones), calling on conservation groups, governments, and citizens to collaboratively develop plans that will improve lake conditions. Contact with these agencies has indicated enthusiasm for partnering with MDOT and SEMCOG on a Regional Ecosystem Framework project for the southern portion of the Maumee Lakeplain Ecoregion.

Objectives:

- Develop an effective partnership between MDOT and key state, federal, and regional resource agencies and conservation organizations with the goal of maximizing environmental outcomes through the transportation planning process associated with I-75 in Monroe County.
- Identify and prioritize regionally significant conservation targets and associated goals, objectives, indicators, strategies, and actions through the development of a robust, collaboratively based Regional Ecological Framework (REF) for the southern portion of Maumee Lakeplain Ecoregion, including its respective watersheds and the Lake Erie coastal zone.
- Geospatially identify specific places on the landscape for targeted restoration and/or protection actions based on the results of the REF.
- Effectively integrate conservation priorities, objectives, actions, and measures identified through this process into the MDOT transportation planning process for I-75 in Monroe County.

Expected Benefits:

There is strong interest in mutually beneficial partnerships that coordinate multiple efforts to improve natural resources protection and restoration in this ecological sensitive area bisected by I-75, US-24, and M-125. The purpose of the REF we are proposing is to identify spatially based priorities for avoidance, minimization and mitigation, resulting in increased regulatory certainty and more effective environmental outcomes in the southern portion of the Maumee Lake plain Ecoregion.

This collaboratively based REF will provide the framework and relationships necessary for implementing landscape scale strategies for effective conservation outcomes. Once implemented, this REF will aid in the long-term restoration, protection and maintenance of the globally significant natural features found in the southern Maumee Lake plain ecoregion while streamlining transportation project development of I-75.

By integrating the financial and timing components of the MDOT's transportation planning process with the decision making processes of key partners in the area, the Partnership will be better able to identify, develop, and capitalize on high priority mitigation and restoration opportunities for future projects. Early collaboration will lead to regulatory agency buy-in and help identify potential funding sources and partnerships for implementation of priority protection, enhancement, and restoration activities in the region.

Finally, the successful completion of this project will establish a protocol for integrating transportation and conservation planning in the state of Michigan that can be applied to other ecoregions where there are significant opportunities to advance transportation, economic, and ecological outcomes.

Work Plan/Approach:

The funds will be used to implement key steps of the Federal Highway Administration's (FHWA) new Integrated Ecological Framework (IEF) for the I-75 corridor that stretches from I-275 to the Ohio border. Specifically, we will develop a robust, collaborative Regional Ecosystem Framework (REF) for the southern Maumee Lake plain Ecoregion, including its respective watersheds and the Lake Erie coastal zone. The REF will be built on a foundation of collaborative decision-making, science, and robust geospatial analysis that

identifies spatially based priorities for avoidance, minimization and mitigation of conservation targets (determined collaboratively), resulting in increased regulatory certainty and more effective environmental outcomes at the regional scale.

To facilitate the development of the REF, the project team will establish a Technical Advisory Committee (TAC) consisting of the following agencies: MDOT, Michigan Department of Natural Resources (MDNR), Michigan Department of Environmental Quality (MDEQ), Michigan Department of Agriculture and Rural Development (MDARD), Michigan Natural Features Inventory (MNFI), Federal Highway Administration (FHWA), National Oceanic and Atmospheric Administration (NOAA), United States Fish and Wildlife Services (USFWS), U.S. Army Corps of Engineers, Southeast Michigan Council of Governments (SEMCOG), Monroe County Planning and the Nature Conservancy. The purpose of the TAC is to build consensus on the development of the REF and the best means of avoidance, minimization, and mitigation of transportation impacts on the region’s most significant natural resources. In recognition of the recent and ongoing conservation activities in the region, a key benefit and outcome of the TAC will be to gather, document, and assess all relevant conservation based efforts that target the southern portion of the Maumee Lake plain ecoregion.

To ensure local stakeholders are engaged in this initiative, SEMCOG will also organize several stakeholder meetings in Monroe County targeting local communities, landowners, and businesses. The purpose of these meetings will be to share information, gather local input, and raise awareness of the effort.

MNFI will take the lead on developing the REF based on our expertise in conservation planning and associated software tools such as NatureServe Vista. This tool allows for landscape level evaluation of an area for assessing impacts and developing strategic mitigation. MNFI also played a key role in the development of the Integrated Ecological Framework for AASHTO and is familiar with all of the nine steps. MNFI also has experience with utilizing the Adaptive Management or Conservation Action Planning (CAP) process. The CAP process contains four key components 1) Defining the project, 2) Developing strategies and measures, 3) Implementation, and 4) Adaptation. For this proposal, we will focus on the first two steps; the remaining two steps will be implemented SEMCOG, MDOT, and key stakeholders in the region including the MDNR. The CAP will assist with the identification of ecological priorities, key indicators, stressors, priority strategies, goals, and objectives. MNFI will monitor information, commitments and decisions made in the CAP process by utilizing the Miradi software tool and summarize the captured information in a final CAP report.

Once the REF is completed, SEMCOG and MDOT will make the information accessible on existing web resources, with plans to provide periodic updates on implementation and monitoring of the REF by TAC partners and other key stakeholders.

Timeline/Project Work Period:

Activity	Start	Finish
Form Technical Advisory Committee	08/15/2013	09/30/2013
Hold Technical Advisory Committee Meetings	08/15/2013	04/15/2015
Develop Draft Regional Ecosystem Framework/CAP	09/01/2013	09/30/2014
Stakeholder meeting #1 (preparation and hold meeting)	09/23/2013	02/10/2014
Stakeholder meeting #2 (preparation and hold meeting)	02/10/2014	06/30/2014
Develop Final Regional Ecosystem Framework/CAP	10/01/2014	08/30/2015
Stakeholder meeting #3 (preparation and hold meeting)	09/24/2014	02/11/2015
Web Site with Data and Final Report	02/01/2015	08/30/2015

Deliverables, Products, and Annual Milestones for MNFI:**FY14**

- First set of TAC meetings are prepared and held
- First and second stakeholder meetings are prepared and held
- Final assessment of conservation related plans in region is completed and shared with partners
- Inventory and assessment of relevant GIS data layers is completed
- Data enhancement of select heritage element occurrences completed (based on TAC input)
- Draft REF and Conservation Action Plan is completed

Location: Lansing and Monroe County

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – Due within 2 months of completion of project.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by MDOT will have the MDOT logo and specifically acknowledge the MDOT’s participation and support.

Any reports or products produced through a project funded by MDOT that was paid in part or in whole by a federal grant obtained by MDOT must contain the following acknowledgement: “(Partial) funding for this project was through the SHRP2 Lead Adopter Incentive Implementation Assistance program in

Budget: FY2014

Cost Category	Cost
Personnel	67,318
Travel	672
Supplies	575
Indirect Cost (Rate: 26%)	17,827
Budget Total	86,392
- Waived Indirect	17,827
Total Project Amount:	68,565

Contract Type/Payments:

This is a fixed-price quarterly invoiced project.

Title (11):	Natural Community Surveys on State Park and Recreation Lands – FY2		
Sponsor(s):	DNR Parks & Recreation Division: Glenn Palmgren and Ray Fahlsing		
Principal Investigator(s):	Josh Cohen		
Project Beginning Date:	1 October 2013	Project End Date:	28 February 2014
Budget Request for Current Year:	FY2 \$16,385 (FY1 \$32,106)		

Statement of Needs:

Michigan’s diverse terrestrial and aquatic systems provide critical habitat and are key to the conservation, protection, and sustainability of plant and animal species. Maintaining the ecological integrity of natural ecosystems requires long-term active and passive management of ecosystem structure and composition, ecological processes, and human interactions.

Michigan Department of Natural Resources (DNR), Parks & Recreation Division (PRD) is responsible for management of Michigan’s State Parks, Recreation Areas, Boating Access Sites and Harbors. Part of PRD’s mission states that the division will “acquire, protect, and preserve the natural, historic, and cultural features of Michigan’s unique resources...” Within the division, the Stewardship Unit is charged with preserving, protecting, and restoring the natural and cultural features. Preservation and restoration (where necessary) of the natural communities within state parks and recreation areas, along with their constituent plants and animals, is a core part of the mission. PRD is in the process of writing and updating management plans for state parks and recreation areas. In these plans the land is zoned for various levels of protection and use based on the location and type of natural and cultural features on the ground. In addition, the Department’s Biodiversity Conservation Planning Process (BCCP) is identifying biodiversity stewardship areas, many of which will include portions of state parks and recreation areas, where the management priority will be for biodiversity conservation. The goal of BCCP is to establish a network of representative natural communities that contribute to functioning ecosystems across the state.

A baseline inventory of natural communities was conducted in all state parks and recreation areas in the late 1990s - early 2000s. However, this initial inventory did not include comprehensive boundary mapping, detailed condition assessments, or threat assessments. To inform the PRD Management Planning process, the DNR BCCP, and the overall protection, preservation, and restoration of natural communities throughout Michigan’s state parks and recreation areas, up-to-date information is needed on the boundaries, condition, landscape context, and current threats to the ecological integrity of natural communities. From 2009 to 2012, Michigan Natural Features Inventory (MNFI) conducted a multi-year survey and assessment on state park and recreation area lands of known natural community element occurrences. During the course of these surveys, ecologists identified additional potential high-quality natural communities in many of the larger parks (i.e., Porcupine Mountains Wilderness and Craig Lake State Parks). In addition, the PRD has recently acquired numerous lands that have yet to be evaluated or fully evaluated for high-quality natural communities (i.e., Lime Island Recreation Area, Menominee River Recreation Area and Rockport State Park).

MNFI proposes to conduct surveys for high-quality natural communities in the following PRD lands: Porcupine Mountains Wilderness State Park, Craig Lake State Park, Lime Island Recreation Area, Menominee River Recreation Area and Rockport State Park. Current state forest land along the Keweenaw Point that will likely be transferred to PRD ownership may potentially be included within the surveys. In addition, MNFI ecologists will work in coordination with PRD staff to select additional PRD lands for survey if time and budget permits.

Surveys will assess the current condition of high-quality natural communities, delineate their boundaries and detail the vegetative structure and composition, landscape and abiotic context, threats, management needs, and restoration opportunities. Results of these surveys will be incorporated into MNFI's database and will be summarized in a brief report to be completed by the end of the project. Information gathered from this survey effort will help the DNR prioritize protection, management, and restoration and facilitate the ongoing management planning and BCCP.

Completion of this multi-year survey project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), improve Michigan's natural community classification (p88), identify areas of high biodiversity (p72), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), and provide more information on what constitutes high-quality representative occurrences of landscape features (p88). Work on this project will contribute to the DNR's development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86), and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Work Plan/Approach:

MNFI will complete the following:

1. Survey for high-quality natural community element occurrences on state park and recreation area lands.
 - a. Prioritization of sites to be surveyed will be determined in consultation with PRD.
 - b. Preparation of GIS maps and GIS data for each of the targeted areas.
 - c. Field surveys will assess classification, condition, size, and landscape context
 - d. Field surveys will include:
 - i. compiling a list of dominant and representative plant species
 - ii. describing site-specific structural attributes and ecological processes
 - iii. measuring representative tree DBH and age where appropriate
 - iv. analyzing soils and hydrology
 - v. noting current and historical anthropogenic disturbances
 - vi. evaluating potential threats (for invasive species, create a list of all invasive species noted in the community and describe the extent and significance of the invasion for each species) – an overall threat “score” or “grade” will be assigned for each site, with scoring criteria that was developed in consultation with PRD
 - vii. ground-truthing aerial photographic interpretation using GPS to facilitate mapping the perimeter of the element occurrence
 - viii. taking digital photos and GPS points at significant locations
 - ix. surveying adjacent lands when possible to assess landscape context – but detailed surveys of non-state-owned portions of a community are not required
 - x. assigning element occurrence ranks
 - xi. noting management needs and restoration opportunities (recommendations of priorities and what to do, but not detail on how to do it)
2. Incorporate survey results into MNFI's database.
3. Compile and provide all survey data listed above and produce a brief annual report summarizing findings, focusing on natural community condition and threats.

Timeline/Project Work Period:

The timeline for the project extends from January 1, 2013 to February 28, 2014.

1. Field preparation- winter and spring 2013 (January 1, 2013 to May 31, 2013) - **Completed**
2. Field surveys- summer 2013 (June 1, 2013 to September 30, 2013) - **Completed**
3. Progress report with list of natural communities visited and their element occurrence rankings- December 31, 2013
4. Final report and incorporate data in to MNFI database for the natural communities documented on PRD lands - February 28, 2014

Expected Benefits and Information Transfer:

Results from these surveys will help inform the PRD Management Planning process, the DNR BCCP, and the overall protection, preservation, and restoration of natural communities throughout Michigan’s state parks and recreation areas. Information gathered from this survey effort will help the DNR prioritize protection, management, and restoration and facilitate the ongoing management planning and BCCP. Completion of this multi-year survey project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), improve Michigan’s natural community classification (p88), identify areas of high biodiversity (p72), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), and provide more information on what constitutes high-quality representative occurrences of landscape features (p88). Work on this project will contribute to the DNR’s development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86), and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Deliverables and Products:

Progress report with list of natural communities visited was due September 30, 2013.

Progress report with list of natural communities visited and their element occurrence rankings due December 31, 2013.

Final report, survey data, and incorporation of data into MNFI database due February 28, 2014

Location:

MNFI scientists will work closely with the DNR PRD staff based in Lansing. Field surveys will be conducted throughout the state.

Reporting:

Brief progress reports will be submitted to Glenn Palmgren and Ray Fahlsing by September 30, 2013 and December 31, 2013. Final report, survey data, and incorporation of data into MNFI database due February 28, 2014.

2014 Budget:		
	Task or Direct Cost Category	<u>Cost FY2014</u>
	Personnel	\$13,654
	Travel	
	Supplies	
	Indirect Cost (Rate: 26%)	\$3,550
	Budget Total	\$17,204
	-*Waived Indirect Difference	-\$820
	Total Project Amount:	\$16,385
Contract Type/Payments:		
This is a fixed-price quarterly invoiced project.		

Title (12):	Ecosystem and Forestland Emergency Contingency Surveys		
Sponsor(s):	DNR FRD, Amy Clark Eagle, DNR FRD, Deb Begalle		
Principal Investigator(s):	Joshua Cohen		
Project Beginning Date:	October 1, 2013	Project End Date:	September 30, 2014
Budget Request for Current Year:	\$4,000		

Statement of Needs:

Michigan’s diverse terrestrial and aquatic systems provide habitat for a spectrum of wildlife. Forested ecosystems cover more than half of Michigan and are key to the conservation, protection, and sustainability of wildlife species. The health of these ecosystems relies on long-term active management and our understanding of the interaction between biotic and abiotic factors as well as ecological processes and human interactions.

The Forest Resources Division (FRD) and Wildlife Division (WD) are jointly responsible for management of the State Forests for long-term forest health, sustainability and myriad forest products and values, ecosystem services including recreation, and wildlife habitat. The Divisions are responsible for assuring that these management activities do not harm threatened and endangered species. Through this project Michigan Natural Features Inventory (MNFI) will conduct emergency surveys of sites where there is an imminent conflict between proposed management or active timber sales and known occurrences of threatened or endangered species or high-quality natural communities. These surveys will occur following a formal request from the Michigan Department of Natural Resources for MNFI assistance. If no survey requests have been made by April 30, 2014, the funds will be utilized by MNFI to conduct natural community surveys within proposed Biodiversity Stewardship Areas or begin development of a natural community abstract (e.g., emergent marsh, submergent marsh, or Great Lakes barrens).

Completion of this project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), provide more information on what constitutes high-quality representative occurrences of landscape features (p88), and monitor species that are highly imperiled (p83). Work on this project will contribute to the development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86) and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Work Plan/Approach:

Following a formal request by the DNR, MNFI will conduct no more than three surveys of state forest compartments where there is a conflict between proposed management or active timber sales and known occurrences of threatened or endangered species or high-quality natural communities. The surveys will be followed by a brief report of findings and recommendations.

If no survey requests have been made by April 30, 2014, the funds will be utilized by MNFI to conduct natural community surveys within proposed Biodiversity Stewardship Areas or begin development of a

natural community abstract (e.g., emergent marsh, submergent marsh, or Great Lakes barrens).

Timeline/Project Work Period:

The timeline for this project extends from October 1, 2013 to September 30, 2014.

Expected Benefits and Information Transfer:

Completion of this project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), provide more information on what constitutes high-quality representative occurrences of landscape features (p88), and monitor species that are highly imperiled (p83). Work on this project will contribute to the development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86) and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Deliverables and Products:

The surveys will be followed by a brief report of findings and recommendations. If no surveys are conducted, MNFI will begin development of a natural community abstract (e.g., emergent marsh, submergent marsh, or Great Lakes barrens).

Location:

Field surveys could potentially occur on state forest lands in the northern Lower Peninsula and Upper Peninsula. Work on natural community abstracts would be conducted in Lansing.

Reporting:

A brief year-end activity report will be produced following completion of FY14 work in September 2014.

Budget:

	Task or Direct Cost Category	Cost
	Personnel	\$2,308
	Travel	\$1,692
	Supplies	\$
	Indirect Cost (Rate: 26%)	\$1,040
	Budget Total	\$5,040
	Waived Indirect	-\$1,040
	Total Project Amount:	\$4,000

Contract Type/Payments: This is a fixed price quarterly invoiced project.

Title (13):	CSWG Upper Midwest Riverine Turtle Habitat Improvement		
Principal Investigator(s):	Yu Man Lee		
Sponsor:	Lori Sargent		
Project Beginning Date:	1 October 2013	Project End Date:	30 September 2014
Budget Request for Fiscal Year 2014:	\$45,500		

Statement of Needs: Several studies have documented that many turtle populations inhabiting rivers and streams in eastern North America are declining (Doroff and Keith 1990, Heppell 1998, Daigle and Jutras 2005). The Wood Turtle (*Glyptemys insculpta*) is one such freshwater turtle species that has declined significantly in eastern North America. Wood turtles are medium-sized turtles associated with clear, hard-bottomed (sandy) creeks, streams and rivers in spring, fall, and winter, and terrestrial habitats in the summer (Harding 1997). They prefer forested areas over open areas, although small openings in the streamside canopy are essential for nesting and feeding. The Wood Turtle is currently listed in a number of states including Minnesota, Wisconsin, and Iowa, and is a species of special concern in Michigan. The Wood Turtle also has been identified as a Species of Greatest Conservation Need (SGCN) by State Wildlife Action Plans (WAPs) in a number of states including Michigan, Minnesota, Wisconsin, and Iowa. The IUCN Red List classifies the wood turtle as a vulnerable species (Hilton-Taylor 2000).

Threats to Wood Turtle populations include habitat loss, degradation, and fragmentation due to development, roads, dams, streambank stabilization, and timber harvesting. Other threats include predation of nests, hatchlings, and adults; road mortality; removal of adults from populations by humans; and disturbance from intensive recreational use in and along rivers and streams. In Michigan, habitat loss and degradation has occurred in some wood turtle populations, but nest predation and lack of recruitment are probably more of an issue, particularly in the Upper Peninsula (Harding pers. comm.). Road mortality and availability of suitable and sufficient nesting habitat also are limiting factors in some populations.

In addition to the Wood Turtle, the Snapping Turtle (*Chelydra serpentina*), Northern Map Turtle (*Graptemys geographica*), and Eastern Spiny Softshell turtle (*Apalone spinifera spinifera*) inhabit rivers and streams in Michigan, and potentially occur in the same areas as wood turtles. The Blanding's Turtle (*Emydoidea blandingii*) and Eastern Box Turtle (*Terrapene carolina carolina*), which are both special concern species and SGCN in Michigan, also occur in some of the same areas as Wood Turtles. These species also face similar threats as the wood turtle, including habitat loss and fragmentation, nest predation, and road mortality.

This project is a multi-state, multi-year project that will involve four states, Minnesota, Wisconsin, Iowa, and Michigan, and multiple partners within each state. This project will improve turtle nesting and riverine habitats, improve turtle nesting success by managing nest sites and reducing nest predation, and reduce adult turtle mortalities along roads and bridges within the study watersheds. In Michigan, efforts will focus primarily on improving nesting success and habitat for the Wood Turtle. This project will also develop and initiate the first landscape-level monitoring approach for the Wood Turtle and other riverine turtle species within the Upper Midwest region to assess the effectiveness of the conservation actions implemented as part of this project.

Objectives:

MNFI will help the MDNR meet the following objectives for Michigan's portion of the Competitive SWG Upper Midwest Riverine Turtle Habitat Improvement project:

- 1) Improve turtle nesting success by nest site management.

- a) Identify locations of nesting habitats that are safe from frequent normal year flooding events along 2 river stretches considered for this project.
 - b) Increase turtle nesting success by reducing the effects of predation using nest cages and/or predator exclusion fences around 30 Wood Turtle nest sites along 2 river stretches (15 nest sites along each river stretch).
- 2) Reduce adult turtle mortality by increasing connectivity among habitats that turtles use to complete their life cycle.
- a) Identify barriers to movements and pathways that pose a threat to turtle travel needed by Wood, Painted, and Snapping Turtles to complete their normal life cycle along 2 river stretches (or project sites).
- 3) Improve turtle habitat in river and stream corridors.
- a) Improve the characteristics of potential turtle nesting sites in flood-safe areas to increase their suitability for nesting by riverine turtles. This work would be undertaken at 4 turtle nesting sites/areas.
- 4) Assess the effectiveness of conservation actions by monitoring turtle use, abundance, and habitat response.
- a) Identify and measure at least 6 parameters that best evaluate the short term response of turtle populations to conservation actions implemented.
 - b) Identify 10 population and habitat parameters that would best evaluate the long term response of turtles and describe future habitat conditions at sites where conservation actions have occurred.
- 5) The lead state will submit a comprehensive report of all activities that address each objective conducted by or on behalf of all States that receive funding to the WSFR Regional office by the required performance reporting period.
- a) Minnesota Department of Natural Resources is designated as the lead state agency for this project.
 - b) All participating states (including Michigan) and partners commit to providing the lead state with their project results and necessary information in due time for completion of both the interim and final reports.
 - c) The lead state agency commits to completing all interim reports and final report within the specified time lines.

Expected Benefits:

This project addresses major identified threats to Wood Turtles and other riverine turtles in Michigan and other states in the Upper Midwest region. This project strives to improve turtle nesting success and reduce turtle mortality by reducing nest predation, enhancing nesting and other habitat, identifying nesting habitats/areas that are safe from frequent flooding, increasing connectivity among habitats by identifying barriers to movements and pathways that pose a threat to turtle travel, and reducing adult turtle road mortality in some states. This project also will help develop and initiate a landscape-level monitoring approach for the Wood Turtle and other riverine turtles in Michigan and the Upper Midwest, which will allow us to assess the effectiveness of the conservation actions undertaken by this project and provide additional information on populations of Wood Turtles and other riverine turtles in the Upper Midwest. If the conservation actions undertaken by this project prove to be successful, this project will help identify and provide examples of conservation actions that can be implemented at other sites to help conserve and manage populations of Wood Turtles and other riverine turtles in Michigan and the Upper Midwest. This project will benefit SGCN and address conservation issues identified in Michigan's and the other

states' WAPs, helping Michigan and the other states' satisfy their major and common goal of stabilizing and increasing populations of SGCNs. This project also helps implement goals of collaborative regional landscape and watershed plans (e.g., Lake Superior Bi-National Program).

Work Plan/Approach:

Selection of Project Sites – Project sites were selected where previous surveys or research had been undertaken and in many cases there is information indicating that these sites would be vital to the long term sustainability of the targeted riverine turtle species. In Michigan, Wood Turtle surveys, monitoring, and/or research have been conducted along the Au Sable River and several tributaries in Crawford, Oscoda, and Alcona counties, and the Ontonagon River and tributaries in Ontonagon, Gogebic, Houghton and/or Iron counties in Michigan. This project will focus on these two areas, and consider additional project sites as needed and as time and funding allow.

Surveys - Tracking Turtle Movements Telemetry will be used to track the movements of turtles at one of project sites in Michigan. Information on turtle movements is necessary to assess habitat use before and after habitat improvement work as a way to assess the effectiveness of habitat improvement conservation actions; and to identify barriers to travel and the degree of connectivity among habitats that turtles frequent during their annual cycle. A sufficient number of wood turtles (20-30) need to be tracked at each site where telemetry would be undertaken. Early spring surveys in the selected watersheds will be undertaken to capture and measure, sex and age turtles following well established survey methodologies (Buech et al. 1997). Turtles will be tracked during one nesting season beginning April 2014 and then again in 2015. Tracking them from April to October will reveal nesting sites, foraging sites as well as hibernation sites. At the other project site and in addition to telemetry, surveys will be conducted to identify and monitor turtle nesting sites and monitor turtle use of enhanced nesting habitat areas.

Identifying and Mapping Flood-Safe Areas Objective 1a Hydrological models such as the U.S. Army Corps Models: HEC-GeoRAS (Ref # 12 and the HEC-RAS (Ref #13) can identify flooding zones for any river stretch based on digital elevational models and river flow metered at gauging stations within or closest to that river stretch. Hydrological models will be used to map flood prone areas. Areas within 500m from the center of the river channels that are most secure from flooding, that could provide suitable nesting habitat, and that are well connected to the river channel and to potential foraging habitat will be delineated and mapped in GIS.

Protecting Nests against Predation Objective 1b. Two main methods will be used to reduce the effects of predation on turtle nests. Wire cages will be placed over individual nests shortly after turtles have laid their eggs (Standing et al. 2000; Linck and Gillette (2009). This method requires the close monitoring of nests at the time turtles are nesting in late May through early June; and then again at hatching time in late July until early August. A second method to protect against nest predation is by fencing an area that allows turtles to enter it but excludes larger predators, raccoon and fox. This method has successfully increased turtle nest success 74% in one study in southern Wisconsin (Geller 2012). Additional methods to reduce nest predation may be considered and utilized. A minimum of 30 nests (15 at each project site) will be protected by cages and/or predator exclusion fences. Protected and unprotected nests will be monitored to assess effectiveness of the nest cages and predator exclusion fences.

Identifying Barriers and Dangerous Road Crossings Objective 2a. This effort will assess the threat from road mortality in the project areas and identify locations where efforts to reduce road mortality and enhance connectivity may be implemented in the future. In Michigan, the Natural Heritage database will be checked for locations of reported dead turtles that fall within project areas. The tracking of turtle movements using radio telemetry will indicate how they are negotiating barriers and road crossings. Road and trail layers superimposed on turtle travel routes will reveal locations where turtles could be

encountering the greatest road mortality risks within the project areas.

Restoration of Nesting and Foraging Habitat Objective 3a. Nesting sites/habitat will be improved by removing encroaching woody vegetation, grass, and other vegetation. Sites of ¼ to ½ an acre that are south facing, have sandy soil, are well connected to river (no roads or ATV trails), and have a lower risk of flooding will be selected for habitat improvement. Encroaching vegetation will be removed mechanically or through the use of prescribed fire. Ideally, restoration of nesting sites will be done in late September to early October to lessen the likelihood of turtles still being on land.

Assessing the Effectiveness of Conservation Actions. Objective 4. Plans to measure the effectiveness of implemented conservation actions will be discussed and refined with state project partners and researchers at universities. Control sampling units will be paired with sampling units that will undergo a conservation action. In some cases, a before and after- treatment condition will apply. Parameters will be measured that best indicate the effect(s) that each conservation action is targeting. For example, the number of hatchlings produced from protected nest sites could measure the effectiveness of nest protection. The feasibility of measuring particular parameters will be discussed with researchers who have previously utilized similar techniques. We will also discuss some parameters related to monitoring the long-term effectiveness of certain conservation actions with land managers. The final list of parameters for monitoring the effectiveness of the conservation actions and methods for data collection and analysis will be developed in conjunction with the other state and project partners. Methodologies will be coordinated among the 4 states to insure that the results can be validly compared.

Timeline/Project Work Period:

Work will begin on October 1, 2013 and end on July 31, 2016 with periodic updates via quarterly reports and annual progress reports being provided to the WLD sponsor.

October 2013-March 2014

Coordination and Planning

Finalize Grant Compliance; Coordination with Land Managers/ Landowners/ University Research/ Volunteers/ Other Partners; Field Work and Habitat Work Planning/Visit to Project Sites; Equipment Acquisition; Contracting Habitat Work/ Surveys / Private Land Agreements (as needed); Ongoing Habitat Work (in other states); Identify and Map Safe Nesting Areas in Project Sites;

March/ April 2014- October 2014

First Field Season

Spring Surveys; Capture Turtles and Fit with Transmitters; Install Cameras to Monitor Nesting Sites at some sites; Install Predator Control; Telemetry Work; Monitoring to Assess Response to Conservation Actions; Initiate Habitat Improvement Work if possible;

November 2014-March 2015

Evaluation Period

Analyze First Season Data; Adjust Methodologies (as needed); Coordinate among Project Leaders/ Principal Investigators/ Others; Initiate/Continue Habitat Improvement Work; Complete First Interim Report; Predator Trapping at some Nesting Sites (in other states);

April 2015-October 2015

Second Field Season

Additional Spring Surveys and Capturing and Marking of Turtles; Repeat Telemetry Work (if needed); Install Predator Control; Monitoring to Assess Response to Conservation Actions; Continue Habitat Improvement Work; Coordination among Project Leaders; Complete 2nd Interim Report;

November 2015-July 2016

Compiling Results/ Second Project Evaluation

Compile all Results; Summarize Findings; Develop Recommendations for Adaptive Management; Discuss Future SWG for Long Term Monitoring; Assist with Writing Final Report and Submit.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

4. Map(s) indicating the locations of areas with suitable Wood Turtle nesting habitats and/or nest sites that are predicted to be safe from flooding events in both project areas/sites.
5. Summary and map(s) of the Wood Turtles that are found and/or tracked during the survey and telemetry portions of the project, and the number and locations of Wood Turtle nesting sites that are found in the field, and are protected from predators and/or monitored.
6. Map(s) identifying barriers or potential barriers to movements and pathways that pose a threat to Wood Turtle and other riverine turtle travel to complete their life cycle within the project sites.
7. Summary and map(s) showing the locations and area of turtle nesting habitat that is enhanced for Wood Turtle and other riverine turtle use within the project sites.
8. Updated Wood Turtle element occurrences in the Michigan Natural Heritage Database.
9. A brief report highlighting project activities and results will be provided after the first and second years of the project, and a final report will be provided at the end of the third year of the project.

Location: Office work will be conducted at the MNFI offices located in the Mason Building, Lansing, MI, and on the campus of Michigan State University. Field/project sites will be located along the Au Sable River and tributaries in Crawford, Oscoda, and/or Alcona counties; and along the Ontonagon River and tributaries in Ontonagon, Gogebic, Houghton, and/or Iron counties.

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual/interim progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version) using template provided; and to the Minnesota DNR, lead state/agency for the overall CSWG project, by the date requested.
3. Final report – will be in an appropriate format that makes sense for the project and agreed upon by the WLD Sponsor, collaborating states, and lead state (Minnesota) for the project.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY 2014

	Cost Category	Cost
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	Personnel	\$ 28,000
	Travel	\$ 7,500
	Supplies	\$ 4,000
	Subcontract	\$ 6,000
	Indirect Cost (Rate: 26%)	\$ 11,830
	Budget Total	\$ 57,330
	- Waived Indirect	\$ 11,830
	Total Project Amount:	\$ 45,500
Contract Type/Payments:		
This is a fixed-price quarterly invoiced project.		

Use of Costs as Non-federal Match Portion for US Fish and Wildlife Administered Grants to DNR Wildlife Division

All of the costs association with each of the titles described in the above work plan are eligible for reimbursement through federal awards received by the Department and administered by the US Fish and Wildlife Service (US FWS). Through this agreement, some of these costs are being used by the Department to satisfy the non-federal match portion of these federal awards. As a vendor for this contract, MNFI and Michigan State University are not sub recipients of these federal awards and are not subject to the terms in these federal awards. MNFI and MSU, however, may not use those portions of the costs in these work plans the Department is using as non-federal match as non-federal match for any federal award MNFI and MSU may have. The portion of costs for each work plan the Department is using as non-federal match and the federal award to which this match is applied are summarized as follows:

Title (#)	Costs used as Non-federal Match	Federal Award ID and Name	Sponsor	Requested Funds
(1)	Indirect Cost (Rate: 52%)	T-9-T-5 Michigan's Comprehensive State Wildlife Grant	Mike Donovan	\$310,745
(2)	Indirect Cost (Rate: 26%)	T-9-T-5 Michigan's Comprehensive State Wildlife Grant	Mike Donovan	\$272,629
(3)	Indirect Cost (Rate: 26%)	T-9-T-5 Michigan's Comprehensive State Wildlife Grant	Amy Derosier, Mike Donovan	\$75,000
(4)	Indirect Cost (Rate: 26%)	T-9-T-5 Michigan's Comprehensive State Wildlife Grant	Amy Derosier	\$52,000
(5)	Indirect Cost (Rate: 26%)	W-153-M-3	Sue Tangora	\$35,000
(6)	Indirect Cost (Rate: 26%)	U-19-HM-1	Mark Sargent	\$50,000
(7)	Indirect Cost (Rate: 26%)	T-9-T-5 Michigan's Comprehensive State Wildlife Grant	Dan Kennedy	\$22,000
(8)	Indirect Cost (Rate: 52%)	U-22-HM-1	Mark Sargent	\$50,000
(9)	Indirect Cost (Rate: 26%)	T-9-T-2 Michigan's Comprehensive State Wildlife Grant	Glenn Palmgren Ray Fahlsing	\$37,615
(10)	Indirect Cost (Rate: 26%)	MDOT (USDOT)	Joe Robison	\$68,565
(11)	Indirect Cost (Rate: 26%)	T-9-T-2 Michigan's Comprehensive State Wildlife Grant	Glenn Palmgren Ray Fahlsing	\$16,385
(12)	Indirect Cost (Rate: 52%)	Ecosystem and Forestland Emergency Contingency Surveys	Amy Clark Eagle Deb Begalle	\$4,000

(13)	Indirect Cost (Rate: 26%)	CSWG Upper Midwest Riverine Turtle Habitat Improvement	Lori Sargent Christine Hanaburgh	\$45,500
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Updated 2014 Wages

Name	Area of Expertise	Hourly Rate*
Badra, Peter	Aquatic Ecology; Project Management Oversight	\$ 37.97
Campbell, Suzan	Conservation Education	\$ 28.99
Cohen, Joshua	Terrestrial Ecology; Botanical Expertise; Project Management Oversight	\$ 39.22
Cuthrell, David	Zoological Expertise; Project Management Oversight	\$ 42.18
Enander, Helen	Database Management and Information Technology	\$ 40.90
Higman, Phyllis	Conservation Education; Botanical Expertise; Project Management Oversight	\$ 51.89
Hyde, Daria	Conservation Planning and Education; Project Management Oversight	\$ 32.16
Klatt, Brian	Project Management Oversight; Zoological Expertise; Botanical Expertise; Terrestrial Ecology; Conservation Planning	\$ 68.34
Korroch, Kraig	Database Management and Information Technology	\$ 39.47
Latimore, Jo	Aquatic Ecology; Project Management Oversight	\$ 39.14
Lee, Yuman	Zoological Expertise; Conservation Education; Project Management Oversight	\$ 44.24
Lincoln, Jesse	Terrestrial Ecology; Botanical Expertise; Project Management Oversight	\$ 27.91
Monfils, Michael	Zoological Expertise; Aquatic Ecology; Project Management Oversight	\$ 42.75
Paskus, John	Conservation Planning; Conservation Education; Project Management Oversight	\$ 49.43

Penskar, Michael	Botanical Expertise; Terrestrial Ecology; Project Management Oversight	\$ 47.67
Ridge, Sue	Project Management Oversight	\$ 36.03
Rogers, Becca	Database Management and Information Technology	\$ 39.89
Sanders, Mike	Database Management and Information Technology	\$ 29.04
Schools, Edward	Database Management and Information Technology; Project Management Oversight	\$ 52.71
Slaughter, Brad	Botanical Expertise; Terrestrial Ecology; Project Management Oversight	\$ 32.62
Toben, Nancy	Project Management Oversight	\$ 41.80
For Academic Staff, the university does not recognize hourly rates. Thus, the rates presented are estimates based on annual salaries divided by 2080 hours.		
Anticipated Hirings and Seasonal Employees		
Associate botanist		\$ 30.86
Associate ecologist		\$ 31.86
Associate zoologist		\$ 35.90
Seasonal - Aq Ecology		\$ 17.55
Seasonal - Botany		\$ 17.55
Seasonal - Cons Planning		\$ 17.55
Seasonal - Ecology		\$ 17.55
Seasonal - Zoology		\$ 17.55
Seasonal-CGIS		\$ 17.55



CHANGE NOTICE NO. 04 TO CONTRACT NO. 751B3200002
Between
STATE OF MICHIGAN
and

Required by authority of 1984 PA 431, as amended.

Name and Address of Contractor Michigan State University Office of Sponsored Programs 426 Auditorium Rd 301 Administration Building Lansing, MI 48824-2612	Primary Contact Diane Cox, Manager	
	Email coxd@osp.msu.edu	
	Telephone (517) 884-4243	Contractor #, Mail Code 2****5984/283

State Contact	Agency	Name	Telephone	Email
Contract Compliance Inspector	DNR	Michael Donovan	(517) 373-7027	Donovanm@michigan.gov
Buyer	DNR	Jana Harding-Bishop	(517) 373-1190	HardingJ3@michigan.gov

Initial Contract Summary			
Description (Provide a basic but comprehensive description of services) Conservation Planning Services			
Effective Date November 1, 2012	Initial Expiration Date October 31, 2015	Initial Available Options 3 - 1 yr options	Current Expiration Date October 31, 2015
Payment Terms Net 45	F.O.B. N/A	Shipped N/A	Shipped From N/A
Minimum Delivery Requirements N/A		Alternate Payment Options <input type="checkbox"/> P-Card <input type="checkbox"/> Direct Voucher (DV)	Available to MiDeal Participants <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Description of Change Notice

Option Exercised: Yes No If Yes, New Expiration Date: _____

Provide the detail of the Change Notice
Extending the following project due dates - no impact on cost:

Title # 2 - Southern Michigan Lands Integrated Inventory Project - Revised date 11/30/13
The original work statement say MNFI will inventory game areas that the wildlife division identifies. We don't set an exact acres target because the cost and time it takes to inventory any game area varies depending on the travel time to get there and the complexity of the natural environment they encounter. This year the actual costs have varied to where we can accomplish more acres within the specified work plan budget if we allot more time to MNFI.

Title # 8 - Mounting a Rapid Response to Invasive Plants - Revised date 9/30/14
This project is funded through a federal grant that got a later than expected start in fy 2013. The EPA has decided to extend the grant period through 2014. The DNR project sponsor recognizes that the MNFI project lead is heavily tasked and would like to give her the entire fiscal year to wrap up the remaining 25% of work.

Title #12 - Critical Review of the Draft Wind-energy Multi-species Habitat Conservation Plan - Revised date 9/30/14
Involves the review of a document being written through a multi-state effort with the US

Fish and Wildlife Service and AWEA (a wind industry group), involving the state of Indiana, their contractor and a subcontractor. The subcontractor is writing chapters 1-11 of a Plan. First drafts of chapters 1-5 have been completed. Chapters 4 and 5 were the longest and most complex, and chapters 1-5 represented approximately 75% of the review that we asked MNFI to do. They cannot review Chapters 6-11 until the chapters are provided by the subcontractor. We do not expect those chapters until sometime next fiscal year. We do not know when and so need the contract extended a full year.

Value/Cost of Change Notice

\$0.00

Estimated Revised Aggregate Contract Value

\$4,099,602.18

FOR THE CONTRACTOR:

Michigan State University

On-file in DNR Procurement

Authorized Agent Signature

Diane Cox

Authorized Agent (Print or Type)

10/15/13

Date

FOR THE STATE:

Department of Natural Resources

On-file in DNR Procurement

Authorized Buyer Signature

Sharon Walenga-Maynard

Authorized Buyer (Print or Type)

10/15/13

Date

Title (2):	Southern Michigan Lands Integrated Inventory Project		
Principal Investigator(s):	Mike Kost		
Sponsor:	Mike Donovan		
Project Beginning Date:	1 November 2012	Project End Date:	30 November 2013
Budget Request for Each Fiscal Year of Project:	\$225,000		
Statement of Needs:			
<p>In order for the DNR to fulfill its responsibility for managing Michigan's natural resources, their staff require thorough knowledge of both the landscape features and natural features on state lands. While the DNR has long performed inventories and kept detailed records for a diverse array of wildlife and other natural resources, thorough inventory of the natural features such as rare wildlife species and the full array of natural communities has not been completed. The goal of this project is to facilitate implementation of the Michigan Wildlife Action Plan (WAP) by completing an integrated inventory of both the landscape features and natural features on DNR managed lands in southern Michigan. This project will involve conducting both IFMAP Stage 1 inventories and natural features inventories to identify and document the landscape features, rare species, and high quality natural communities that occur on state lands in southern Lower Michigan. Upon completion of the integrated inventories, reports for each management area will be produced that describe their landscape and natural features and conservation significance. The information provided from these integrated inventories is needed for identifying opportunities for ecological restoration and biodiversity protection, and assessing the potential benefits and impacts of future land management, recreation, and development activities on state lands.</p> <p>Michigan Natural Features Inventory has over 25 years of experience conducting natural features inventories and employs staff with expertise in identifying and documenting high quality natural communities and terrestrial and aquatic rare species. In addition, MNFI staff has established strong working relationships with many of the state land managers through collaborations on various projects, ecological workshops and day-to-day consultations. Consequently, MNFI is in an excellent position to perform biological inventories and convey information about recognition of natural features, survey methodology, and stewardship needs to DNR field staff.</p> <p>This work also addresses important elements of the Michigan Wildlife Action Plan (WAP). Specifically, this work addresses the need for surveys to locate additional high quality natural communities, because the spatial extent and condition of these communities may be valuable indicators of landscape feature condition (p. 80). In addition, this work addresses the need for surveys that will address gaps in knowledge related to threats, landscape features, species and the relationships among them (p. 79).</p>			
Objectives:			
<ol style="list-style-type: none"> 1) To provide the Wildlife Division with critical information for making well-informed decision on the management of state lands. 2) To conduct IFMAP Stage 1 inventories on state lands administered by the Wildlife Division to identify and delineate landscape features. These inventories provide the Wildlife Division with critically important information for natural resource planning and management. 3) To conduct natural features inventories on state lands administered by the Wildlife Division to document rare species, Species of Greatest Conservation Need, and exemplary natural communities. This information is critically important to land managers and planners for making well-informed land management decisions. In addition, this information is used for conservation planning by many other agencies including the Michigan Department of Environmental Quality, Michigan Department of Transportation, Michigan Department of Agriculture, US Fish and Wildlife Service, Natural Resource Conservation Service, The Nature Conservancy, regional and local land trusts and conservation organizations, universities, and private industry (e.g., 			

environmental consultants, power companies, etc.).

- 4) To make the information collected through this integrated inventory processes available through two statewide databases, IFMAP and Biotics. Both databases are widely used by DNR staff for resource assessment and management planning. In addition, information contained in the Biotics database is available to the organizations referenced above.
- 5) To complete Biotics data entry for the natural features identified at Barry State Game Area during the current (2012) field season.

Expected Benefits:

Upon completion of this integrated inventory, DNR staff will have full access to critically important information for making well-informed decisions on planning and management. Completion of the IFMAP Stage 1 inventory will provide accurate ownership boundaries of the state game areas, which will allow future maps made by the DNR and others to more accurately reflect current ownership boundaries. The delineation and classification of vegetation stands within the state game areas, along with the tabular data on wildlife habitat variables, will provide wildlife planners and biologists with valuable information for assessing potential habitat-management options and needs. Similarly, the natural features inventory data and report will provide critical information for conservation planning and management to DNR staff as well as a broad suite of potential Biotics users (see item 3 in list of above).

Work Plan/Approach:

- 1) IFMAP Stage 1 inventory to identify and delineate landscape features will be conducted on state lands administered by the Wildlife Division (e.g., State Game Areas, State Wildlife Areas and State Recreation Areas). This process will involve 1) determining management area ownership boundaries, 2) delineating and classifying vegetation stands using desktop GIS software, and 3) conducting field inventories to ground-truth stand delineations and classifications and record data on wildlife habitat variables. The management areas chosen for IFMAP Stage 1 inventory will be identified by the Wildlife Division in consultation with MNFI project staff.
- 2) Natural features inventories will focus on state lands where IFMAP Stage 1 inventory has been completed and will be conducted concurrently with the Stage 1 inventory. Thus, Stage 1 inventories and natural features inventories will be conducted simultaneously but in different management areas. In 2013, natural features inventories will focus on identifying and documenting rare animal species at Barry State Game Area, where natural communities surveys were completed in 2012, and surveys for natural communities will be conducted at Lost Nation State Game Area. During the following field season (2014), surveys for rare wildlife species will move to Lost Nation State Game Area, and the natural community surveys will shift to the next management area identified for inventory. When possible, this rolling, tag-team approach in which natural community surveys are followed by rare animal surveys will be utilized in subsequent years of the project because it provides very specific habitat data useful for targeting rare wildlife surveys.
- 3) The timing of these integrated inventories will be sequenced to provide Wildlife Division staff with accurate and timely information for Wildlife Area Master Planning.
- 4) Planning for natural features inventories will utilize data collected during the IFMAP Stage 1 inventory to help focus the inventory efforts for natural communities and rare species.
- 5) The integrated inventories will provide recommendations for conservation planning, which will be recorded in the IFMAP GDSE through the Stage 1 comments for Stands and/or the Unique Sites categories of Areas of Interest (AOI) layer.
- 6) A status report summarizing the work accomplished on both the IFMAP and natural features inventories will be produced. With additional funding in the subsequent fiscal year, the element occurrences (EOs) located on Barry State Game Area will be entered into the Biotics database. A final report for Barry State Game Area will be produced that describes its natural features, their

conservation significance, and the associated management recommendations with new funding in 2014 following the completion of the rare animal surveys.

Timeline/Project Work Period:

October to March: 1) Determine and adjust ownership boundaries of state game areas in preparation for conducting IFMAP Stage 1 pre-inventory. 2) Conduct IFMAP Stage 1 pre-inventory to delineate and classify vegetation stands on state game areas using desktop GIS software. 2) Process EOs from Barry State Game Area. 4) Prepare for natural community surveys at Lost Nation State Game Area and rare animal surveys at Barry State Game Area.

April to November: 1) Hire and train seasonal staff to assist with IFMAP Stage 1 inventories of state game areas. 2) Conduct IFMAP Stage 1 inventories on state game areas. 3) Conduct natural features inventories of Lost Nation State Game Area with a focus on natural communities and Barry State Game Area with a focus on rare animals. 4) Prepare and submit annual progress report.

Deliverables, Products, and Annual Milestones:

- 1) All ownership boundaries of state game areas receiving IFMAP inventory will be delineated and entered into IFMAP, where they will be available to DNR staff (October through March).
- 2) All vegetations stands of state game areas receiving IFMAP inventory will be delineated and classified during the IFMAP Stage 1 preinventory process. These stand delineations will be available to DNR staff upon completion of the preinventory of each compartment within a state game area (October through March).
- 3) Final ground-truthed and adjusted shapefiles of all stands, along with the associated data on wildlife habitat variables, will be available to DNR staff through IFMAP upon completion of Stage 1 inventory of each compartment within a state game area (April through September).
- 4) All EOs at Barry State Game Area will be available to DNR staff through IFMAP and Biotics (March). In addition, the data from Biotics will also be available to other conservation organizations, academics, and private industry groups (March).
- 5) A status report summarizing the work accomplished during the current field season on both the IFMAP and natural features inventories will be produced (September). With additional funding in the subsequent fiscal year, EOs for Barry State Game Area will be entered into Biotics. A final report for Barry State Game Area that describes its natural features, their conservation significance, and the associated management recommendations will be produced with additional funding in 2014 following the completion of the rare animal surveys.

Location: This project will focus on state lands administered by the Wildlife Division (e.g., State Game Areas, State Wildlife Areas and State Recreation Areas). The IFMAP Stage 1 inventories will be conducted on state lands identified by the Wildlife Division in consultation with MNFI project staff. The natural features inventories will be conducted at Lost Nation State Game Area and Barry State Game Area. This project may include attending professional conferences and trainings in Michigan or other states to gain new information and report on results.

Reporting:

1. Quarterly updates to sponsor: format to be decided with WLD Sponsor.
2. Annual progress report: to be submitted by November 30 to WLD Sponsor and MNFI Contact in an electronic format using a designated template.
3. Final report: With additional funding in subsequent years, a final report of the natural features inventory of Barry State Game Area will be submitted by March 31, 2014, following the completion of rare animal surveys. The format will follow that of the previously submitted state game area reports and will contain management recommendations. In addition, a short (2-5 pages) summary in the format of a scientific journal will also be submitted.

Acknowledgement of Participation:

Any reports, products, or presentations produced through this project will contain the DNR logo and specifically acknowledge the Wildlife Division's participation and support.

Any reports or products produced through this project will contain the following acknowledgement as appropriate: "(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name(s)*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: FY\$225,000

	Cost Category	Cost
	Personnel	\$197,833
	Travel	\$23,392
	Supplies	\$3,775
	Indirect Cost (Rate: 26%)	\$58,500
	Budget Total	\$283,500
	- Waived Indirect	-\$58,500
	Total Project Amount:	\$225,000

Contract Type/Payments:

This is a fixed-price contract.

Title (8): Mounting a Rapid Response to Invasive Plants 2013

Sponsor(s): Sue Tangora

Principal Investigator(s): Phyllis Higman

Project Beginning Date: November 1, 2012 **Project End Date:** September 30, 2014

Budget Request for Current Year: \$100,000

Statement of Needs:

Invasive species are having negative impacts on the health of the Great Lakes. They displace critical habitat for fish and wildlife, interrupt food webs, reduce recreational resources and negatively affect the natural health and economy of the Great Lakes states. The most effective and efficient means of reducing the impact of invasive species to Great Lakes health beyond prevention is to respond immediately to new invasions or new outliers. Even the best prevention program cannot keep all invasive species out of Michigan, but a program that responds quickly, uses cost-effective methods, and engages key stakeholders, will minimize the threat of invasions impacting the health of the Great Lakes. The best system for early detection of invaders is only as good as its ability to respond. Currently, several early infestations of invasive species predicted to have significant impacts to the health of the Great Lakes have already been detected in Michigan. To date, no response has been mounted, nor is there any response mechanism in place or assigned responsibilities to do so. We propose to build the

knowledge and decision support structure, to respond quickly and effectively to these known infestations and to new invaders.

The Michigan Department of Natural Resources and Michigan Natural Features Inventory will develop and implement a Rapid Response Program in Michigan. This project will build on Michigan's current efforts to control invasive species and will result in the eradication and control of 8 to 10 high threat invasive species that impact the health of the Great Lakes. This Rapid Response Program will help direct future resources for invasive species control to the most cost-effective, strategic, and highest threat locations.

Work Plan/Approach:

MNFI will work with MDNR-WD and partners to address the following objectives:

- Develop an aquatic invasive species Rapid Response Program in Michigan
- Expand and maintain Michigan Invasive Species Information Network (MISIN)
- Test and implement Rapid Response Program
- Eradicate only known occurrences of water hyacinth, water lettuce, Brazilian waterweed, and parrot feather, and isolated outliers of frog-bit and flowering rush in Michigan

Timeline/Project Work Period:

November – December

- Refine priority species research data; augment where needed
- Assist with defining Decision Support Structure
- Assist with planning of mock exercise
- Discuss proposed training priorities
- Facilitate data input into MISIN and data output to users

January – March

- Assist with site review and selection for treatment
- Review and assess proposed treatment options
- Assist with conduction of mock exercise
- Refine training plan
- Facilitate data input into MISIN and data output to users

April – June

- Plan surveys for additional reported occurrences
- Plan treatment monitoring
- Coordinate logistics and compile training packages for stakeholders
- Facilitate data input into MISIN and data output to users
- Provide identification training for seasonal employees

July – September

- Conduct surveys for infestations as needed
- Assist with treatment monitoring
- Assist with treatments
- Conduct training for stakeholders
- Facilitate data input into MISIN and data output to users

Expected Benefits and Information Transfer:

- High threat species will be eradicated and new occurrences will be prevented from establishing and spreading.
- Major costs for new aquatic invasive species will be avoided.
- Greater awareness and focus on highest threat species will be created.
- A Rapid Response Program will be formally implemented in Michigan.
- Response and treatments of priority species will be improved.
- Real-time integration of spatially-explicit invasive species data will be incorporated into

decision-making.

- New infestations will be more quickly detected.
- Stakeholders are engaged and working together to address new invaders.

Deliverables and Products:

- Specific species information provided for a minimum of six species for website
- Survey data for a minimum of six species uploaded into the MISIN
- Assistance with a minimum of one mock rapid response exercise to be completed
- Assistance with treatments and monitoring to be completed (number of sites to be treated and monitored will be determined with project coordinator prior to field season.)
- Stakeholder training to be completed

Location:

Statewide

Reporting:

Brief summary of year's activities.

Budget:

Task or Direct Cost Category	Cost
Personnel (Higman, Latimore, Campbell, Hyde)	\$91,600
Travel	\$7,000
Supplies	\$1,400
Indirect Cost (Rate: 26%)	\$26,000
Budget Total	\$126,000
- Waived Indirect	\$26,000
Total Project Amount:	\$100,000

Contract Type/Payments:

This is a fixed price contract.

Title (12):	Critical Review of the Draft Wind-energy Multi-species Habitat Conservation Plan		
Principal Investigator(s):	Brian Klatt		
Sponsor:	Chris Hoving and Christine Hanaburgh		
Project Beginning Date:	1 November 2012	Project End Date:	30 September 2014
Budget Request for Each Fiscal Year of Project:	FY13: \$18,000		
Statement of Needs:			
<p>The Michigan Department of Natural Resources (DNR), Wildlife Division (WLD) has joined with five other state natural resource agencies to develop a multi-species habitat conservation plan (HCP) to facilitate on-shore wind energy development in the Midwest. Development of the HCP must be based on the most sound scientific information available and provide for the conservation of the species under consideration. Additionally, a requirement of the HCP development process is that an environmental impact statement (EIS) must be prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) to insure that the potential environmental impacts of adopting, or not adopting, the HCP are evaluated and fully described for decision-makers. Staff members of the Michigan Natural Features Inventory (MNFI) have specialized expertise in preparing HCPs, natural history and conservation expertise with respect to the taxa under consideration, and extensive expertise in the preparation and review of NEPA documentation. Because of this combination of expertise, MNFI is uniquely qualified to provide a critical review of the draft HCP and supporting EIS on behalf of the Michigan Department of</p>			

Natural Resources – Wildlife Division (WLD).

Objectives:

1. Conduct a critical review and develop written comments to the WLD on the draft HCP.
2. Conduct a critical review and develop written comments to the WLD on the draft EIS.

Expected Benefits:

1. As the HCP will provide guidance throughout a large geographic area for an extended time period, it is critical that the conservation measures with respect to at-risk species be as sound as possible. MNFI has specialized experience in the species under consideration and will provide comments that can be used by decision-makers to insure the most effective HCP possible.
2. The purposes of NEPA documentation are several-fold. First, NEPA is intended to insure that government agencies fully considered the potential impacts of their actions with respect to “the quality of the human environment.” Secondly, cases where a government action may significantly affect the environment, NEPA provides a mechanism to comment on the project and to provide input as to the considerations of the government with respect to potential impacts to the environment. This latter purpose can result in considerable public controversy and even legal action if the requirements of NEPA are not fully met, or the analysis of the potential impacts of the project are not fully described or are otherwise deficient. A review of the draft HCP and EIS by MNFI will significantly increase the probability that the process of development of the documents, or the final documents themselves, will stand up to scientific and/or public scrutiny.

Work Plan/Approach:

1. In preparation for the review of the documents, MNFI will develop a format for providing comments to the WLD, that will clearly indicate whether the comment is of general nature or applicable to a specific section of either document.

2. MNFI staff members will be selected to comment on the HCP based on their respective areas of expertise. It is anticipated that the following staff will fulfill the following roles:

Brian Klatt – General review of both documents; specific review of the EIS in light of NEPA requirements; review of both documents with respect to bats

Joelle Gehring – Review of pertinent sections of both documents with respect to at-risk birds and bats.

Dave Cuthrell – Review of pertinent sections of both documents with respect to at-risk insects.

Pete Badra – Review of pertinent sections of both documents with respect to at-risk mussels.

Daria Hyde – Review of the HCP in general.

3. Documents will be distributed to reviewers and comments collected in a central document.
4. Comments will be reviewed internally at MNFI and finalized for submittal to the WLD.
5. A meeting with the WLD will be held to review or clarify the comments.

Timeline/Project Work Period:

WLD will provide drafts of HCP Chapters 1, Introduction and 3 to MNFI by COB December 14, 2012

and comments will be due from MNFI to WLD by COB Jan 14, 2013.

WLD will provide drafts of HCP Chapters 2, 4-11 to MNFI by COB Jan 22, 2013 and comments will be due from MNFI to WLD by COB Feb 22, 2013.

WLD will provide second drafts of HCP Chapters 1, Introduction and 3 to MNFI by COB March 4, 2013 and report regarding how comments on 1st draft were incorporated into the 2nd draft will be due from MNFI to WLD by COB Apr 8, 2013.

WLD will provide second drafts of HCP Chapters 2, 4-11 to MNFI by COB Apr 22, 2013 and report regarding how comments on 1st draft were incorporated into the 2nd draft will be due from MNFI to WLD by COB Jun 21, 2013.

A schedule of drafts and comments will be developed for the NEPA documentation. To provide for adequate review of the documents, a period of at least four weeks should be anticipated from the time of receipt of the documents by MNFI and submittal of the comments to the WLD.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

1. A set of comments for first draft chapters of each document (HCP and EIS) as they are produced, and an analysis of how the comments on the first draft were incorporated into the second draft.
2. Meeting with WLD representatives to discuss and clarify comments.

Location: All work under this project will be performed in the offices of the MNFI.

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – can be in what ever format makes sense for the project but must also include a short (2-5 page) summary in the format of a scientific journal. If the project is a research project it must also make management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD's participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: "MI Regional Wind Energy MSHCP grant E-22-HP-1 in cooperation with the U.S. Fish and Wildlife Service, Section 6 Cooperative Endangered Species Conservation Fund."

Budget: FY2013

	Cost Category	Cost
	Personnel	\$18,000
	Travel	0
	Supplies	0
	Indirect Cost (Rate: 26%)	4,680
	Budget Total	22,680
	- Waived Indirect	4,680
	Total Project Amount:	\$18,000

Contract Type/Payments:

This is a fixed-price contract.



Michigan Department of Natural Resources – Procurement Services
P.O. Box 30028, Lansing, MI 48909
OR
530 W. Allegan, Lansing, MI 48933

CHANGE NOTICE NO. 03 TO CONTRACT NO. 751B3200002
Between
STATE OF MICHIGAN
and

Required by authority of 1984 PA 431, as amended.

Name and Address of Contractor Michigan State University Office of Sponsored Programs 426 Auditorium Rd 301 Administration Building Lansing, MI 48824-2612	Primary Contact Diane Cox, Manager	
	Email coxd@osp.msu.edu	
	Telephone (517) 884-4243	Contractor #, Mail Code 2****5984/283

State Contact	Agency	Name	Telephone	Email
Contract Compliance Inspector	DNR	Michael Donovan	(517) 373-7027	Donovanm@michigan.gov
Buyer	DNR	Jana Harding-Bishop	(517) 373-1190	HardingJ3@michigan.gov

Initial Contract Summary

Description (Provide a basic but comprehensive description of services) Conservation Planning Services			
Effective Date November 1, 2012	Initial Expiration Date October 31, 2015	Initial Available Options 3 - 1 yr options	Current Expiration Date October 31, 2015
Payment Terms Net 45	F.O.B. N/A	Shipped N/A	Shipped From N/A
Minimum Delivery Requirements N/A		Alternate Payment Options <input type="checkbox"/> P-Card <input type="checkbox"/> Direct Voucher (DV)	Available to MiDeal Participants <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Description of Change Notice

Option Exercised: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, New Expiration Date: _____	
Provide the detail of the Change Notice Revising Title # 6 and adding \$10K to the project. Adding title # 15	
Value/Cost of Change Notice \$0.00	Estimated Revised Aggregate Contract Value \$4,099,602.18

FOR THE CONTRACTOR:

Michigan State University

On-file in DNR Procurement

Authorized Agent Signature
Diane Cox

Authorized Agent (Print or Type)
8/13/13

Date

FOR THE STATE:

Department of Natural Resources

On-file in DNR Procurement

Authorized Buyer Signature
Sharon Walenga-Maynard

Authorized Buyer (Print or Type)
8/22/13

Date

Title (6): REVISED	Prairie Fen and Associated Savanna Restoration in Michigan and Indiana for Species of Greatest Conservation Need		
Principal Investigator:	Brad Slaughter		
Sponsor:	Mark Sargent		
Project Beginning Date:	1 November 2012	Project End Date:	30 September 2013
Budget Request for Each Fiscal Year of Project:	\$35,000 this is a change from original \$25,000 for fy2013		

Statement of Needs:

Fens and savannas are important habitats in the Great Lakes region. Historically, northern Indiana and southern Michigan had approximately one million acres of grassland, and much of it was oak savanna. Within the savannas were globally rare wet grasslands called prairie fens. Both fens and savannas are listed as globally vulnerable, imperiled or critically imperiled by NatureServe. These natural communities are disproportionately rich in biodiversity. Fens and savannas are the principal habitat for the federally endangered Mitchell's satyr butterfly (*Neonympha mitchellii mitchellii*) and the federal candidate eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*) (MI WAP p.SLP-75). In addition to these federally listed species, prairie fens and savannas are home to 32 other species of greatest conservation need (SGCN).

The conversion of savannas surrounding fens to agriculture or forest has been documented as a significant threat to fens in the draft Michigan and Indiana Fen Conservation Plan (FCP). Prolonged fire suppression has led to the invasion of trees and shrubs in formerly open prairie, savannas and wetlands. Invasive species have also taken over extensive areas of habitat. Species that require open habitat are being pushed to the edge of extinction. What little habitat remains will continue to decline in the absence of management, putting further pressure on SGCN.

Overall, fens and savannas, as well as the SGCN that rely on them, are threatened by altered hydrologic regimes, invasive plants and animals, altered fire regimes, and landscape fragmentation (MI WAP, p. SLP-75). These threats have also been documented in the draft Michigan HCP for the Mitchell's satyr butterfly. This proposed work addresses two of the top priority threats to SGCN and habitats: invasive species and fragmentation. Invasive species and fragmentation are the greatest threats to SGCN in Michigan statewide (MI WAP p.43-50), and they are priority threats to both savannas, fens, and the numerous SGCN that depend on those habitats (MI WAP p.SLP-30 and 76).

Many of the conservation needs in fens and savannas are priorities for the conservation of SGCN. This proposed work addresses four statewide priority conservation needs identified in Michigan's WAP (MI WAP Executive Summary pg 9):

- Identification and conservation of representative areas, high-quality areas and other areas of high ecological significance (includes development of site conservation plans and any formal protection determined to be necessary).
- Identification and conservation of areas facing serious threats (e.g., invasive species, lack of disturbance regime and contamination).
- Develop and use best management practices, recommended plans or strategies for conservation

and management of species at risk.

- Assist private landowners and create partnerships between conservation organizations/agencies and private landowners for conservation of species at risk and natural communities.

Objectives:

Work will be driven by two main objectives:

- (1) Restore or enhance 200 acres of prairie fen and associated savanna to benefit the federally endangered Mitchell's satyr butterfly and a diverse array of other SGCN. Work will be conducted on at least 12 currently occupied fens and 4 fens that historically supported MSB.
- (2) Restore or enhance 400 acres of prairie fen and associated savanna to benefit the eastern massasauga rattlesnake and 32 other SGCN. Work will be conducted on 24 sites.

MNFI will work to meet these objectives through the following activities:

- (1) Assist in the development of site-specific conservation plans. MNFI will provide previously developed conservation plans to assist restoration of several sites occupied by Mitchell's satyr butterfly, and will provide input into the development of restoration and management strategies for sites that lack previously drafted conservation plans. Potential conservation actions that will be considered include exotic/invasive species control, prescribed fire, mechanical treatment of shrubs and trees, restoration of hydrology, and maintenance and rehabilitation of natural corridors.
- (2) Develop and implement habitat monitoring at all sites to assess the impacts of habitat management. This may include the placement and monitoring of photo points, development/refinement and scoring of coarse-level habitat metrics, and vegetation sampling at selected sites.
- (3) Monitor Mitchell's satyr butterfly, eastern massasauga rattlesnake, and SGCN through the use of presence/absence surveys, counts, or mark-recapture surveys.
- (4) Survey for targeted SGCN at sites where the species are not known to be present.
- (5) REVISION from Original Work plan: Additional Objective Develop a user-friendly technical guide of conservation practices that have been implemented, locations of activities, results of actions, and lessons learned.

Attend meetings with a variety of partners to discuss opportunities for adaptive management (e.g., Mitchell's Satyr Working Group).

Expected Benefits:

By completing the objectives of this grant, progress will be made towards the overall goal of Michigan's WAP to conserve and restore SGCN. Surveys and monitoring activities identified in this workplan will inform and assess conservation actions that will benefit 34 SGCN found in fens and associated savannas. By restoring 200 acres of occupied and historically occupied habitat for Mitchell's satyr, we will benefit the species over the short term by improving habitat quality at more than 50% of the sites it has been documented from worldwide. This will result in the long-term benefit of improved population viability at these sites, as well as preventing the imminent extirpation of the species at one or more sites. Restoring 400 acres of habitat for other species such as the eastern massasauga rattlesnake will

result in short-term benefits such as improved habitat quality in the stronghold of its range and improved connectivity between wetland hibernation sites and upland basking sites. Over the long term, massasauga will benefit through improved population viability, complimenting the CCAA, and ultimately the prevention of the species being federally listed. Similar short term and long-term benefits are expected for the other 32 species associated with fens and adjacent savannas.

Work Plan/Approach:

FY13 work will begin on November 1, 2012 and end on March 30, 2014.

Oct – Dec 2012: Process data collected in FY12. Begin final report.

Jan – Mar 2013: Process data collected in FY12. Continue working on final report.

Apr – June 2013: Take photographs at photo points established in FY10-12. If funding allows, survey Mitchell’s satyr, eastern massasauga rattlesnake, and SGCN through the use of presence/absence surveys or counts. Potentially survey for targeted SGCN at sites where the species are not known to be present.

July – Sep 2013: Take photographs at photo points established in FY10-12. If funding allows, survey Mitchell’s satyr, eastern massasauga rattlesnake, and SGCN through the use of presence/absence surveys or counts. Potentially survey for targeted SGCN at sites where the species are not known to be present. Compile data for final report.

Aug- Sep 2013: Changed time frame: Develop user-friendly guide.

Oct 2013 – Mar 2014: Prepare and complete final report.

Timeline/Project Work Period:

Work will begin on November 1, 2012 and end on September 30, 2013 with periodic updates being provided to the WLD sponsor.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

Deliverables will be driven by the following targets:

- MNFI will attend the annual Mitchell’s Satyr Recovery Working Group Meeting in March 2013.
- Habitat monitoring. MNFI will monitor photo points at five to ten project sites. All monitoring photographs and associated data will be provided to the DNR as part of the final report. Any additional habitat monitoring data that may be collected, including maps of invasive species infestations and vegetation plot data will be provided to the DNR as part of the final report.
- Depending on the requested comprehensiveness of the final report, MNFI may continue limited monitoring of Mitchell’s satyr butterfly, eastern massasauga rattlesnake, and poweshiek skipperling, and will provide feedback on population trends and changes in habitat (due to management and/or degradation) and guidance for adaptive management.
- Additional Deliverable: Production of a user-friendly technical guide of conservation practices that have been implemented, locations of activities, results of actions, and lessons learned

Habitat and species monitoring data will be compiled into a final report that documents progress towards

meeting management goals. Photographs, habitat and species data, and field notes will be compiled and made available to project partners.

Location: southern Lower Michigan

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – the final report will be formatted in a similar manner to the FY10 annual report. Monitoring data, tables, and photographs will be stored in a central location that can be accessed by WLD Lansing and field staff.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY 2013

	Cost Category	Original Cost :	Adjusted Cost:
	Personnel	\$23,710	\$33,710
	Travel	\$825	
	Supplies	\$465	
	Indirect Cost (Rate: 52%)	\$13,000	\$18,200
	Budget Total	\$38,000	\$53,200
	Waived Indirect	-\$13,000	-\$18,200
	Total Project Amount:	\$25,000	\$35,000

Contract Type/Payments: Fixed Price, Quarterly Payments

Title: 15	Western Lake Erie Integrated Ecological Framework		
Principal Investigator(s):	John Paskus		
Sponsor:	Joe Robison		
Project Beginning Date:	8/15/13	Project End Date:	9/30/13
Budget Request for 2013:	\$17,400		

Statement of Needs:

MDOT has identified the SE gateway corridor into the Lower Peninsula as critical to transportation and economic development in Michigan. This corridor exists within an ecologically significant area of the state that includes globally imperiled ecosystems, several major river systems, and a productive Lake Erie coastal zone. Over the next several decades, MDOT will be reconstructing the freeways and state highways in this corridor and has recently targeted I-75 in Monroe County for a 20 year, multi-billion dollar full reconstruction

The corridor is located within the Maumee Lake plain Ecoregion. Over the past 200 years, this area's natural lands and waters have experienced a tremendous amount of stress including wetland loss, habitat degradation, invasive species, sedimentation, altered hydrology, and storm water runoff. Despite these impacts, this Ecoregion still harbors several globally imperiled natural communities including: lake-plain prairie, oak openings, wet mesic flat-woods, and Great Lakes marsh. These imperiled communities provide habitat for a number of threatened and endangered plant and animal species, including the state threatened eastern fox snake, federally threatened prairie white-fringed orchid and the federally endangered Indiana bat. Other potential federally listed species that might benefit from ecologically based transportation planning include the eastern massasauga rattlesnake and the northern long-eared bat.

The coastal marshes in this area support world class freshwater fisheries, including perch and walleye, and some of the most significant stopover habitat for migratory birds in the Great Lakes region particularly for waterfowl. Other environmental concerns identified by our partners include the presence of prime farmland, parks and aesthetic opportunities and climate change effects within the corridor.

Local watershed plans, Western Lake Erie plans and studies, and the International Lake Erie Biodiversity Conservation Strategy (2012) have identified the top priorities as:

- Reduce phosphorus from agricultural run-off via sedimentation control
- Improve base flow and reduce flashiness of rivers and streams
- Control invasive species (phragmites is a particular concern)
- Improve passage for migratory fish
- Increase habitat for a globally significant migratory bird passageway
- Protect and restore globally imperiled natural communities
- Protect and restore priority plant and animal species habitat, particularly the state threatened eastern fox snake and federally threatened prairie-white fringed orchid

In addition, a portion of the Lake Erie shoreline is controlled by a number of conservation agencies and organizations. The Nature Conservancy has numerous conservation interests in this region as does the USFWS with the Detroit River International Wildlife Refuge. The MDNR controls several parks and game areas, and the Michigan Department of Agriculture and Rural Development (MDARD) has strong

interest in Western Lake Erie water quality improvements. Recently, the lake has experienced environmental problems (toxic algae blooms/large dead zones), calling on conservation groups, governments, and citizens to collaboratively develop plans that will improve lake conditions. Contact with these agencies has indicated enthusiasm for partnering with MDOT and SEMCOG on a Regional Ecosystem Framework project for the southern portion of the Maumee Lakeplain Ecoregion.

Objectives:

- Develop an effective partnership between MDOT and key state, federal, and regional resource agencies and conservation organizations with the goal of maximizing environmental outcomes through the transportation planning process associated with I-75 in Monroe County.
- Identify and prioritize regionally significant conservation targets and associated goals, objectives, indicators, strategies, and actions through the development of a robust, collaboratively based Regional Ecological Framework (REF) for the southern portion of Maumee Lakeplain Ecoregion, including its respective watersheds and the Lake Erie coastal zone.
- Geospatially identify specific places on the landscape for targeted restoration and/or protection actions based on the results of the REF.
- Effectively integrate conservation priorities, objectives, actions, and measures identified through this process into the MDOT transportation planning process for I-75 in Monroe County.

Expected Benefits:

There is strong interest in mutually beneficial partnerships that coordinate multiple efforts to improve natural resources protection and restoration in this ecological sensitive area bisected by I-75, US-24, and M-125. The purpose of the REF we are proposing is to identify spatially based priorities for avoidance, minimization and mitigation, resulting in increased regulatory certainty and more effective environmental outcomes in the southern portion of the Maumee Lake plain Ecoregion.

This collaboratively based REF will provide the framework and relationships necessary for implementing landscape scale strategies for effective conservation outcomes. Once implemented, this REF will aid in the long-term restoration, protection and maintenance of the globally significant natural features found in the southern Maumee Lake plain ecoregion while streamlining transportation project development of I-75.

By integrating the financial and timing components of the MDOTs transportation planning process with the decision making processes of key partners in the area, the Partnership will be better able to identify, develop, and capitalize on high priority mitigation and restoration opportunities for future projects. Early collaboration will lead to regulatory agency buy-in and help identify potential funding sources and partnerships for implementation of priority protection, enhancement, and restoration activities in the region.

Finally, the successful completion of this project will establish a protocol for integrating transportation and conservation planning in the state of Michigan that can be applied to other ecoregions where there are significant opportunities to advance transportation, economic, and ecological outcomes.

Work Plan/Approach:

The funds will be used to implement key steps of the Federal Highway Administration's (FHWA) new Integrated Ecological Framework (IEF) for the I-75 corridor that stretches from I-275 to the Ohio border.

Specifically, we will develop a robust, collaborative Regional Ecosystem Framework (REF) for the southern Maumee Lake plain Ecoregion, including its respective watersheds and the Lake Erie coastal zone. The REF will be built on a foundation of collaborative decision-making, science, and robust geospatial analysis that identifies spatially based priorities for avoidance, minimization and mitigation of conservation targets (determined collaboratively), resulting in increased regulatory certainty and more effective environmental outcomes at the regional scale.

To facilitate the development of the REF, the project team will establish a Technical Advisory Committee (TAC) consisting of the following agencies: MDOT, Michigan Department of Natural Resources (MDNR), Michigan Department of Environmental Quality (MDEQ), Michigan Department of Agriculture and Rural Development (MDARD), Michigan Natural Features Inventory (MNFI), Federal Highway Administration (FHWA), National Oceanic and Atmospheric Administration (NOAA), United States Fish and Wildlife Services (USFWS), U.S. Army Corps of Engineers, Southeast Michigan Council of Governments (SEMCOG), Monroe County Planning and the Nature Conservancy. The purpose of the TAC is to build consensus on the development of the REF and the best means of avoidance, minimization, and mitigation of transportation impacts on the region’s most significant natural resources. In recognition of the recent and ongoing conservation activities in the region, a key benefit and outcome of the TAC will be to gather, document, and assess all relevant conservation based efforts that target the southern portion of the Maumee Lake plain ecoregion.

To ensure local stakeholders are engaged in this initiative, SEMCOG will also organize several stakeholder meetings in Monroe County targeting local communities, landowners, and businesses. The purpose of these meetings will be to share information, gather local input, and raise awareness of the effort.

MNFI will take the lead on developing the REF based on our expertise in conservation planning and associated software tools such as NatureServe Vista. This tool allows for landscape level evaluation of an area for assessing impacts and developing strategic mitigation. MNFI also played a key role in the development of the Integrated Ecological Framework for AASHTO and is familiar with all of the nine steps. MNFI also has experience with utilizing the Adaptive Management or Conservation Action Planning (CAP) process. The CAP process contains four key components 1) Defining the project, 2) Developing strategies and measures, 3) Implementation, and 4) Adaptation. For this proposal, we will focus on the first two steps; the remaining two steps will be implemented SEMCOG, MDOT, and key stakeholders in the region including the MDNR. The CAP will assist with the identification of ecological priorities, key indicators, stressors, priority strategies, goals, and objectives. MNFI will monitor information, commitments and decisions made in the CAP process by utilizing the Miradi software tool and summarize the captured information in a final CAP report.

Once the REF is completed, SEMCOG and MDOT will make the information accessible on existing web resources, with plans to provide periodic updates on implementation and monitoring of the REF by TAC partners and other key stakeholders.

Timeline/Project Work Period for entire multi-year project: (Commitment is only for work performed thru 9/30/2013 at this time)

Activity	Start	Finish
Form Technical Advisory Committee	08/15/2013	09/30/2013
Hold Technical Advisory Committee Meetings	08/15/2013	04/15/2015
Develop Draft Regional Ecosystem Framework/CAP	09/01/2013	09/30/2014
Stakeholder meeting #1 (preparation and hold meeting)	09/23/2013	02/10/2014

Stakeholder meeting #2 (preparation and hold meeting)	02/10/2014	06/30/2014
Develop Final Regional Ecosystem Framework/CAP	10/01/2014	08/30/2015
Stakeholder meeting #3 (preparation and hold meeting)	09/24/2014	02/11/2015
Web Site with Data and Final Report	02/01/2015	08/30/2015

Deliverables, Products, and Annual Milestones for MNFI:

FY13

- Technical Advisory Committee is formed (list of committed organizations)
- Kickoff TAC meeting is held (materials and minutes) pending partner availability
- Detailed Gant Chart of each key step in the process is created to facilitate project management
- Identification and initial assessment of conservation related plans in region is completed

Location: Lansing and Monroe County

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – can be in what ever format makes sense for the project but must also include a short (2-5 page) summary in the format of a scientific journal. If the project is a research project it must also make management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support. Any reports, products, or presentations produced through a project funded by MDOT will have the MDOT logo and specifically acknowledge MDOT’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY2013

	Cost Category	Cost
	Personnel	\$16,950
	Travel	\$252
	Supplies	\$200
	Indirect Cost (Rate: 26%)	4,525

	Budget Total	\$21,927
	- Waived Indirect	4,525
	Total Project Amount:	\$17,402

Contract Type/Payments:

This is a fixed-price contract with quarterly reimbursements

CHANGE NOTICE NO. 02 TO CONTRACT NO. 751B3200002
Between
STATE OF MICHIGAN
and

Required by authority of 1984 PA 431, as amended.

Name and Address of Contractor Michigan State University Office of Sponsored Programs 426 Auditorium Rd 301 Administration Building Lansing, MI 48824-2612	Primary Contact Lisa Somers	
	Email Somers@osp.msu.edu	
	Telephone (517) 884-4279	Contractor #, Mail Code 2****5984/283

State Contact	Agency	Name	Telephone	Email
Contract Compliance Inspector	DNR	Michael Donovan	(517) 373-7027	Donovanm@michigan.gov
Buyer	DNR	Jana Harding-Bishop	(517) 373-1190	HardingJ3@michigan.gov

Initial Contract Summary

Description (Provide a basic but comprehensive description of services) Conservation Planning Services			
Effective Date November 1, 2012	Initial Expiration Date October 31, 2015	Initial Available Options 3 - 1 yr options	Current Expiration Date October 31, 2015
Payment Terms Net 45	F.O.B. N/A	Shipped N/A	Shipped From N/A
Minimum Delivery Requirements N/A		Alternate Payment Options <input type="checkbox"/> P-Card <input type="checkbox"/> Direct Voucher (DV)	Available to MiDeal Participants <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Description of Change Notice

Option Exercised: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If Yes, New Expiration Date: _____
Provide the detail of the Change Notice Changing the cost breakdown of Title # 14 to cross fiscal years	
Value/Cost of Change Notice \$0.00	Estimated Revised Aggregate Contract Value \$4,099,602.18

FOR THE CONTRACTOR:

Michigan State University

On-file in DNR Procurement

Authorized Agent Signature

Lisa Somers

Authorized Agent (Print or Type)

3/27/13

Date

FOR THE STATE:

Department of Natural Resources

On-file in DNR Procurement

Authorized Buyer Signature

Sharon Walenga-Maynard

Authorized Buyer (Print or Type)

3/27/13

Date

Title (14): Natural Community Surveys on State Park and Recreation Area Lands

Sponsor(s): DNR Parks & Recreation Division: Glenn Palmgren and Ray Fahlsing

Principal Investigator(s): Josh Cohen

Project Beginning Date: 1 January 2013 **Project End Date:** 28 February 2014

Budget Request for Current Year: \$48,491

Statement of Needs:

Michigan's diverse terrestrial and aquatic systems provide critical habitat and are key to the conservation, protection, and sustainability of plant and animal species. Maintaining the ecological integrity of natural ecosystems requires long-term active and passive management of ecosystem structure and composition, ecological processes, and human interactions.

Michigan Department of Natural Resources (DNR), Parks & Recreation Division (PRD) is responsible for management of Michigan's State Parks, Recreation Areas, Boating Access Sites and Harbors. Part of PRD's mission states that the division will "acquire, protect, and preserve the natural, historic, and cultural features of Michigan's unique resources..." Within the division, the Stewardship Unit is charged with preserving, protecting, and restoring the natural and cultural features. Preservation and restoration (where necessary) of the natural communities within state parks and recreation areas, along with their constituent plants and animals, is a core part of the mission. PRD is in the process of writing and updating management plans for state parks and recreation areas. In these plans the land is zoned for various levels of protection and use based on the location and type of natural and cultural features on the ground. In addition, the Department's Biodiversity Conservation Planning Process (BCCP) is identifying biodiversity stewardship areas, many of which will include portions of state parks and recreation areas, where the management priority will be for biodiversity conservation. The goal of BCCP is to establish a network of representative natural communities that contribute to functioning ecosystems across the state.

A baseline inventory of natural communities was conducted in all state parks and recreation areas in the late 1990s - early 2000s. However, this initial inventory did not include comprehensive boundary mapping, detailed condition assessments, or threat assessments. To inform the PRD Management Planning process, the DNR BCCP, and the overall protection, preservation, and restoration of natural communities throughout Michigan's state parks and recreation areas, up-to-date information is needed on the boundaries, condition, landscape context, and current threats to the ecological integrity of natural communities. From 2009 to 2012, Michigan Natural Features Inventory (MNFI) conducted a multi-year survey and assessment on state park and recreation area lands of known natural community element occurrences. During the course of these surveys, ecologists identified additional potential high-quality natural communities in many of the larger parks (i.e., Porcupine Mountains Wilderness and Craig Lake State Parks). In addition, the PRD has recently acquired numerous lands that have yet to be evaluated or fully evaluated for high-quality natural communities (i.e., Lime Island Recreation Area, Menominee River Recreation Area and Rockport Recreation Area).

MNFI proposes to conduct surveys for high-quality natural communities in the following PRD lands: Porcupine Mountains Wilderness State Park, Craig Lake State Park, Lime Island Recreation Area, Menominee River Recreation Area and Rockport Recreation Area. Current state forest land along the Keweenaw Point that will likely be transferred to PRD ownership may potentially be included within the surveys. In addition, MNFI ecologists will work in coordination with PRD staff to select additional PRD lands for survey if time and budget permits.

Surveys will assess the current condition of high-quality natural communities, delineate their boundaries and detail the vegetative structure and composition, landscape and abiotic context, threats, management needs, and restoration opportunities. Results of these surveys will be incorporated into MNFI's database and will be summarized in a brief report to be completed by the end of the project. Information gathered from this survey effort will help the DNR prioritize protection, management, and restoration and facilitate the ongoing management planning and BCCP.

Completion of this multi-year survey project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), improve Michigan's natural community classification (p88), identify areas of high biodiversity (p72), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), and provide more information on what constitutes high-quality representative occurrences of landscape features (p88). Work on this project will contribute to the DNR's development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86), and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Work Plan/Approach:

MNFI will complete the following:

1. Survey for high-quality natural community element occurrences on state park and recreation area lands.
 - a. Prioritization of sites to be surveyed will be determined in consultation with PRD.
 - b. Preparation of GIS maps and GIS data for each of the targeted areas.
 - c. Field surveys will assess classification, condition, size, and landscape context
 - d. Field surveys will include:
 - i. compiling a list of dominant and representative plant species
 - ii. describing site-specific structural attributes and ecological processes
 - iii. measuring representative tree DBH and age where appropriate
 - iv. analyzing soils and hydrology
 - v. noting current and historical anthropogenic disturbances
 - vi. evaluating potential threats (for invasive species, create a list of all invasive species noted in the community and describe the extent and significance of the invasion for each species) – an overall threat “score” or “grade” will be assigned for each site, with scoring criteria that was developed in consultation with PRD
 - vii. ground-truthing aerial photographic interpretation using GPS to facilitate mapping the perimeter of the element occurrence
 - viii. taking digital photos and GPS points at significant locations
 - ix. surveying adjacent lands when possible to assess landscape context – but detailed surveys of non-state-owned portions of a community are not required
 - x. assigning element occurrence ranks
 - xi. noting management needs and restoration opportunities (recommendations of priorities and what to do, but not detail on how to do it)
 - xii.
2. Incorporate survey results into MNFI's database.
3. Compile and provide all survey data listed above and produce a brief annual report

summarizing findings, focusing on natural community condition and threats.

Timeline/Project Work Period:

The timeline for the project extends from January 1, 2013 to February 28, 2014.

1. Field preparation- winter and spring 2013 (January 1, 2013 to May 31, 2013)
2. Field surveys- summer 2013 (June 1, 2013 to September 30, 2013)
3. Progress report with list of natural communities visited and their element occurrence rankings- December 31, 2013
4. Final report and incorporate data in to MNFI database for the natural communities documented on PRD lands - February 28, 2014

Expected Benefits and Information Transfer:

Results from these surveys will help inform the PRD Management Planning process, the DNR BCCP, and the overall protection, preservation, and restoration of natural communities throughout Michigan's state parks and recreation areas. Information gathered from this survey effort will help the DNR prioritize protection, management, and restoration and facilitate the ongoing management planning and BCCP. Completion of this multi-year survey project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), improve Michigan's natural community classification (p88), identify areas of high biodiversity (p72), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), and provide more information on what constitutes high-quality representative occurrences of landscape features (p88). Work on this project will contribute to the DNR's development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86), and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Deliverables and Products:

Progress report with list of natural communities visited due September 30, 2013.

Progress report with list of natural communities visited and their element occurrence rankings due December 31, 2013.

Final report, survey data, and incorporation of data into MNFI database due February 28, 2014

Location: MNFI scientists will work closely with the DNR PRD staff based in Lansing. Field surveys will be conducted throughout the state.

Reporting: Brief progress reports will be submitted to Glenn Palmgren and Ray Fahlsing by September 30, 2013 and December 31, 2013.

Final report, survey data, and incorporation of data into MNFI database due February 28, 2014

2013–2014 Budget:

Task or Direct Cost Category	Cost FY 2013	Cost FY2014
Personnel	\$19,430	\$13,654
Travel	\$7,050	
Supplies	\$275	
Indirect Cost (Rate: 26%)	\$6,956	\$3,550
Budget Total	\$33,711	\$17,204
-*Waived Indirect Difference	-\$1,605	-\$820
Total Project Amount:	\$32,106	\$16,385

Budget:

Task or Direct Cost Category

Contract Type/Payments:

This is a fixed-priced contract.

* (Negotiated IDC Rate for this division of DNR is 20% or \$8,082.



Michigan Department of Natural Resources – Procurement Services
 P.O. Box 30028, Lansing, MI 48909
 OR
 530 W. Allegan, Lansing, MI 48933

CHANGE NOTICE NO. 01 TO CONTRACT NO. 751B320002
Between
STATE OF MICHIGAN
and

Required by authority of 1984 PA 431, as amended.

Name and Address of Contractor Michigan State University Office of Sponsored Programs 426 Auditorium Rd 301 Administration Building Lansing, MI 48824-2612	Primary Contact Lisa Somers	
	Email Somers@osp.msu.edu	
	Telephone (517) 884-4279	Contractor #, Mail Code 2****5984/283

State Contact	Agency	Name	Telephone	Email
Contract Compliance Inspector	DNR	Michael Donovan	(517) 373-7027	Donovanm@michigan.gov
Buyer	DNR	Jana Harding-Bishop	(517) 373-1190	HardingJ3@michigan.gov

Initial Contract Summary

Description (Provide a basic but comprehensive description of services) Conservation Planning Services			
Effective Date November 1, 2012	Initial Expiration Date October 31, 2015	Initial Available Options 3 - 1 yr options	Current Expiration Date October 31, 2015
Payment Terms Net 45	F.O.B. N/A	Shipped N/A	Shipped From N/A
Minimum Delivery Requirements N/A		Alternate Payment Options <input type="checkbox"/> P-Card <input type="checkbox"/> Direct Voucher (DV)	Available to MiDeal Participants <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Description of Change Notice

Option Exercised: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, New Expiration Date: _____	
Provide the detail of the Change Notice Adding FY-13 Projects - no increase in contract value	
Value/Cost of Change Notice \$0.00	Estimated Revised Aggregate Contract Value \$4,099,602.18

FOR THE CONTRACTOR:

Michigan State University

 On-file in DNR Procurement
 Authorized Agent Signature
 Lisa Somers

 Authorized Agent (Print or Type)
 12/5/12

 Date

FOR THE STATE:

Department of Natural Resources

 On-file in DNR Procurement
 Authorized Buyer Signature
 Sharon Walenga-Maynard

 Authorized Buyer (Print or Type)
 12/5/12

 Date

2013 Michigan Natural Feature Inventory Work Plans

The project work plans in this document are used by the DNR to update the scope of work for the Contract agreement number 751B3200002 between the Michigan Department of Natural Resources (DNR) and Michigan State University's Michigan Natural Features Inventory (MNFI).

In order for MNFI to begin work on any of these work plans, a purchase order must be released by the DNR referencing the specific work plan. The ability of the DNR to release a purchase order is impacted by the levels of State and Federal appropriations across a variety of programs. There is tremendous uncertainty in the appropriation levels at both the State and Federal levels of government.

The appearance of a project work plan in this document is not a guarantee that a purchase order will be released for that project work plan. It is critically important to remember that no work can proceed on a project work plan until the DNR releases a corresponding purchase order.

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Title (1):	Consultation, Administration and Database Management (CAD)		
Principal Investigator(s):	Brian Klatt		
Sponsor:	Mike Donovan		
Project Beginning Date:	1 November 2012	Project End Date:	30 September 2013
Budget Request for Each Fiscal Year of Project:	\$305,550		
Statement of Needs:			
<p>Part 365, Endangered Species Protection, of the Natural Resources and Environmental Protection Act (Act 451 of the Michigan Public Acts of 1994) requires the Department of Natural Resources to carry out the provisions of the Act with respect to protection of listed threatened and endangered species (“listed species”); the MDNR Wildlife Division (WLD) serves a central role in implementing the requirements of Part 365 of PA 451. Additionally, the State’s Wildlife Action Plan (WAP) identified a number of Species of Greatest Conservation Need (SGCN) as well as Landscape Features that support Michigan’s wildlife. The WAP serves as a guidepost to the MDNR in obtaining and wisely using Federal funding that furthers the purposes of the WAP; the WLD is responsible for implementation of the WAP.</p> <p>The Michigan Natural Features Inventory (MNFI) maintains data, information and expertise on listed species, as well as other rare species and high quality natural communities in the Natural Heritage Database (NHD). The NHD is the single most comprehensive source of information on the location and condition of rare species and high quality natural communities in Michigan. As such, the NHD contains critical information on many of the SGCNs and the natural communities tracked in the NHD are linked to the Landscape Features contained in the WAP. Furthermore, MNFI is the designated Natural Heritage Program (NHP) for the state of Michigan and is part of a system of Natural Heritage Programs throughout the United States coordinated by NatureServe. As the NHP for Michigan, MNFI coordinates through NatureServe to aggregate the NHD data into a national-level database that facilitates implementation of WAPs throughout the country and makes possible multi-state projects involving rare species, such as the on-going Multi-species Wind Habitat Conservation Plan for the Midwest.</p> <p>The ability of the MDNR WLD to manage Michigan’s SGCNs is greatly enhanced by the availability of MNFI’s data, information and staff expertise on Michigan’s imperiled species and natural communities. Management activities planned by the MDNR WLD are evaluated for their potential effects on the State’s rare and protected plant and animal species. The MNFI’s staff expertise and NHD are unique and invaluable tools to facilitate this evaluation. Consequently, MNFI resources are essential to the MDNR WLD’s effort to conserve SGCNs.</p> <p>Access to MNFI’s expertise and information is provided to the MDNR WLD through consultation with the MNFI staff, application of MNFI staff expertise in the maintenance and enhancement of information entered into the NHD, and access to information products based on the NHD. Historically, the CAD project provides financial support for access to MNFI staff (consulting), as well as the “value added” products based on the NHD. Consulting services are provided in the form of scientific expertise on threatened and endangered species and expert advice on the management of natural communities.</p>			
Objectives:			
<ol style="list-style-type: none"> 1. Continue to maintain and add to the NHD database. 2. Assist WLD staff with the use of the NHD to support land management planning. 			

3. Clarify for WLD staff the nature and limits of Element Occurrences as represented in the NHD.

Expected Benefits:

The information, expertise and services that MNFI will provide to the MDNR WLD through this project are essential for the WLD to address its mission while meeting its trust responsibilities and legal obligations. Maintaining the NHD, providing assistance with interpretation and application of NHD data, compiling and providing access to natural features information and providing technical consultation and assistance with biodiversity conservation efforts and issues will provide critical information and a sound scientific basis for the Division's natural resource management, planning and protection efforts.

This work directly addresses important elements of the WAP. Specifically, this work provides information and assistance that addresses information gaps on SGCNs, particularly rare and imperiled species. Additionally, rare and high quality natural communities as well as potential indicators of ecological integrity will be tracked and incorporated in management planning and species with specific requirements that are not assessed by landscape feature monitoring or otherwise of considerable interest (e.g., socially or economically important species, keystone species). This project will help address the following WAP elements:

1. The statewide priority threat of lack of scientific knowledge (WAP, pg. 64).
2. The priority issue of rarity (WAP pg. 75).
3. The priority conservation need of identification and elimination of significant information gaps for SGCN and landscape features (WAP, pg. 86) by assessing species status and trends using the NHD.

This project will also contribute to programmatic and administrative support of the Michigan Natural Features Inventory as the designated Natural Heritage Program for Michigan.

Work Plan/Approach:

1. Identify, prioritize and help facilitate surveys and data gathering to determine the distribution and status of SGCNs and associated habitats. Develop and deliver information products and services pertaining to SGCNs and their habitats to the WLD. Whenever possible and through separate agreements, make NHD information available to other land management agencies, including NatureServe, which aggregates state-level data into a national database that is of high value to Federal agencies managing resources within the State of Michigan, as well as making that information to researchers.
2. Review MDNR WLD projects and plans for the management of and potential affects to SGCNs and natural communities while providing recommendations as needed. Consult with MDNR WLD on state-owned lands considered surplus to the Department's needs and considered for disposal. Provide consultation and expertise on other MDNR WLD projects that could affect SGCNs and their habitats as requested.
3. Commensurate with funding, maintain a statewide database on natural heritage elements (i.e. the NHD), process incoming data and continue to link data with MDNR spatial data systems for use by WLD staff, work with the WLD to prioritize for data backlog and new data entry.

4. Review and participate in the development and implementation of projects and plans that include the conservation of SGCNs, and their habitats.
5. In cooperation with the WLD, continue to assess the current process of receiving and processing natural heritage information. Assessment will include identification of information sources, quality of information from each source, advisability of including such information in the NHD, and examining other approaches and adjuncts to the NHD, such as establishment of an observational database in addition to, or incorporation into, the NHD.
6. Develop and deliver an efficient education program within the WLD, explaining the nature of data suitable for inclusion in the NHD, limitations of the NHD, and interpretation of information from the NHD.
7. Administrate the MNFI as a Constituent Member in good standing within the NatureServe network.

Timeline/Project Work Period:

Work will occur throughout the project period from November 1, 2012 to September 30, 2013.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

Deliverables and products that will result from this project will include the following:

1. A statewide database with information on the status and distribution of Michigan's SGCNs and their habitats that are tracked in the NHD.
2. Development, maintenance, application and dissemination of NHD-derived, WAP-related information, expertise, products and services which may include natural feature surveys and technical consultation.
3. Develop educational materials, such as factsheets and PowerPoint presentations, for WLD staff to understand the limits, uses, and nature of NHD Element Occurrences. Participate as an instructor in NHD training session to DNR staff.
4. Refine the developing backlog management system for potential Element Occurrences.
5. Develop guidelines for determining priorities for data entry into the NHD.

Location: The work will be conducted at the MNFI offices located in the Mason Building, the campus of Michigan State University, and locations statewide. Work may involve training, compiling information, providing technical consultation and assistance while participating in meetings, conferences, management and planning sessions.

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY

	Cost Category	Cost
	Personnel	\$298,505
	Travel	\$4,145
	Supplies	\$2,900
	Indirect Cost (Rate: 52%)	\$158,886
	Budget Total	\$458,356
	- Waived Indirect	-\$158,886
	Total Project Amount:	\$305,550

Contract Type/Payments: This is a fixed-price contract.

Title (2):	Southern Michigan Lands Integrated Inventory Project		
Principal Investigator(s):	Mike Kost		
Sponsor:	Mike Donovan		
Project Beginning Date:	1 November 2012	Project End Date:	30 September 2013
Budget Request for Each Fiscal Year of Project:	\$225,000		

Statement of Needs:

In order for the DNR to fulfill its responsibility for managing Michigan’s natural resources, their staff require thorough knowledge of both the landscape features and natural features on state lands. While the DNR has long performed inventories and kept detailed records for a diverse array of wildlife and other natural resources, thorough inventory of the natural features such as rare wildlife species and the full array of natural communities has not been completed. The goal of this project is to facilitate implementation of the Michigan Wildlife Action Plan (WAP) by completing an integrated inventory of both the landscape features and natural features on DNR managed lands in southern Michigan. This project will involve conducting both IFMAP Stage 1 inventories and natural features inventories to identify and document the landscape features, rare species, and high quality natural communities that occur on state lands in southern Lower Michigan. Upon completion of the integrated inventories, reports for each management area will be produced that describe their landscape and natural features and conservation significance. The information provided from these integrated inventories is needed for identifying opportunities for ecological restoration and biodiversity protection, and assessing the potential benefits and impacts of future land management, recreation, and development activities on state lands.

Michigan Natural Features Inventory has over 25 years of experience conducting natural features inventories and employs staff with expertise in identifying and documenting high quality natural communities and terrestrial and aquatic rare species. In addition, MNFI staff has established strong working relationships with many of the state land managers through collaborations on various projects, ecological workshops and day-to-day consultations. Consequently, MNFI is in an excellent position to perform biological inventories and convey information about recognition of natural features, survey methodology, and stewardship needs to DNR field staff.

This work also addresses important elements of the Michigan Wildlife Action Plan (WAP). Specifically, this work addresses the need for surveys to locate additional high quality natural communities, because the spatial extent and condition of these communities may be valuable indicators of landscape feature condition (p. 80). In addition, this work addresses the need for surveys that will address gaps in knowledge related to threats, landscape features, species and the relationships among them (p. 79).

Objectives:

- 6) To provide the Wildlife Division with critical information for making well-informed decision on the management of state lands.
- 7) To conduct IFMAP Stage 1 inventories on state lands administered by the Wildlife Division to identify and delineate landscape features. These inventories provide the Wildlife Division with critically important information for natural resource planning and management.

- 8) To conduct natural features inventories on state lands administered by the Wildlife Division to document rare species, Species of Greatest Conservation Need, and exemplary natural communities. This information is critically important to land managers and planners for making well-informed land management decisions. In addition, this information is used for conservation planning by many other agencies including the Michigan Department of Environmental Quality, Michigan Department of Transportation, Michigan Department of Agriculture, US Fish and Wildlife Service, Natural Resource Conservation Service, The Nature Conservancy, regional and local land trusts and conservation organizations, universities, and private industry (e.g., environmental consultants, power companies, etc.).
- 9) To make the information collected through this integrated inventory processes available through two statewide databases, IFMAP and Biotics. Both databases are widely used by DNR staff for resource assessment and management planning. In addition, information contained in the Biotics database is available to the organizations referenced above.
- 10) To complete Biotics data entry for the natural features identified at Barry State Game Area during the current (2012) field season.

Expected Benefits:

Upon completion of this integrated inventory, DNR staff will have full access to critically important information for making well-informed decisions on planning and management. Completion of the IFMAP Stage 1 inventory will provide accurate ownership boundaries of the state game areas, which will allow future maps made by the DNR and others to more accurately reflect current ownership boundaries. The delineation and classification of vegetation stands within the state game areas, along with the tabular data on wildlife habitat variables, will provide wildlife planners and biologists with valuable information for assessing potential habitat-management options and needs. Similarly, the natural features inventory data and report will provide critical information for conservation planning and management to DNR staff as well as a broad suite of potential Biotics users (see item 3 in list of above).

Work Plan/Approach:

- 7) IFMAP Stage 1 inventory to identify and delineate landscape features will be conducted on state lands administered by the Wildlife Division (e.g., State Game Areas, State Wildlife Areas and State Recreation Areas). This process will involve 1) determining management area ownership boundaries, 2) delineating and classifying vegetation stands using desktop GIS software, and 3) conducting field inventories to ground-truth stand delineations and classifications and record data on wildlife habitat variables. The management areas chosen for IFMAP Stage 1 inventory will be identified by the Wildlife Division in consultation with MNFI project staff.
- 8) Natural features inventories will focus on state lands where IFMAP Stage 1 inventory has been completed and will be conducted concurrently with the Stage 1 inventory. Thus, Stage 1 inventories and natural features inventories will be conducted simultaneously but in different management areas. In 2013, natural features inventories will focus on identifying and documenting rare animal species at Barry State Game Area, where natural communities surveys were completed in 2012, and surveys for natural communities will be conducted at Lost Nation State Game Area. During the following field season (2014), surveys for rare wildlife species will move to Lost Nation State Game Area, and the natural community surveys will shift to the next management area identified for inventory. When possible, this rolling, tag-team approach in which natural community surveys are followed by rare animal surveys will be utilized in subsequent years of the project because it provides very specific

habitat data useful for targeting rare wildlife surveys.

- 9) The timing of these integrated inventories will be sequenced to provide Wildlife Division staff with accurate and timely information for Wildlife Area Master Planning.
- 10) Planning for natural features inventories will utilize data collected during the IFMAP Stage 1 inventory to help focus the inventory efforts for natural communities and rare species.
- 11) The integrated inventories will provide recommendations for conservation planning, which will be recorded in the IFMAP GDSE through the Stage 1 comments for Stands and/or the Unique Sites categories of Areas of Interest (AOI) layer.
- 12) A status report summarizing the work accomplished on both the IFMAP and natural features inventories will be produced. With additional funding in the subsequent fiscal year, the element occurrences (EOs) located on Barry State Game Area will be entered into the Biotics database. A final report for Barry State Game Area will be produced that describes its natural features, their conservation significance, and the associated management recommendations with new funding in 2014 following the completion of the rare animal surveys.

Timeline/Project Work Period:

October to March: 1) Determine and adjust ownership boundaries of state game areas in preparation for conducting IFMAP Stage 1 pre-inventory. 2) Conduct IFMAP Stage 1 pre-inventory to delineate and classify vegetation stands on state game areas using desktop GIS software. 2) Process EOs from Barry State Game Area. 4) Prepare for natural community surveys at Lost Nation State Game Area and rare animal surveys at Barry State Game Area.

April to September: 1) Hire and train seasonal staff to assist with IFMAP Stage 1 inventories of state game areas. 2) Conduct IFMAP Stage 1 inventories on state game areas. 3) Conduct natural features inventories of Lost Nation State Game Area with a focus on natural communities and Barry State Game Area with a focus on rare animals. 4) Prepare and submit annual progress report.

Deliverables, Products, and Annual Milestones:

- 6) All ownership boundaries of state game areas receiving IFMAP inventory will be delineated and entered into IFMAP, where they will be available to DNR staff (October through March).
- 7) All vegetations stands of state game areas receiving IFMAP inventory will be delineated and classified during the IFMAP Stage 1 preinventory process. These stand delineations will be available to DNR staff upon completion of the preinventory of each compartment within a state game area (October through March).
- 8) Final ground-truthed and adjusted shapefiles of all stands, along with the associated data on wildlife habitat variables, will be available to DNR staff through IFMAP upon completion of Stage 1 inventory of each compartment within a state game area (April through September).
- 9) All EOs at Barry State Game Area will be available to DNR staff through IFMAP and Biotics (March). In addition, the data from Biotics will also be available to other conservation

organizations, academics, and private industry groups (March).

- 10) A status report summarizing the work accomplished during the current field season on both the IFMAP and natural features inventories will be produced (September). With additional funding in the subsequent fiscal year, EOs for Barry State Game Area will be entered into Biotics. A final report for Barry State Game Area that describes its natural features, their conservation significance, and the associated management recommendations will be produced with additional funding in 2014 following the completion of the rare animal surveys.

Location: This project will focus on state lands administered by the Wildlife Division (e.g., State Game Areas, State Wildlife Areas and State Recreation Areas). The IFMAP Stage 1 inventories will be conducted on state lands identified by the Wildlife Division in consultation with MNFI project staff. The natural features inventories will be conducted at Lost Nation State Game Area and Barry State Game Area. This project may include attending professional conferences and trainings in Michigan or other states to gain new information and report on results.

Reporting:

1. Quarterly updates to sponsor: format to be decided with WLD Sponsor.
2. Annual progress report: to be submitted by September 30 to WLD Sponsor and MNFI Contact in an electronic format using a designated template.
3. Final report: With additional funding in subsequent years, a final report of the natural features inventory of Barry State Game Area will be submitted by March 31, 2014, following the completion of rare animal surveys. The format will follow that of the previously submitted state game area reports and will contain management recommendations. In addition, a short (2-5 pages) summary in the format of a scientific journal will also be submitted.

Acknowledgement of Participation:

Any reports, products, or presentations produced through this project will contain the DNR logo and specifically acknowledge the Wildlife Division’s participation and support.

Any reports or products produced through this project will contain the following acknowledgement as appropriate: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name(s)*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY\$225,000

	Cost Category	Cost
	Personnel	\$197,833
	Travel	\$23,392
	Supplies	\$3,775
	Indirect Cost (Rate: 26%)	\$58,500
	Budget Total	\$283,500
	- Waived Indirect	-\$58,500

	Total Project Amount:	\$225,000
Contract Type/Payments:		
This is a fixed-price contract.		

Title (3):	Addition of the Poweshiek Skipperling to the Mitchell's Satyr Butterfly HCP		
Sponsor(s):	Dan Kennedy		
Principal Investigator(s):	David Cuthrell		
Project Beginning Date:	1 November 2012	Project End Date:	30 September 2013
Estimated Budget for Year 1:	\$10,500		
Statement of Needs:			
<p>There is a recognized need to include the recently Federally Listed Candidate Poweshiek Skipperling (<i>Oarisma Poweshiek</i>) to the Michigan DNR's "Fen and the Art of Mitchell's Satyr Maintenance: A draft of the fen community conservation plan." Additional justifications include: 1) Once fully listed an incidental take permit (ITP) will be required for all research and habitat management in occupied habitat. 2) Without ITP, all habitat management actions will stop. 3) FWS will have to develop a biological opinion and permit issuance will likely postpone projects for a year. 4) A HCP is required to obtain an ITP for Poweshiek. 5) It is much easier and cost effective to update existing Mitchell Satyr Butterfly HCP than writing a new HCP. And finally 6) Other conservation organizations working in occupied Poweshiek habitat can sign a Certificate of Inclusion and be covered by our ITP if they follow the guidelines identified in the HCP.</p>			
Objectives:			
<p>Our goal is to make updates and improvements to the existing plan as well as produce new sections with specific reference to the Poweshiek skipperling. The objectives of this project are to: 1) Update sections in the existing plan discussing purpose, background, and area to be covered, 2) Produce sections on Poweshiek skipperling biology and status, and 3) Update and add sections on Goals and Objectives that work for both Mitchell's satyr and Poweshiek skipperling, and 4) Update or add to sections under A4) Project Description and Activities covered under Permit and A5) Measures to Minimize Adverse Impacts. Adding the Poweshiek skipperling to this plan will be an overall cost savings to the Department and the USFWS as a separate plan will not have to be produced with much repetitive information.</p>			
Expected Benefits:			
<p>This project will make significant updates and improvements to the existing HCP plan as well as produce new sections with specific reference to the Poweshiek skipperling. Adding the Poweshiek Skipperling to this plan will be an overall cost savings to the Department and the USFWS as a separate plan will not have to be produced with much repetitive information.</p>			
Deliverables and Products:			
<p>The revised Mitchell's Satyr HCP will be the deliverable on this project including updated sections on the Poweshiek skipperling as specified above.</p>			
Location:			
Lansing offices.			

Reporting:

1. Quarterly updates to sponsor: format to be decided with WLD Sponsor.
2. Annual progress report: to be submitted by September 30 to WLD Sponsor and MNFI Contact in an electronic format using a designated template.
3. Final report: With additional funding in subsequent years, the final products are those revised sections in the Mitchell Satyr HCP. No additional report will be produced.

Acknowledgement of Participation:

Any reports, products, or presentations produced through this project will contain the DNR logo and specifically acknowledge the Wildlife Division's participation and support.

Any reports or products produced through this project will contain the following acknowledgement as appropriate: "(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name(s)*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program."

Budget: FY 2013

	Cost Category	Cost
	Personnel	\$10,500
	Travel	0
	Supplies	0
	Indirect Cost (Rate: 52%)	5,460
	Budget Total	15,960
	- Waived Indirect	5,460
	Total Project Amount:	\$10,500

Contract Type/Payments:

This is a fixed-price contract.

Title (4):	Assessment of SGCN Animal Conservation Status Ranks To Aid Delisting		
Principal Investigator(s):	David Cuthrell, Peter Badra		
Sponsor:	Amy Derosier		
Project Beginning Date:	1 November 2012	Project End Date:	30 September 2015
Budget Request for Each Fiscal Year of Project:	\$52,000 for FY 2013 (\$54,000 for FY14, and \$9,000 for FY15)		

Statement of Needs: NatureServe and its member programs use a suite of factors to assess the extinction or extirpation (regional extinction) risk of plants, animals, and ecosystems. By researching and recording information on a set of conservation status factors, biologists can assign a conservation status rank to these elements at both global (G-rank) and regional scales (S-rank). The current protocol for assigning a conservation status rank is based on scoring an element against ten conservation status factors, which are grouped into three categories: rarity (six factors), trends (two factors), and threats (two factors). The conservation status factors that comprise each category help guide the consistent and rigorous recording of information to facilitate the assignment of a conservation status.

It has been over a decade since any of the animal groups in Michigan have been thoroughly and systematically evaluated in terms of their conservation status. In fact, some of the animals that were listed in the Wildlife Action Plan made their way onto the SGCN list because they did not even have status ranks, or their ranks were outdated. Over the last few years MNFI has acquired new information on the distribution and status of many animal species by related SWG funding. Both newly discovered species for the state have been located as well as many new sites were documented through dedicated, special surveys in appropriate habitat.

In addition, the S-ranks will be an extremely valuable tool in the T & E list review process. We believe some of the SCGN species would be delisted if a bit of dedicated, systematic surveys were conducted in Michigan to further understand their full distribution and conservation status. For example, some of the rare land snails and some of the more specialized, and secretive insects are likely much more common than currently documented due to their specialized habits and ephemeral activity patterns. With some dedicated surveys we might be able to prove this.

Through this project MDNR WLD will have some consistent, documented, rationale for species listed as Species of Greatest Conservation Need (SCGN).

Objectives:

- 1) All 404 SGCN animals (for which there is sufficient information) will be run through the NatureServe calculator for consistent and accurate assessments of conservation status ranks.
- 2) MNFI will provide the WLD a list of species for which targeted surveys may show they occur more frequently than previously documented, e.g., land snails, pond mussel, pea clams, and selected insects.
- 3) Provide the WLD a set of recommendations in terms of how often the lists should be reviewed by animal groups/guilds (e.g., fish, amphibians, raptors, neotropical migrants).
- 4) In consultation with WLD we will begin developing species-specific criteria for removal from the

SGCN list.

Expected Benefits:

The newly updated S-ranks will be extremely useful for a number of reasons. With over 400 animals listed as SGCN and limited resources, decisions on priorities and where to focus efforts are needed. This analysis will better inform management and conservation efforts. The S-ranks will also be extremely valuable to the DNR and technical committees during the next T & E list review. And finally the S-ranks can point to success stories by looking at those species that may have made progress during the first decade of SWG funding, and establishing criteria for species removal from the SGCN and in some cases even the state endangered species list.

Work Plan/Approach:

MNFI will work thorough all SGCN animals and review/revise their associated conservation status rank (S-rank and G-rank where we have that responsibility). This new rank will be available on our webpage via our Rare Species Explorer as well as on our lists of rare elements. This list will be readily available to our conservation partners, the general public, and the rare animal technical committees to be used during the next session of the state list review.

For the systematic survey recommendations portion of the project, we will identify those species that we feel we can quickly add information to their distribution and status within the state. One such group where we feel this can happen is within the rare land snails and a second group is within the terrestrial insects. We will review all known occurrences and determine appropriate new places to survey for the elements and provide specific survey recommendations in terms of survey type, survey timing, appropriate weather conditions, and any other special instructions for increasing the likelihood of locating the animal. This information will be provided in the final report and summarized on the rare species explorer portion of MNFI webpage.

Timeline/Project Work Period:

Work will begin on November 1, 2012 and end on March, 30 2015 with periodic updates via quarterly reports being provided to the WLD sponsor.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

1. A detailed list of the SGCN animals with pre-project and post-project conservation ranks will be submitted, along with the associated criteria and standards by species. All this information will be provided to WLD directly from the excel calculator developed by NatureServe.
2. We will also do a minimum of one brown bag highlighting the changes of the S- and G-ranks as part of this project.
3. A brief report highlighting the results of the project will be provided each year, including recommendations for targeted surveys and how often the lists should be reviewed by animal group.

During year one will provide conservation ranks on 1/2 of the animals. FY2012 – 202 animals ranked, FY2013 – 202 animals ranked. During years 2 and 3 of the project, in consultation with WLD, if applicable we will begin developing recommendations for removal of species from the SGCN list. A

final report detailing survey results will be produced during year three of the project.

Location: The work will be conducted at the MNFI offices located in the Mason Building, Lansing, MI, and on the campus of Michigan State University.

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – can be in what ever format makes sense for the project but must also include a short (2-5 page) summary in the format of a scientific journal. If the project is a research project it must also make management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY 2013

	Cost Category	Cost
	Personnel	\$ 50,005
	Travel	\$ 0
	Supplies	\$ 1,995
	Indirect Cost (Rate: 26%)	\$ 13,520
	Budget Total	\$ 65,520
	- Waived Indirect	\$ 13,520
	Total Project Amount:	\$ 52,000

Contract Type/Payments:

This is a fixed-price contract.

Title (5):	Oak Savanna, Pine Barrens, and Jack Pine Forest Restoration in Michigan and Ohio for Species of Greatest Conservation Need		
Principal Investigator:	Brad Slaughter		
Sponsor:	Mark Sargent		
Project Beginning Date:	1 November 2012	Project End Date:	30 September 2013
Budget Request for Each Fiscal Year of Project:	\$50,000 for FY13		

Statement of Needs:

Oak savanna, pine barrens, and jack pine forest are considered conservation priorities due to their rarity, biodiversity value and their dependency on private land management. Approximately 90% of Michigan's oak savannas and barrens have been converted to forest, agriculture or urban development (MI-WAP p. 29). Only a few hundred acres of high quality savanna and barrens habitat remain across both States. Historically, wildfire maintained savannas, barrens and dense stands of jack pine. As naturally occurring wildfires have been suppressed, these habitats have converted to mature closed canopy forest. As a result, many species that depend on these relatively open fire-dependent communities have declined. Combined, oak savanna, pine barrens, and jack pine forest are inhabited by the federally endangered Kirtland's warbler (*Dendroica kirtlandii*) and Karner blue butterfly (*Lycaeides melissa samuelis*), in addition to the federal candidate eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*) (MI WAP p.SLP-60). These habitats also harbor 20 state endangered or threatened species and 97 species of greatest conservation need (SGCN).

Michigan's Wildlife Action Plan (WAP) identifies jack pine forest, pine barrens and oak savanna as critically important habitats for at-risk species (MI-WAP p. SLP-60, NLP-61, SLP-29). Seven globally rare (G3 or rarer) species are associated with these three communities (Appendix B). For these globally rare species, 54% of occurrences are found on private land, despite the fact that private lands have largely been neglected in targeted surveys. The most imperiled of these species is the federally endangered Kirtland's warbler. This species' nesting habitat is concentrated in only a few counties in Michigan.

The proposed conservation actions of this proposal constitute a substantial effort to improve the status of the Kirtland's warbler, Karner blue butterfly and 118 other rare species and SGCN in Ohio and Michigan. The status of many of these species is uncertain, and they are listed because their jack pine, oak savanna or pine barren habitats are rare and degraded. Thus, in addition to implementing specific conservation actions, surveys and monitoring associated with the grant will provide much needed data to better define and improve the status of these species. This proposed work is driven by two primary conservation strategies:

- **Conservation of areas facing serious threats/best management practices** through exotic/invasive species control, prescribed fire, setting back succession, and maintenance and rehabilitation of natural corridors
- **Assist private landowners** through protection and conservation of unique habitats and communities and implementation of the landowner incentive program to manage and monitor natural features

Objectives:

Work will be driven by three main objectives:

- (3) Restore or enhance at least **600 acres** of oak savanna for the federally endangered Karner blue butterfly, eastern massasauga rattlesnake, wild turkey, and a diverse array of SGCN. Work will be conducted on at least 10 sites currently occupied by Karner blue butterfly and 5 sites that support suitable habitat but do not currently support Karner blue butterfly.
- (4) Restore or enhance at least **400 acres** of pine barrens and jack pine forests for the federally endangered Kirtland's warbler, sharp-tailed grouse, wild turkey and a diverse array of SGCN. Work will be conducted on at least 10 sites in northern Michigan.
- (5) For each of the 25 sites identified in the first two objectives, develop a conservation plan that identifies potential threats to savannas, pine barrens, or jack pine forests. The purpose of these plans will be to recommend conservation actions that abate, mitigate, or eliminate threats and improve the long-term sustainability of target animals and plant communities.

MNFI will work to meet these objectives through the following activities:

- (6) Assist in the development of site-specific conservation plans. MNFI will provide input into the development of restoration and management strategies as requested. Potential conservation actions that will be considered include exotic/invasive species control, prescribed fire, mechanical treatment of shrubs and trees, and maintenance and rehabilitation of natural corridors.
- (7) Develop and implement habitat monitoring to assess the impacts of habitat management. This may include the placement and monitoring of photo points, development/refinement and scoring of coarse-level habitat metrics, and vegetation sampling at selected sites.
- (8) Participate in the annual Kirtland's warbler census.
- (9) Monitor Karner blue butterfly and SGCN through the use of presence/absence surveys, counts, or mark-recapture surveys.
- (10) Survey for targeted SGCN at sites where the species are not known to be present.

Attend meetings with a variety of partners to discuss opportunities for adaptive management (e.g., Karner Blue Working Group).

Expected Benefits:

By completing the objectives of this grant, progress will be made towards the overall goal of Michigan's WAP to conserve and restore SGCN. Surveys and monitoring activities identified in this workplan will inform and assess conservation actions that will benefit over 100 rare species and SGCN found in oak savanna, pine barrens, and jack pine forest. By restoring 600 acres of occupied and potential habitat for Karner blue butterfly and eastern massasauga rattlesnake, we will benefit these species over the short term by improving habitat quality at several sites in the cores of those species' ranges. This will result in the long-term benefit of improved population viability at these sites, the prevention of imminent extirpation of these species at one or more sites, complementation of the eastern massasauga rattlesnake CCAA, and prevention of federal listing for eastern massasauga rattlesnake. Restoring 400 acres of habitat for other species such as the Kirtland's warbler will result in the short-term benefit of improved breeding habitat quality in the stronghold of its range. Over the long term, Kirtland's warbler will benefit through improved population viability. Similar short term and long-term benefits are expected for the

other species of greatest conservation need associated with oak savannas and pine barrens.

Work Plan/Approach:

FY13 work will begin on November 1, 2012 and end on September 30, 2013.

Oct – Dec 2012: Process data collected in FY12. Refine habitat monitoring plans.

Jan – Mar 2013: Process data collected in FY12. Refine habitat monitoring plans. Attend annual Karner Blue Recovery Working Group Meeting.

Apr – June 2013: Survey Karner blue butterfly, Kirtland’s warbler, and SGCN through the use of presence/absence surveys, counts, or distance surveys. Survey for targeted SGCN at historical sites and/or sites where the species are not known to be present.

July – Sep 2013: Implement habitat monitoring strategy. Take photographs at photo points established in FY12. Score coarse-level habitat metrics. Survey Karner blue butterfly and SGCN through the use of presence/absence surveys, counts, or distance surveys. Survey for targeted SGCN at historical sites and/or sites where the species are not known to be present. Compile data for annual performance report.

Timeline/Project Work Period:

FY13 work will begin on November 1, 2012 and end on September 30, 2013 with periodic updates being provided to the WLD sponsor.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

Deliverables will be driven by the following targets:

- Meeting and training participation and technical assistance. MNFI will attend project meetings, provide on-the-ground training and field assistance for DNR biologists as requested, and will assist in the development and refinement of habitat management plans as requested. MNFI will attend the annual Karner Blue Recovery Working Group Meeting in March 2013.
- Habitat monitoring. MNFI will conduct habitat monitoring through the placement and monitoring of photo points in approximately 10 sites, and will conduct more detailed monitoring of habitat structure and composition through the use of coarse-level habitat metrics, quantitative vegetation sampling, and/or invasive species mapping in at least five sites. All monitoring photographs and associated data will be provided to the DNR as part of the final report. Coarse metrics and/or vegetation plot and/or transect data will also be provided to the DNR as part of the final report.
- Karner blue butterfly monitoring and rare insect surveys. MNFI, in conjunction with partners and volunteers, will locate transects and conduct distance surveys and/or presence/absence surveys of Karner blue butterflies in at least three sites. MNFI will provide the DNR with Karner blue monitoring data in the final report (and in tabular electronic format). In addition, populations of rare insects observed during KBB surveys will be documented and entered into the MNFI database.
- Kirtland’s warbler monitoring. MNFI will spend one to three days assisting with the annual Kirtland’s warbler census.

Habitat and species monitoring data will be compiled into a final report at the end of the project that

documents progress towards meeting management goals. Photographs, habitat and species data, and field notes will be compiled and made available to project partners.

Location: Lower Michigan

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – the final report will summarize accomplishments over the course of the three-year project. Monitoring data, tables, and photographs will be stored in a central location that can be accessed by WLD Lansing and field staff.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY 2013

	Cost Category	Cost
	Personnel	\$ 43,290
	Travel	\$ 5,823
	Supplies	\$ 887
	Indirect Cost (Rate: 52%)	\$ 26,000
	Budget Total	\$ 76,000
	Waived Indirect	-\$ 26,000
	Total Project Amount:	\$ 50,000

Contract Type/Payments:

This is a fixed-price contract.

Title (6):	Prairie Fen and Associated Savanna Restoration in Michigan and Indiana for Species of Greatest Conservation Need		
Principal Investigator:	Brad Slaughter		
Sponsor:	Mark Sargent		
Project Beginning Date:	1 November 2012	Project End Date:	30 September 2013
Budget Request for Each Fiscal Year of Project:	\$25,000		

Statement of Needs:

Fens and savannas are important habitats in the Great Lakes region. Historically, northern Indiana and southern Michigan had approximately one million acres of grassland, and much of it was oak savanna. Within the savannas were globally rare wet grasslands called prairie fens. Both fens and savannas are listed as globally vulnerable, imperiled or critically imperiled by NatureServe. These natural communities are disproportionately rich in biodiversity. Fens and savannas are the principal habitat for the federally endangered Mitchell’s satyr butterfly (*Neonympha mitchellii mitchellii*) and the federal candidate eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*) (MI WAP p.SLP-75). In addition to these federally listed species, prairie fens and savannas are home to 32 other species of greatest conservation need (SGCN).

The conversion of savannas surrounding fens to agriculture or forest has been documented as a significant threat to fens in the draft Michigan and Indiana Fen Conservation Plan (FCP). Prolonged fire suppression has led to the invasion of trees and shrubs in formerly open prairie, savannas and wetlands. Invasive species have also taken over extensive areas of habitat. Species that require open habitat are being pushed to the edge of extinction. What little habitat remains will continue to decline in the absence of management, putting further pressure on SGCN.

Overall, fens and savannas, as well as the SGCN that rely on them, are threatened by altered hydrologic regimes, invasive plants and animals, altered fire regimes, and landscape fragmentation (MI WAP, p. SLP-75). These threats have also been documented in the draft Michigan HCP for the Mitchell’s satyr butterfly. This proposed work addresses two of the top priority threats to SGCN and habitats: invasive species and fragmentation. Invasive species and fragmentation are the greatest threats to SGCN in Michigan statewide (MI WAP p.43-50), and they are priority threats to both savannas, fens, and the numerous SGCN that depend on those habitats (MI WAP p.SLP-30 and 76).

Many of the conservation needs in fens and savannas are priorities for the conservation of SGCN. This proposed work addresses four statewide priority conservation needs identified in Michigan’s WAP (MI WAP Executive Summary pg 9):

- Identification and conservation of representative areas, high-quality areas and other areas of high ecological significance (includes development of site conservation plans and any formal protection determined to be necessary).
- Identification and conservation of areas facing serious threats (e.g., invasive species, lack of disturbance regime and contamination).
- Develop and use best management practices, recommended plans or strategies for conservation

and management of species at risk.

- Assist private landowners and create partnerships between conservation organizations/agencies and private landowners for conservation of species at risk and natural communities.

Objectives:

Work will be driven by two main objectives:

- (6) Restore or enhance 200 acres of prairie fen and associated savanna to benefit the federally endangered Mitchell's satyr butterfly and a diverse array of other SGCN. Work will be conducted on at least 12 currently occupied fens and 4 fens that historically supported MSB.
- (7) Restore or enhance 400 acres of prairie fen and associated savanna to benefit the eastern massasauga rattlesnake and 32 other SGCN. Work will be conducted on 24 sites.

MNFI will work to meet these objectives through the following activities:

- (11) Assist in the development of site-specific conservation plans. MNFI will provide previously developed conservation plans to assist restoration of several sites occupied by Mitchell's satyr butterfly, and will provide input into the development of restoration and management strategies for sites that lack previously drafted conservation plans. Potential conservation actions that will be considered include exotic/invasive species control, prescribed fire, mechanical treatment of shrubs and trees, restoration of hydrology, and maintenance and rehabilitation of natural corridors.
- (12) Develop and implement habitat monitoring at all sites to assess the impacts of habitat management. This may include the placement and monitoring of photo points, development/refinement and scoring of coarse-level habitat metrics, and vegetation sampling at selected sites.
- (13) Monitor Mitchell's satyr butterfly, eastern massasauga rattlesnake, and SGCN through the use of presence/absence surveys, counts, or mark-recapture surveys.
- (14) Survey for targeted SGCN at sites where the species are not known to be present.

Attend meetings with a variety of partners to discuss opportunities for adaptive management (e.g., Mitchell's Satyr Working Group).

Expected Benefits:

By completing the objectives of this grant, progress will be made towards the overall goal of Michigan's WAP to conserve and restore SGCN. Surveys and monitoring activities identified in this workplan will inform and assess conservation actions that will benefit 34 SGCN found in fens and associated savannas. By restoring 200 acres of occupied and historically occupied habitat for Mitchell's satyr, we will benefit the species over the short term by improving habitat quality at more than 50% of the sites it has been documented from worldwide. This will result in the long-term benefit of improved population viability at these sites, as well as preventing the imminent extirpation of the species at one or more sites. Restoring 400 acres of habitat for other species such as the eastern massasauga rattlesnake will result in short-term benefits such as improved habitat quality in the stronghold of its range and improved connectivity between wetland hibernation sites and upland basking sites. Over the long term, massasauga will benefit through improved population viability, complimenting the CCAA, and ultimately the prevention of the species being federally listed. Similar short term and long-term benefits are expected for

the other 32 species associated with fens and adjacent savannas.

Work Plan/Approach:

FY13 work will begin on November 1, 2012 and end on March 30, 2014.

Oct – Dec 2012: Process data collected in FY12. Begin final report.

Jan – Mar 2013: Process data collected in FY12. Continue working on final report.

Apr – June 2013: Take photographs at photo points established in FY10-12. If funding allows, survey Mitchell’s satyr, eastern massasauga rattlesnake, and SGCN through the use of presence/absence surveys or counts. Potentially survey for targeted SGCN at sites where the species are not known to be present.

July – Sep 2013: Take photographs at photo points established in FY10-12. If funding allows, survey Mitchell’s satyr, eastern massasauga rattlesnake, and SGCN through the use of presence/absence surveys or counts. Potentially survey for targeted SGCN at sites where the species are not known to be present. Compile data for final report.

Oct 2013 – Mar 2014: Prepare and complete final report.

Timeline/Project Work Period:

Work will begin on November 1, 2012 and end on September 30, 2013 with periodic updates being provided to the WLD sponsor.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

Deliverables will be driven by the following targets:

- MNFI will attend the annual Mitchell’s Satyr Recovery Working Group Meeting in March 2013.
- Habitat monitoring. MNFI will monitor photo points at five to ten project sites. All monitoring photographs and associated data will be provided to the DNR as part of the final report. Any additional habitat monitoring data that may be collected, including maps of invasive species infestations and vegetation plot data will be provided to the DNR as part of the final report.
- Depending on the requested comprehensiveness of the final report, MNFI may continue limited monitoring of Mitchell’s satyr butterfly, eastern massasauga rattlesnake, and poweshiek skipperling, and will provide feedback on population trends and changes in habitat (due to management and/or degradation) and guidance for adaptive management.

Habitat and species monitoring data will be compiled into a final report that documents progress towards meeting management goals. Photographs, habitat and species data, and field notes will be compiled and made available to project partners.

Location: southern Lower Michigan

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – the final report will be formatted in a similar manner to the FY10 annual report. Monitoring data, tables, and photographs will be stored in a central location that can be accessed by WLD Lansing and field staff.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY 2013

	Cost Category	Cost
	Personnel	\$ 23,710
	Travel	\$ 825
	Supplies	\$ 465
	Indirect Cost (Rate: 52%)	\$ 13,000
	Budget Total	\$ 38,000
	Waived Indirect	-\$ 13,000
	Total Project Amount:	\$ 25,000

Contract Type/Payments:

This is a fixed-price contract.

Title (7):	Diverse Grassland Complexes for Species of Greatest Conservation Need		
Principal Investigator:	Brad Slaughter		
Sponsor:	Mark Sargent		
Project Beginning Date:	1 November 2012	Project End Date:	30 September 2013
Budget Request for Each Fiscal Year of Project:	\$25,000 for FY13		

Statement of Needs:

General Land Office surveys conducted in Michigan from 1816 to 1856 estimate that prairies and savannas occupied 7% of the state, over 10 million acres. Since the settlement of southern Michigan, it is estimated that over 99 percent of these original native grasslands have been lost. Prairies, savannas and created grasslands provide critical habitat for a variety of SGCN, including:

- Birds, such as the grasshopper sparrow (state special concern), Henslow’s sparrow (state endangered), northern harrier (state special concern), short-eared owl (state endangered), dickcissel (state special concern), and western meadowlark (state special concern);
- Insects, such as Karner blue butterfly (federally endangered), persius duskywing (state threatened), Henry’s elfin (state special concern), and frosted elfin (state threatened);
- Amphibians and reptiles, such as eastern massasauga (state special concern and federal candidate) and spotted turtle (state threatened); and
- Mammals, such as the prairie vole (state endangered).

Grassland birds are among the most imperiled birds in North America; 48% of species are of conservation concern and 55% are showing decline. Major threats to grassland birds include habitat loss and fragmentation due to agriculture and energy demand for biofuels and global warming. Conservation practices aimed at reversing this decline and stabilizing populations of grassland birds include restoring and maintaining grasslands, agricultural management that is compatible with birds, restoration of wetlands adjacent to grasslands, and managing public lands to benefit grassland birds.

The proposed conservation actions of this proposal constitute a substantial effort to improve prairie, savanna and grassland habitats to benefit Karner blue butterflies, Henslow’s sparrow, grasshopper sparrow, northern harrier and 111 other SGCN in Michigan. These species are rare or of conservation concern because their prairie, savanna and grassland habitats are rare and degraded. The proposed work directly implements conservation strategies identified in the Michigan WAP, MDNR Wildlife Division Guiding Principles and Strategies, MDNR Wildlife Featured Species Approach and the Michigan Pheasant Initiative.

Objectives:

Work will be driven by three main objectives:

- (8) Restore or enhance at least 400 acres of prairie, savanna and low quality grasslands for the federally endangered Karner blue butterfly, Henslow’s sparrow, grasshopper sparrow, Northern harrier, and a diverse array of grassland SGCN. Suitable habitat will be improved on at least 5 sites in Michigan known to harbor Karner blue butterfly. In addition, 5 sites that offer high

potential for Karner blue butterfly, but do currently support populations, will be restored.

- (9) Plant at least 1,350 acres of native grasses and forbs for grassland birds such as Henslow's sparrow, grasshopper sparrow and northern harrier and a diverse array of SGCN. Suitable habitat for grassland birds will be improved on at least 55 sites in southern Michigan. At least 10 sites will be adjacent to or within occupied habitats for our priority SGCN.
- (10) Conservation plans will be developed, where necessary, for the 65 sites identified in the first two objectives, to identify the potential threats to each site. In cases where a management plan already exists, it will be reviewed and updated as needed to address grassland threats and management. It is expected that at least 35 sites will require management plans either written or revised. The purpose of these management plans will be to recommend conservation actions that abate, mitigate, or eliminate threats and improve the long-term sustainability of Karner blue butterfly, Henslow's and grasshopper sparrows, northern harrier, and a diverse array of grassland SGCN and their associated habitats.

MNFI will work to meet these objectives through the following activities:

- (15) Assist in the development of site-specific conservation plans. MNFI will provide input into the development of restoration and management strategies as requested. Potential conservation actions that will be considered include exotic/invasive species control, prescribed fire, mechanical treatment of shrubs and trees, and maintenance and rehabilitation of natural corridors.
- (16) Develop and implement habitat monitoring to assess the impacts of habitat management. This may include the placement and monitoring of photo points, development/refinement and scoring of coarse-level habitat metrics, and vegetation sampling at selected sites.
- (17) Monitor Karner blue butterfly, grassland birds, and other SGCN through the use of presence/absence surveys, counts, distance surveys, or other sampling techniques.
- (18) Survey for targeted SGCN at sites where the species are not known to be present.

Attend meetings with a variety of partners to discuss opportunities for adaptive management (e.g., Karner Blue Working Group).

Expected Benefits:

By completing the objectives of this grant, progress will be made towards the overall goal of Michigan's WAP to conserve and restore SGCN. Surveys and monitoring activities identified in this workplan will inform and assess conservation actions that will benefit over 100 rare species and SGCN found in grassland ecosystems. By restoring 400 acres of occupied and potential habitat for Karner blue butterfly and other SGCN, we will benefit these species over the short term by improving habitat quality at several sites in the cores of those species' ranges. This may result in the long-term benefit of improved population viability at these sites, and the prevention of imminent extirpation of these species at one or more sites. Planting of 1,350 acres of native grasses and forbs for other species such as the Henslow's sparrow, grasshopper sparrow, and northern harrier should improve the long-term sustainability of birds and other SGCN that utilize grassland habitats in southern Michigan.

Work Plan/Approach:

FY13 work will begin on November 1, 2012 and end on September 30, 2013.

Oct – Dec 2012: Assist in the identification and selection of sites. Assist in the development of restoration and management plans for identified sites. Identify monitoring approaches for target sites.

Jan – Mar 2013: Assist in the identification and selection of sites. Assist in the development of restoration and management plans for identified sites. Identify monitoring approaches for target sites. Attend annual Karner Blue Recovery Working Group Meeting.

Apr – June 2013: Survey Karner blue butterfly, grassland birds, and other SGCN through the use of presence/absence surveys, counts, or distance surveys. Survey for targeted SGCN at historical sites and/or sites where the species are not known to be present. Place photo monitoring points within target sites and collect baseline photos. Score coarse-level habitat metrics where appropriate.

July – Sep 2013: Survey Karner blue butterfly, grassland birds, and other SGCN through the use of presence/absence surveys, counts, or distance surveys. Survey for targeted SGCN at historical sites and/or sites where the species are not known to be present. Place photo monitoring points within target sites and collect baseline photos. Score coarse-level habitat metrics where appropriate. Compile data for annual performance report.

Timeline/Project Work Period:

FY13 work will begin on November 1, 2012 and end on September 30, 2013 with periodic updates being provided to the WLD sponsor.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

Deliverables will be driven by the following targets:

- Meeting and training participation and technical assistance. MNFI will attend project meetings, provide on-the-ground training and field assistance for DNR biologists as requested, and will assist in the development and refinement of habitat management plans as requested. MNFI will attend the annual Karner Blue Recovery Working Group Meeting in March 2013.
- Habitat monitoring. MNFI will conduct habitat monitoring through the placement and monitoring of photo points in approximately 10 sites, and will conduct more detailed monitoring of habitat structure and composition through the use of coarse-level habitat metrics, quantitative vegetation sampling, and/or invasive species mapping in at least three sites. All monitoring photographs and associated data will be provided to the DNR as part of the final report. Coarse metrics and/or vegetation plot and/or transect data will also be provided to the DNR as part of the final report.
- Karner blue butterfly monitoring and rare insect surveys. MNFI, in conjunction with partners and volunteers, will locate transects and conduct distance surveys and/or presence/absence surveys of Karner blue butterflies in at least three sites. MNFI will provide the DNR with Karner blue monitoring data in the final report. In addition, populations of rare insects observed during KBB surveys will be documented and entered into the MNFI database.
- Grassland bird surveys. MNFI will conduct grassland bird surveys at target sites, focusing on areas being planted to native grasses and forbs.

Habitat and species monitoring data will be compiled into a final report at the end of the project that documents progress towards meeting management goals. Photographs, habitat and species data, and field notes will be compiled and made available to project partners.

Location: Lower Michigan

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – the final report will summarize accomplishments over the course of the three-year project. Monitoring data, tables, and photographs will be stored in a central location that can be accessed by WLD Lansing and field staff.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the Michigan State Wildlife Grants (*substitute appropriate program name*) program grant T-9-T (*substitute current grant number or title*) in cooperation with the U.S. Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.”

Budget: FY 2013

	Cost Category	Cost
	Personnel	\$ 21,237
	Travel	\$ 2,920
	Supplies	\$ 843
	Indirect Cost (Rate: 52%)	\$ 13,000
	Budget Total	\$ 38,000
	Waived Indirect	-\$ 13,000
	Total Project Amount:	\$ 25,000

Contract Type/Payments:

This is a fixed-price contract.

Title (8): Mounting a Rapid Response to Invasive Plants 2013

Sponsor(s): Sue Tangora

Principal Investigator(s): Phyllis Higman

Project Beginning Date: November 1, 2012 **Project End Date:** September 30, 2013

Budget Request for Current Year: \$100,000

Statement of Needs:

Invasive species are having negative impacts on the health of the Great Lakes. They displace critical habitat for fish and wildlife, interrupt food webs, reduce recreational resources and negatively affect the natural health and economy of the Great Lakes states. The most effective and efficient means of reducing the impact of invasive species to Great Lakes health beyond prevention is to respond immediately to new invasions or new outliers. Even the best prevention program cannot keep all invasive species out of Michigan, but a program that responds quickly, uses cost-effective methods, and engages key stakeholders, will minimize the threat of invasions impacting the health of the Great Lakes.

The best system for early detection of invaders is only as good as its ability to respond. Currently, several early infestations of invasive species predicted to have significant impacts to the health of the Great Lakes have already been detected in Michigan. To date, no response has been mounted, nor is there any response mechanism in place or assigned responsibilities to do so. We propose to build the knowledge and decision support structure, to respond quickly and effectively to these known infestations and to new invaders.

The Michigan Department of Natural Resources and Michigan Natural Features Inventory will develop and implement a Rapid Response Program in Michigan. This project will build on Michigan's current efforts to control invasive species and will result in the eradication and control of 8 to 10 high threat invasive species that impact the health of the Great Lakes. This Rapid Response Program will help direct future resources for invasive species control to the most cost-effective, strategic, and highest threat locations.

Work Plan/Approach:

MNFI will work with MDNR-WD and partners to address the following objectives:

- Develop an aquatic invasive species Rapid Response Program in Michigan
- Expand and maintain Michigan Invasive Species Information Network (MISIN)
- Test and implement Rapid Response Program
- Eradicate only known occurrences of water hyacinth, water lettuce, Brazilian waterweed, and parrot feather, and isolated outliers of frog-bit and flowering rush in Michigan

Timeline/Project Work Period:

November – December

- Refine priority species research data; augment where needed
- Assist with defining Decision Support Structure

- Assist with planning of mock exercise
- Discuss proposed training priorities
- Facilitate data input into MISIN and data output to users

January – March

- Assist with site review and selection for treatment
- Review and assess proposed treatment options
- Assist with conduction of mock exercise
- Refine training plan
- Facilitate data input into MISIN and data output to users

April – June

- Plan surveys for additional reported occurrences
- Plan treatment monitoring
- Coordinate logistics and compile training packages for stakeholders
- Facilitate data input into MISIN and data output to users
- Provide identification training for seasonal employees

July – September

- Conduct surveys for infestations as needed
- Assist with treatment monitoring
- Assist with treatments
- Conduct training for stakeholders
- Facilitate data input into MISIN and data output to users

Expected Benefits and Information Transfer:

- High threat species will be eradicated and new occurrences will be prevented from establishing and spreading.
- Major costs for new aquatic invasive species will be avoided.
- Greater awareness and focus on highest threat species will be created.
- A Rapid Response Program will be formally implemented in Michigan.
- Response and treatments of priority species will be improved.
- Real-time integration of spatially-explicit invasive species data will be incorporated into decision-making.
- New infestations will be more quickly detected.
- Stakeholders are engaged and working together to address new invaders.

Deliverables and Products:

- Specific species information provided for a minimum of six species for website
- Survey data for a minimum of six species uploaded into the MISIN
- Assistance with a minimum of one mock rapid response exercise to be completed
- Assistance with treatments and monitoring to be completed (number of sites to be treated and monitored will be determined with project coordinator prior to field season.)

- Stakeholder training to be completed

Location:

Statewide

Reporting:

Brief summary of year's activities.

Budget:

Task or Direct Cost Category	Cost
Personnel (Higman, Latimore, Campbell, Hyde)	\$91,600
Travel	\$7,000
Supplies	\$1,400
Indirect Cost (Rate: 26%)	\$26,000
Budget Total	\$126,000
- Waived Indirect	\$26,000
Total Project Amount:	\$100,000

Contract Type/Payments:

This is a fixed price contract.

Title (9):	Monitoring Bat Use of Agricultural Fields in Michigan		
Principal Investigator(s):	Joelle Gehring and Brian Klatt		
Sponsor:	Chris Hoving and Christine Hanaburgh		
Project Beginning Date:	November 1, 2012	Project End Date:	September 30, 2013
Budget Request for Each Fiscal Year of Project:	FY13: \$8,660		

Statement of Needs:

In Michigan, the rate of wind turbine construction is expected to soar due to the abundance of areas with high potential for wind development in association with the Great Lakes. While wind energy is often considered “green” energy, there are associated environmental impacts. Of great concern is the impact of turbines on bats, as these structures are known to cause mortality due to both collision and decompression (barotrauma). Barotrauma occurs when the quickly moving rotors leave behind a low-pressure vortex and as the bats fly through this zone or are pulled into it they suffer from severe lung damage, especially pulmonary hemorrhage. Essentially, the blood vessels in their lungs burst because of the difference in pressure between the air and the blood in their capillaries.

Based on mortality rates observed at functioning wind farms, as well as the projected increase in number of wind developments, biologists estimate that the number of deaths in the year 2020 for the Mid-Atlantic region alone is 33,000–110,000 bats. Bat populations are also under tremendous threat due to the recent spread of white-nose syndrome, which can cause 99% mortality of bats when infecting hibernacula. About half of the approximately 45 species of bat in the United States and Canada are currently considered endangered or threatened at the national or local level, and any further threats to bats are a cause of concern to wildlife biologists.

Nine species of bats live in Michigan, including the five species that are most commonly killed at wind turbines. The nine Michigan species are eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), eastern pipistrelle (*Perimyotis subflavus*), big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), Indiana bat (*M. sodalis*), northern long-eared bat (*M. septentrionalis*), and evening bat (*Nycticeius humeralis*). The Indiana bat is the only resident mammal of Michigan that is on the federal list of endangered species. The evening bat is currently being classified as threatened in Michigan, and the eastern pipistrelle is listed as a species of “special concern” by the Michigan Department of Natural Resources. Furthermore, the state’s Wildlife Action Plan labels these three species, as well as the eastern red bat, hoary bat, silver-haired bat, and northern bat, as species of “greatest conservation need”.

Many of the proposed wind farms throughout the North America are located in agricultural areas. Often wildlife management agencies recommend siting turbines in agricultural field as a method of avoiding wildlife concentration areas. However, there is some evidence that bats use agricultural fields for foraging. Specifically, Munzer (2008) found that evening bats in southern Michigan roosted exclusively in bottomland forest but dietary evidence suggested that they fed over agricultural fields to a significant degree. Currently, there is a paucity of data on which to base recommendations to wind developers regarding effective woodland buffer distances. It is important to monitor and determine the distance from forested corridors that bats travel and use for foraging in order to further minimize impacts of wind turbines to bats.

By monitoring the species composition and relative abundance of bats in agricultural fields we can provide wind energy developers with information useful for micrositing of turbines. Appropriate micrositing can significantly reduce negative impacts to bats. This information will also be useful to local planning agencies as they develop guidelines for wind turbine siting.

Objectives:

Monitor the bat species present in agricultural fields and their relationship to forest cover during the breeding and migration seasons.

Monitor the relative abundance of bats present in agricultural fields and their relationship to forest cover during the breeding and migration seasons.

Expected Benefits:

Currently there are no data on which to base recommendations on setback or buffer distances from forested areas. Our monitoring efforts would provide a better understanding of buffers that would be most effective at minimizing bat fatalities at wind turbines.

This information would be useful to agencies making recommendations as well as to local planning agencies as they develop guidelines for wind turbine siting.

Work Plan/Approach:

In an effort to monitor and detect bat activity over agricultural fields we propose to collect acoustic data at varying distances from forest cover during both the breeding and migration seasons. One acoustic monitoring station would be established at the edge of the forested area with a line of two additional monitors extending out into the adjoining agricultural fields. Monitors would be spaced 150 meters apart. Given that the acoustical units have an effective detection radius of 100 meters, this arrangement would result in a potential detection range of 400 meters out into the agricultural field from the forested area. Five separate monitoring lines would be established.

Data would be recorded using a SM2+Bat monitor equipped with a SMX-US Ultrasonic Microphone (Wildlife Acoustics, Inc.). Calls would be recorded in compressed format (.wav) and uncompressed using the proprietary WAC2WAV converter. Uncompressed calls would be analyzed using the Sonobat analysis program. Data from the migration period, as well as data collected previously, during the summer roosting period will be processed. The Sonobat software attempts to classify calls of sufficient quality by species, or as “High” or “Low” frequency calls, using a discriminant analysis and expert opinion approach. The species in this region that would be included in the high frequency calls include: little brown bats, northern red bat, Indiana bat, eastern pipistrelle, and northern long-eared bat. Conversely the bat species with low frequency calls include: big brown bat, silver-haired bat, hoary bat, and evening bat. All recorded calls will be identified to species if possible, commensurate with current technical approaches. However, many species of bats are difficult to separate from one another using acoustic data; of particular note, the calls of the little brown bat, northern long-eared myotis, and Indiana bat overlap in many quantitative call measurements and may not be separable, as might the calls of the silver-haired and big brown bats.

Bat acoustic data would then be compared among distances from forested areas and conclusions drawn regarding the most effective buffer for minimizing bat fatalities at wind turbines.

Timeline/Project Work Period:

Nov 1 – Nov 15, 2012 install acoustic equipment and initiate bat monitoring

Nov 16 – January 31, 2013 analyze data and complete report for submission to the MDNR

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

- **January 31, 2013** – We will provide the WLD Sponsor with a detailed report of the species detected, the relative abundance of bat species, and the spatial relationship of these data to forested areas. By monitoring the species composition and relative abundance of bats in agricultural fields we can provide wind energy developers with information useful for micrositing of turbines. Appropriate micrositing can significantly reduce negative impacts to bats. This information will also be useful to local planning agencies as they develop guidelines for wind turbine siting.

Location: Southern Michigan (Lenawee County and surrounding areas)

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – can be in what ever format makes sense for the project but must also include a short (2-5 page) summary in the format of a scientific journal. If the project is a research project it must also make management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the MI Regional Wind Energy MSHCP grant **E-22-HP-1** in cooperation with the U.S. Fish and Wildlife Service, Section 6 Cooperative Endangered Species Conservation Fund.

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Budget: FY2013: \$8,660

	Cost Category	Cost
	Personnel	8,000
	Travel	660
	Supplies	0
	Indirect Cost (Rate: 26%)	2,252

	Budget Total	10,912
	- Waived Indirect	2,252
	Total Project Amount:	8,660
Contract Type/Payments:		
This is a fixed-price contract.		

Title (10):	Acoustic Monitoring of Chiropteran and Avian Migration Activity in High Wind Energy Potential Areas of Michigan		
Principal Investigator(s):	Brian Klatt and Joelle Gehring		
Sponsor:	Chris Hoving and Christine Hanaburgh		
Project Beginning Date:	1 November 2012	Project End Date:	30 September 2013
Budget Request for Each Fiscal Year of Project:	FY12: \$7,708		
Statement of Needs:			
<p>The Michigan Department of Natural Resources (DNR), Wildlife Division (WLD) has joined with five other state natural resource agencies to develop a multi-species habitat conservation plan (HCP) to facilitate on-shore wind energy development in the Midwest. Development of the HCP must be based on the most sound scientific information available and is likely going to need an adaptive management approach as additional scientific information is developed and existing data sets are expanded. Previous and on-gong studies by the Michigan Natural Features Inventory (MNFI) have documented both chiropteran (bat) and avian (bird) activity in areas of proposed wind-farms in Michigan and suggest that bats are more common somewhat inland than at the shore of Lake Michigan during migration periods, a high wind-energy area as designated in the final report for the Michigan Wind Energy Resource Zone board. While the data from these US Department of Energy and MDEQ Coastal Management Program are suggestive, they are of limited duration and raise important and interesting questions concerning the distribution of chiropteran activity on the landscape.</p> <p>It is well known that bats and birds navigate at least to some extent based on landscape features, such as treelines, rivers, ridgetops, major rivers, and coastlines. While some high wind energy areas in Michigan are located in the south-central area of the state (e.g. Lenawee County), most occur in coastal areas, such as the eastern shore of Lake Michigan, the upper shore area of the lower peninsula, and in the “thumb”/Saginaw Bay area. As wind energy development in Michigan is likely to require an adaptive management approach, monitoring of activities, including biotic resources will be a necessity. MNFI is proposing to build on the information already generated in the DOE/CMP pilot project through establishment of an acoustical monitoring system for birds and bats.</p>			
Objectives:			
<ol style="list-style-type: none"> 1. Establish a network of permanent monitoring locations to acoustically monitor bat activity in high wind energy areas in the state. 2. Use the monitoring system to further assess bat relative abundance and activity in relation to proximity to the shore versus inland. 3. Develop draft siting or operational recommendations for the HCP that will help mitigate potential impacts to bat populations due to wind energy development. 			
Expected Benefits:			
<ol style="list-style-type: none"> 1. Expanded baseline information with respect to bat activity in areas of high wind-energy. 2. Development of GIS-based map products that can help guide local planners and wind developers in 			

making environmentally-sound wind-farm siting decisions.

3. Provide information to developers of the HCP with respect to bat distributions.

Work Plan/Approach:

The Michigan Natural Features Inventory (MNFI) conducted a pilot study funded by the MDEQ Coastal Management Program and the US Department of Energy to preliminarily assess the risk to bats posed by wind energy development in the high wind-energy, coastal areas of Michigan. The pilot study focused on the question as to whether bats used Great Lakes coastlines as migratory routes. To assess this, MNFI monitored bat activity at five locations along Lakes Michigan and Huron. At each location, bat activity was monitored both near the shore and further in shore (1-2 kilometers). Each location was monitored for four nights during the migratory period. The results of this study have been reported to the MDEQ in the MNFI Report “Bat Migration along the Lake Michigan and Lake Huron Coastlines: A Pilot Study to Inform Wind Turbine Siting” (MNFI Report Number 2011-19). The results of the study suggest that bats preferentially use in-shore areas relative to nearer the shore.

While these results are suggestive and represent the first of their kind, they do have limitations in interpretation and applicability. The EchoTrak system used in the pilot study is a proprietary system and a very limited number of units are available. Consequently, it was not possible to monitor all of the sites, or even the near-shore versus in-shore pairs, simultaneously. Levels of bat activity are notoriously variable from night-to-night and to a large extent this variability is still unexplained. This factor, along with the fact that each site was monitored for only four nights, limits the ability to make comparisons between geographic locations and between the near-shore and in-shore sites at each geographic location with a high degree of confidence.

Consequently, we propose a project to collect data that allows for greater location-to-location and near-shore versus in-shore site comparisons, as well as providing baseline information on bat activity throughout the active portion of the year. The approach is to monitor bat activity at multiple locations and at near-shore versus in-shore sites *simultaneously* using an array of ultrasonic monitors. We propose to use the most advanced monitors available, namely the SM2+Bat monitors produced by Wildlife Acoustics. These monitors record ultrasonic calls of bats in full spectrum, which allows for the application more sophisticated analysis software (Sonobat) in identification of species (though some identification of some species remains problematic). Monitoring will be conducted in alternating 15-minute blocks from one half-hour before sunset until one half-hour after sunrise. Monitoring was begun during the summer residency period under an earlier contract and we propose to continue this monitoring through mid-October. Monitoring sites are located in the general areas of: Benton Harbor, Manistee, Muskegon, Cheboygan, Sebawaing, and Fayette.

Recorded calls would be analyzed using the Sonobat analysis program. Data from the migration period, as well as data collected previously, during the summer roosting period will be processed. The Sonobat software attempts to classify calls of sufficient quality by species, or as “High” or “Low” frequency calls, using a discriminant analysis and expert opinion approach. The species in this region that would be included in the high frequency calls include: little brown bats, northern red bat, Indiana bat, eastern pipistrelle, and northern long-eared bat. Conversely the bat species with low frequency calls include: big brown bat, silver-haired bat, hoary bat, and evening bat. All recorded calls will be identified to species if possible, commensurate with current technical approaches. However, many species of bats are difficult to separate from one another using acoustic data; of particular note, the calls of the little brown bat, northern long-eared myotis, and Indiana bat overlap in many quantitative call measurements and may not be separable, as might the calls of the silver-haired and big brown bats.

Timeline/Project Work Period:

1 November 2012 – 31 January 2013 – Collect data, perform monthly maintenance on monitoring units (download data, replace batteries), analyze available data and prepare preliminary recommendations.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

1. January 31, 2013: Report describing monitoring protocols and rationale, results, interpretation, and implications with respect to siting wind-turbines.

Location: Vicinity of the cities of Benton Harbor, Manistee, Muskegon, Cheboygan, Sebawaing, and Fayette.

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – can be in what ever format makes sense for the project but must also include a short (2-5 page) summary in the format of a scientific journal. If the project is a research project it must also make management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “(Partial) funding for this project was through the MI Regional Wind Energy MSHCP grant [E-22-HP-1](#) in cooperation with the U.S. Fish and Wildlife Service, Section 6 Cooperative Endangered Species Conservation Fund.”

Budget: FY2013

	Cost Category	Cost
	Personnel	\$6,757
	Travel	951
	Supplies	0
	Indirect Cost (Rate: 26%)	2,004

	Budget Total	9,712
	- Waived Indirect	2,004
	Total Project Amount:	7,708
Contract Type/Payments:		
This is a fixed-price contract.		

Title (11):	Monitoring Bat Species Diversity in the Northern Thumb Area of Michigan		
Principal Investigator(s):	Joelle Gehring and Brian Klatt		
Sponsor:	Chris Hoving and Christine Hanaburgh		
Project Beginning Date:	November 1, 2012	Project End Date:	September 30, 2013
Budget Request for Each Fiscal Year of Project:	FY13: \$8,188		

Statement of Needs:

In Michigan, the rate of wind turbine construction is expected to increase due to the abundance of areas with high potential for wind development in association with the Great Lakes. While wind energy is often considered “green” energy, there are associated environmental impacts. Of great concern is the impact of turbines on bats, as these structures are known to cause mortality due to both collision and decompression (barotrauma). Barotrauma occurs when the quickly moving rotors leave behind a low-pressure vortex and as the bats fly through this zone or are pulled into it they suffer from severe lung damage, especially pulmonary hemorrhage. Essentially, the blood vessels in their lungs burst because of the difference in pressure between the air and the blood in their capillaries.

Based on mortality rates observed at functioning wind farms, as well as the projected increase in number of wind farm developments, biologists estimate that the number of deaths in the year 2020 for the Mid-Atlantic region alone is 33,000–110,000 bats. Bat populations are also under tremendous threat due to the recent spread of white-nose syndrome, which can cause 99% mortality of bats when infecting hibernacula. About half of the approximately 45 species of bat in the United States and Canada are currently considered endangered or threatened at the national or local level, and any further threats to bats are a cause of concern to wildlife biologists.

Nine species of bats live in Michigan, including the five species that are most commonly killed at wind turbines. The nine Michigan species are eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), eastern pipistrelle (*Perimyotis subflavus*), big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), Indiana bat (*M. sodalis*), northern long-eared bat (*M. septentrionalis*), and evening bat (*Nycticeius humeralis*). The Indiana bat and evening bat are not expected to be present in the project area. The eastern pipistrelle is listed as a species of “special concern” by the Michigan Department of Natural Resources. Furthermore, the state’s Wildlife Action Plan labels these three species, as well as the eastern red bat, hoary bat, silver-haired bat, and northern long-eared bat, as species of “greatest conservation need”.

The northern thumb area of Michigan (Huron County) is an area with high quality winds for wind energy development. There is currently a paucity of bat monitoring data useful for turbine siting recommendations. MNFI proposes continuation of bat activity monitoring through the use mobile transects that can provide information on bat activity covering a much larger area than stationary monitoring stations.

Objectives:

Monitor the bat species present in the northern thumb area of Michigan during the breeding season and

migration season.

Monitor the relative abundance of bats present in the northern thumb area of Michigan during the breeding season and migration season.

Determine the relationship between bat presence and the proximity to water courses in an area targeted for wind energy development.

Expected Benefits:

Monitor the species diversity, relative abundance, and proximity to water courses in an area that is targeted for wind energy development. By monitoring the species composition and relative abundance of bats in the project area we can provide wind energy developers with information useful for micrositing of turbines. Appropriate micrositing can significantly reduce negative impacts to bats. This information will also be useful to local planning agencies as they develop guidelines for wind turbine siting.

Work Plan/Approach:

We propose to monitor the bats in the wind resource area of the northern thumb area (Huron County) using mobile acoustic surveys. Surveys would be conducted during the migration season. An ultrasonic-sensitive microphone would be attached to the roof of a vehicle with the microphone feeding into a recording unit. Transects would then be driven through the project area at 10 mph during calm and clear weather conditions 30 minutes after sunset. Species-specific data could then be used to draw comparisons among habitat types and make comparisons with respect to relative abundance of the different bat species in the area. Each transect would be acoustically monitored 3 times during the migration season.

Data would be recorded using an EchoMeter EM3 monitor equipped with a SMX-US Ultrasonic Microphone (Wildlife Acoustics, Inc.). Calls would be recorded in compressed format (.wac) and uncompressed using the proprietary WAC2WAV converter. Uncompressed calls would be analyzed using the Sonobat analysis program. Data from the migration period, as well as data collected previously, during the summer roosting period will be processed. The Sonobat software attempts to classify calls of sufficient quality by species, or as “High” or “Low” frequency calls, using a discriminant analysis and expert opinion approach. The species in this region that would be included in the high frequency calls include: little brown bats, northern red bat, Indiana bat, eastern pipistrelle, and northern long-eared bat. Conversely the bat species with low frequency calls include: big brown bat, silver-haired bat, hoary bat, and evening bat. All recorded calls will be identified to species if possible, commensurate with current technical approaches. However, many species of bats are difficult to separate from one another using acoustic data; of particular note, the calls of the little brown bat, northern long-eared myotis, and Indiana bat overlap in many quantitative call measurements and may not be separable, as might the calls of the silver-haired and big brown bats.

Timeline/Project Work Period:

Nov 1 – Nov 15, 2013 conduct mobile acoustic surveys

Nov 16 – January 31, 2013 analyze data and complete report for submission to the MDNR

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

- **January 31, 2013** – We will provide the WLD Sponsor with a detailed report of the species detected, the relative abundance of bat species detected, and the comparison of these data in

relation to riparian areas of Michigan. This product will serve as a baseline for future monitoring efforts.

Location: The northern thumb area in the lower peninsula of Michigan (Huron County)

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – can be in what ever format makes sense for the project but must also include a short (2-5 page) summary in the format of a scientific journal. If the project is a research project it must also make management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “MI Regional Wind Energy MSHCP grant [E-22-HP-1](#) in cooperation with the U.S. Fish and Wildlife Service, Section 6 Cooperative Endangered Species Conservation Fund.”

Budget: FY2013

	Cost Category	Cost
	Personnel	7,582
	Travel	231
	Supplies	375
	Indirect Cost (Rate: 26%)	2,129
	Budget Total	10,317
	- Waived Indirect	2,129
	Total Project Amount:	8,188

Contract Type/Payments:

This is a fixed-price contract.

Title (12):	Critical Review of the Draft Wind-energy Multi-species Habitat Conservation Plan		
Principal Investigator(s):	Brian Klatt		
Sponsor:	Chris Hoving and Christine Hanaburgh		
Project Beginning Date:	1 November 2012	Project End Date:	30 September 2013
Budget Request for Each Fiscal Year of Project:	FY13: \$18,000		
Statement of Needs:			
<p>The Michigan Department of Natural Resources (DNR), Wildlife Division (WLD) has joined with five other state natural resource agencies to develop a multi-species habitat conservation plan (HCP) to facilitate on-shore wind energy development in the Midwest. Development of the HCP must be based on the most sound scientific information available and provide for the conservation of the species under consideration. Additionally, a requirement of the HCP development process is that an environmental impact statement (EIS) must be prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) to insure that the potential environmental impacts of adopting, or not adopting, the HCP are evaluated and fully described for decision-makers. Staff members of the Michigan Natural Features Inventory (MNFI) have specialized expertise in preparing HCPs, natural history and conservation expertise with respect to the taxa under consideration, and extensive expertise in the preparation and review of NEPA documentation. Because of this combination of expertise, MNFI is uniquely qualified to provide a critical review of the draft HCP and supporting EIS on behalf of the Michigan Department of Natural Resources – Wildlife Division (WLD).</p>			
Objectives:			
<ol style="list-style-type: none"> 1. Conduct a critical review and develop written comments to the WLD on the draft HCP. 2. Conduct a critical review and develop written comments to the WLD on the draft EIS. 			
Expected Benefits:			
<ol style="list-style-type: none"> 1. As the HCP will provide guidance throughout a large geographic area for an extended time period, it is critical that the conservation measures with respect to at-risk species be as sound as possible. MNFI has specialized experience in the species under consideration and will provide comments that can be used by decision-makers to insure the most effective HCP possible. 2. The purposes of NEPA documentation are several-fold. First, NEPA is intended to insure that government agencies fully considered the potential impacts of their actions with respect to “the quality of the human environment.” Secondly, cases where a government action may significantly affect the environment, NEPA provides a mechanism to comment on the project and to provide input as to the considerations of the government with respect to potential impacts to the environment. This latter purpose can result in considerable public controversy and even legal action if the requirements of NEPA are not fully met, or the analysis of the potential impacts of the project are not fully described or are otherwise deficient. A review of the draft HCP and EIS by MNFI will significantly increase the probability that the process of development of the documents, or the final documents themselves, will stand up to scientific 			

and/or public scrutiny.

Work Plan/Approach:

1. In preparation for the review of the documents, MNFI will develop a format for providing comments to the WLD, that will clearly indicate whether the comment is of general nature or applicable to a specific section of either document.

2. MNFI staff members will be selected to comment on the HCP based on their respective areas of expertise. It is anticipated that the following staff will fulfill the following roles:

Brian Klatt – General review of both documents; specific review of the EIS in light of NEPA requirements; review of both documents with respect to bats

Joelle Gehring – Review of pertinent sections of both documents with respect to at-risk birds and bats.

Dave Cuthrell – Review of pertinent sections of both documents with respect to at-risk insects.

Pete Badra – Review of pertinent sections of both documents with respect to at-risk mussels.

Daria Hyde – Review of the HCP in general.

3. Documents will be distributed to reviewers and comments collected in a central document.

4. Comments will be reviewed internally at MNFI and finalized for submittal to the WLD.

5. A meeting with the WLD will be held to review or clarify the comments.

Timeline/Project Work Period:

WLD will provide drafts of HCP Chapters 1, Introduction and 3 to MNFI by COB December 14, 2012 and comments will be due from MNFI to WLD by COB Jan 14, 2013.

WLD will provide drafts of HCP Chapters 2, 4-11 to MNFI by COB Jan 22, 2013 and comments will be due from MNFI to WLD by COB Feb 22, 2013.

WLD will provide second drafts of HCP Chapters 1, Introduction and 3 to MNFI by COB March 4, 2013 and report regarding how comments on 1st draft were incorporated into the 2nd draft will be due from MNFI to WLD by COB Apr 8, 2013.

WLD will provide second drafts of HCP Chapters 2, 4-11 to MNFI by COB Apr 22, 2013 and report regarding how comments on 1st draft were incorporated into the 2nd draft will be due from MNFI to WLD by COB Jun 21, 2013.

A schedule of drafts and comments will be developed for the NEPA documentation. To provide for adequate review of the documents, a period of at least four weeks should be anticipated from the time of receipt of the documents by MNFI and submittal of the comments to the WLD.

Deliverables, Products, and Annual Milestones: Detail milestones that will show progress on this project as well as deliverables and products that will result from this project annually (work with WLD Sponsor):

1. A set of comments for first draft chapters of each document (HCP and EIS) as they are produced, and an analysis of how the comments on the first draft were incorporated into the second draft.
2. Meeting with WLD representatives to discuss and clarify comments.

Location: All work under this project will be performed in the offices of the MNFI.

Reporting:

1. Quarterly updates to sponsor – format to be decided with WLD Sponsor (email or meeting; December, March, June)
2. Annual progress reports - are due September 30 to WLD Sponsor and MNFI Contact (electronic version); follow template.
3. Final report – can be in what ever format makes sense for the project but must also include a short (2-5 page) summary in the format of a scientific journal. If the project is a research project it must also make management recommendations.

Acknowledgement of Participation:

Any reports, products, or presentations produced through a project funded by WLD will have the DNR logo and specifically acknowledge the WLD’s participation and support.

Any reports or products produced through a project funded by WLD, that was paid in part or in whole by a federal grant obtained by the DNR must contain the following acknowledgement: “MI Regional Wind Energy MSHCP grant [E-22-HP-1](#) in cooperation with the U.S. Fish and Wildlife Service, Section 6 Cooperative Endangered Species Conservation Fund.”

Budget: FY2013

	Cost Category	Cost
	Personnel	\$18,000
	Travel	0
	Supplies	0
	Indirect Cost (Rate: 26%)	4,680
	Budget Total	22,680
	- Waived Indirect	4,680
	Total Project Amount:	\$18,000

Contract Type/Payments:

This is a fixed-price contract.

Title (13): Ecosystem and Forestland Emergency Contingency Surveys

Sponsor(s): DNR FMD, Amy Clark Eagle
DNR FMD, Deb Begalle

Principal Investigator(s): Joshua Cohen

Project Beginning Date: November 1, 2012 **Project End Date:** September 30, 2013

Budget Request for Current Year: \$4,000

Statement of Needs:

Michigan's diverse terrestrial and aquatic systems provide habitat for a spectrum of wildlife. Forested ecosystems cover more than half of Michigan and are key to the conservation, protection, and sustainability of wildlife species. The health of these ecosystems relies on long-term active management and our understanding of the interaction between biotic and abiotic factors as well as ecological processes and human interactions.

The Forest Resources Division (FRD) and Wildlife Division (WD) are jointly responsible for management of the State Forests for long-term forest health, sustainability and myriad forest products and values, ecosystem services including recreation, and wildlife habitat. The Divisions are responsible for assuring that these management activities do not harm threatened and endangered species. Through this project Michigan Natural Features Inventory (MNFI) will conduct emergency surveys of sites where there is an imminent conflict between proposed management or active timber sales and known occurrences of threatened or endangered species or high-quality natural communities. These surveys will occur following a formal request from the Michigan Department of Natural Resources for MNFI assistance. If no survey requests have been made by April 30, 2013, the funds will be utilized by MNFI to conduct natural community surveys within proposed Biodiversity Stewardship Areas or begin development of a natural community abstract (e.g., emergent marsh, submergent marsh, or Great Lakes barrens).

Completion of this project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), monitor high quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), provide more information on what constitutes high quality representative occurrences of landscape features (p88), and monitor species that are highly imperiled (p83). Work on this project will contribute to the development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86) and will lead to the identification and conservation of representative areas, high quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Work Plan/Approach:

Following a formal request by the DNR, MNFI will conduct no more than three surveys of state forest compartments where there is a conflict between proposed management or active

timber sales and known occurrences of threatened or endangered species or high-quality natural communities. The surveys will be followed by a brief report of findings and recommendations.

If no survey requests have been made by April 30, 2013, the funds will be utilized by MNFI to conduct natural community surveys within proposed Biodiversity Stewardship Areas or begin development of a natural community abstract (e.g., emergent marsh, submergent marsh, or Great Lakes barrens).

Timeline/Project Work Period:

The timeline for this project extends from November 1, 2012 to September 30, 2013.

Expected Benefits and Information Transfer:

Completion of this project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), provide more information on what constitutes high-quality representative occurrences of landscape features (p88), and monitor species that are highly imperiled (p83). Work on this project will contribute to the development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86) and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Deliverables and Products:

The surveys will be followed by a brief report of findings and recommendations. If no surveys are conducted, MNFI will begin development of a natural community abstract (e.g., emergent marsh, submergent marsh, or Great Lakes barrens).

Location:

Field surveys could potentially occur on state forest lands in the northern Lower Peninsula and Upper Peninsula. Work on natural community abstracts would be conducted in Lansing.

Reporting:

A brief year-end activity report will be produced following completion of FY13 work in fall 2013.

Budget:

Task or Direct Cost Category	Cost
Personnel	\$3,308
Travel	\$692
Supplies	\$
Indirect Cost (Rate: 26%)	\$1,040

Budget Total	\$5,040
Waived Indirect	-\$1,040
Total Project Amount:	\$4,000

Contract Type/Payments:

This is a fixed price contract.

Title (14): Natural Community Surveys on State Park and Recreation Area Lands

Sponsor(s): DNR Parks & Recreation Division: Glenn Palmgren and Ray Fahlsing

Principal Investigator(s): Josh Cohen

Project Beginning Date: 1 January 2013 **Project End Date:** 28 February 2014

Budget Request for Current Year: \$48,491

Statement of Needs:

Michigan's diverse terrestrial and aquatic systems provide critical habitat and are key to the conservation, protection, and sustainability of plant and animal species. Maintaining the ecological integrity of natural ecosystems requires long-term active and passive management of ecosystem structure and composition, ecological processes, and human interactions.

Michigan Department of Natural Resources (DNR), Parks & Recreation Division (PRD) is responsible for management of Michigan's State Parks, Recreation Areas, Boating Access Sites and Harbors. Part of PRD's mission states that the division will "acquire, protect, and preserve the natural, historic, and cultural features of Michigan's unique resources..." Within the division, the Stewardship Unit is charged with preserving, protecting, and restoring the natural and cultural features. Preservation and restoration (where necessary) of the natural communities within state parks and recreation areas, along with their constituent plants and animals, is a core part of the mission. PRD is in the process of writing and updating management plans for state parks and recreation areas. In these plans the land is zoned for various levels of protection and use based on the location and type of natural and cultural features on the ground. In addition, the Department's Biodiversity Conservation Planning Process (BCCP) is identifying biodiversity stewardship areas, many of which will include portions of state parks and recreation areas, where the management priority will be for biodiversity conservation. The goal of BCCP is to establish a network of representative natural communities that contribute to functioning ecosystems across the state.

A baseline inventory of natural communities was conducted in all state parks and recreation areas in the late 1990s - early 2000s. However, this initial inventory did not include comprehensive boundary mapping, detailed condition assessments, or threat assessments. To inform the PRD Management Planning process, the DNR BCCP, and the overall protection, preservation, and restoration of natural communities throughout Michigan's state parks and recreation areas, up-to-date information is needed on the boundaries, condition, landscape context, and current threats to the ecological integrity of natural communities. From 2009 to 2012, Michigan Natural Features Inventory (MNFI) conducted a multi-year survey and assessment on state park and recreation area lands of known natural community element occurrences. During the course of these surveys, ecologists identified additional potential high-quality natural communities in many of the larger parks (i.e., Porcupine Mountains Wilderness and Craig Lake State Parks). In addition, the PRD has recently acquired numerous lands that have yet to be evaluated or fully evaluated for high-quality natural communities (i.e., Lime Island Recreation Area, Menominee River Recreation Area and Rockport State Park).

MNFI proposes to conduct surveys for high-quality natural communities in the following PRD lands: Porcupine Mountains Wilderness State Park, Craig Lake State Park, Lime Island Recreation Area, Menominee River Recreation Area and Rockport State Park. Current state forest land along the Keweenaw Point that will likely be transferred to PRD ownership may potentially be included within the surveys. In addition, MNFI ecologists will work in coordination with PRD staff to select additional PRD lands for survey if time and budget permits. Surveys will assess the current condition of high-quality natural communities, delineate their

boundaries and detail the vegetative structure and composition, landscape and abiotic context, threats, management needs, and restoration opportunities. Results of these surveys will be incorporated into MNFI's database and will be summarized in a brief report to be completed by the end of the project. Information gathered from this survey effort will help the DNR prioritize protection, management, and restoration and facilitate the ongoing management planning and BCCP.

Completion of this multi-year survey project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), improve Michigan's natural community classification (p88), identify areas of high biodiversity (p72), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), and provide more information on what constitutes high-quality representative occurrences of landscape features (p88). Work on this project will contribute to the DNR's development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86), and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Work Plan/Approach:

MNFI will complete the following:

4. Survey for high-quality natural community element occurrences on state park and recreation area lands.
 - a. Prioritization of sites to be surveyed will be determined in consultation with PRD.
 - b. Preparation of GIS maps and GIS data for each of the targeted areas.
 - c. Field surveys will assess classification, condition, size, and landscape context
 - d. Field surveys will include:
 - i. compiling a list of dominant and representative plant species
 - ii. describing site-specific structural attributes and ecological processes
 - iii. measuring representative tree DBH and age where appropriate
 - iv. analyzing soils and hydrology
 - v. noting current and historical anthropogenic disturbances
 - vi. evaluating potential threats (for invasive species, create a list of all invasive species noted in the community and describe the extent and significance of the invasion for each species) – an overall threat “score” or “grade” will be assigned for each site, with scoring criteria that was developed in consultation with PRD
 - vii. ground-truthing aerial photographic interpretation using GPS to facilitate mapping the perimeter of the element occurrence
 - viii. taking digital photos and GPS points at significant locations
 - ix. surveying adjacent lands when possible to assess landscape context – but detailed surveys of non-state-owned portions of a community are not required
 - x. assigning element occurrence ranks
 - xi. noting management needs and restoration opportunities (recommendations of priorities and what to do, but not detail on how to do it)
5. Incorporate survey results into MNFI's database.
6. Compile and provide all survey data listed above and produce a brief annual report summarizing findings, focusing on natural community condition and threats.

Timeline/Project Work Period:

The timeline for the project extends from January 1, 2013 to February 28, 2014.

5. Field preparation- winter and spring 2013
6. Field surveys- summer 2013
7. Progress report with list of natural communities visited and their element occurrence rankings- December 31, 2013
8. Final report and incorporate data in to MNFI database for the natural communities documented on PRD lands - February 28, 2014

Expected Benefits and Information Transfer:

Results from these surveys will help inform the PRD Management Planning process, the DNR BCCP, and the overall protection, preservation, and restoration of natural communities throughout Michigan's state parks and recreation areas. Information gathered from this survey effort will help the DNR prioritize protection, management, and restoration and facilitate the ongoing management planning and BCCP. Completion of this multi-year survey project addresses important elements of the Michigan Wildlife Action Plan. Specifically, this work addresses the need to inventory community composition across landscape features to develop baseline data (p88), improve Michigan's natural community classification (p88), identify areas of high biodiversity (p72), monitor high-quality representatives of landscape features to assess whether ecological integrity is being maintained (p88), and provide more information on what constitutes high-quality representative occurrences of landscape features (p88). Work on this project will contribute to the DNR's development and use of best management practices, recommended strategies, or recommended plans for conservation and management in specific situations (p86), and will lead to the identification and conservation of representative areas, high-quality areas, other areas of high ecological significance, and conservation of areas with urgent conservation needs (p86).

Deliverables and Products:

Progress report with list of natural communities visited due September 30, 2013.

Progress report with list of natural communities visited and their element occurrence rankings due December 31, 2013.

Final report, survey data, and incorporation of data into MNFI database due February 28, 2014

Location: MNFI scientists will work closely with the DNR PRD staff based in Lansing. Field surveys will be conducted throughout the state.

Reporting: Brief progress reports will be submitted to Glenn Palmgren and Ray Fahlsing by September 30, 2013 and December 31, 2013.

Final report, survey data, and incorporation of data into MNFI database due February 28, 2014

2012 Budget:

Task or Direct Cost Category	Cost
Personnel	\$33,084
Travel	\$7,050
Supplies	\$275
Indirect Cost (Rate: 26%)	\$10,506
Budget Total	\$50,915
-*Waived Indirect Difference	-\$2,424
Total Project Amount:	\$48,491

Contract Type/Payments:

This is a fixed-priced contract.

* (Negotiated IDC Rate for this division of DNR is 20% or \$8,082.

Use of Costs as Non-federal Match Portion for US Fish and Wildlife Administered Grants to DNR Wildlife Division

All of the costs association with each of the titles described in the above work plan are eligible for reimbursement through federal awards received by the Department and administered by the US Fish and Wildlife Service (US FWS). Through this agreement, some of these costs are being used by the Department to satisfy the non-federal match portion of these federal awards. As a vendor for this contract, MNFI and Michigan State University are not subrecipients of these federal awards and are not subject to the terms in these federal awards. MNFI and MSU, however, may not use those portions of the costs in these work plans the Department is using as non-federal match as non-federal match for any federal award MNFI and MSU may have. The portion of costs for each work plan the Department is using as non-federal match and the federal award this match is applied to are summarized as follows:

Title (#)	Costs used as Non-federal Match	Federal Award ID and Name	Sponsor	Requested Funds
(1)	Indirect Cost (Rate: 52%)	T-9-T-4 Michigan's Comprehensive State Wildlife Grant	Mike Donovan	\$305,550
(2)	Indirect Cost (Rate: 26%)	T-9-T-4 Michigan's Comprehensive State Wildlife Grant	Mike Donovan	\$225,000
(3)	Indirect Cost (Rate: 26%)	Addition of the Poweshiek Skipperling to the Mitchell's Satyr Butterfly HCP	Dan Kennedy	\$10,500
(4)	Indirect Cost (Rate: 26%)	Assessment of SGCN Animal Conservation Status Ranks To Aid Delisting	Amy Derosier	\$52,000
(5)	Indirect Cost (Rate: 26%)	Oak Savanna, Pine Barrens, and Jack Pine Forest Restoration in Michigan and Ohio for Species of Greatest Conservation Need	Mark Sargent	\$50,000
(6)	Indirect Cost (Rate: 26%)	Prairie Fen and Associated Savanna Restoration in Michigan and Indiana for Species of Greatest Conservation Need	Mark Sargent	\$25,000
(7)	Indirect Cost (Rate: 52%)	Diverse Grassland Complexes for Species of Greatest Conservation Need	Mark Sargent	\$25,000
(8)	Indirect Cost (Rate: 52%)	Mounting a Rapid Response to Invasive Plants 2013	Sue Tangora	\$100,000

(9)	Indirect Cost (Rate: 52%)	Monitoring Bat Use of Agricultural Fields in Michigan	Chris Hoving Christine Hanaburgh	\$8,660
(10)	Indirect Cost (Rate: 52%)	Acoustic Monitoring of Chiropteran and Avian Migration Activity in High Wind Energy Potential Areas of Michigan	Chris Hoving Christine Hanaburgh	\$7,708
(11)	Indirect Cost (Rate: 52%)	Monitoring Bat Species Diversity in the Northern Thumb Area of Michigan	Chris Hoving Christine Hanaburgh	\$8,188
(12)	Indirect Cost (Rate: 26%)	Critical Review of the Draft Wind-energy Multi-species Habitat Conservation Plan	Chris Hoving Christine Hanaburgh	\$18,000
(13)	Indirect Cost (Rate: 26%)	Ecosystem and Forestland Emergency Contingency Surveys	Amy Clark Eagle Deb Begalle	\$4,000
(14)	Entire costs of this title including Indirect Cost (Rate: 26%)	T-9-T-4 Michigan's Comprehensive State Wildlife Grant	Glenn Palmgren Ray Fahlsing	\$48,491



Michigan Department of Natural Resources – Procurement Services
 P.O. Box 30028, Lansing, MI 48909
 OR
 530 W. Allegan, Lansing, MI 48933

NOTICE OF CONTRACT NO. 751B3200002
Between
STATE OF MICHIGAN
and

Required by authority of 1984 PA 431, as amended.

Name and Address of Contractor Michigan State University Office of Sponsored Programs 426 Auditorium Rd 301 Administration Building Lansing, MI 48824-2612	Primary Contact Lisa Somers	
	Email Somers@osp.msu.edu	
	Telephone (517) 884-4279	Contractor #, Mail Code 2****5984/283

State Contact	Agency	Name	Telephone	Email
Contract Compliance	DNR	Michael Donovan	(517) 373-7027	Donovanm@michigan.gov
Buyer	DNR	Jana Harding-Bishop	(517) 373-1190	HardingJ3@michigan.gov

Contract Summary			
Description (Provide a basic but comprehensive description of services) Conservation Planning Services			
Initial Term 3 years	Effective Date November 1,	Initial Expiration Date October 31, 2015	Available Options 3 - 1 year options
Payment Terms Net 45	F.O.B. N/A	Shipped N/A	Shipped From N/A
Minimum Delivery Requirements N/A	Alternate Payment Options <input type="checkbox"/> P-Card <input type="checkbox"/> Direct Voucher (DV)		Available to MiDeal Participants <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Miscellaneous Information The terms and conditions of this Contract are those of ITB # RFP-JH-WL-751R2200810, this Contract Agreement and the vendor's quote. In the event of any conflicts between the specifications, and terms and conditions, indicated by the State and those indicated by the ESTIMATED CONTRACT VALUE AT TIME OF EXECUTION: \$4,099,602.18			



Michigan Department of Natural Resources - Procurement Services
P.O. Box 30028, Lansing, MI 48909
OR
530 W. Allegan, Lansing, MI 48933

CONTRACT NO. 751B3200002

**Between
THE STATE OF MICHIGAN
And**

Required by authority of 1984 PA 431, as amended.

Name of Contractor Michigan State University	Primary Contact Lisa Somers
Address of Contractor Office of Sponsored Programs	Email Somers@osp.msu.edu
Address of Contractor 426 Auditorium Rd 301 Administration Building	Telephone (517) 884-4279
City, State, ZIP Lansing, MI 48824-2612	Contractor #, Mail Code 2****5984/283

STATE CONTACTS	AGENCY	NAME	TELEPHONE	EMAIL
Project Manager	DNR	Michael Donovan	(517) 373-7027	DonovanM@michigan.gov
Buyer	DNR	Jana Harding-Bishop	(517) 373-1190	HardingJ3@michigan.gov

CONTRACT SUMMARY

Description Conservation Planning Services (MNFI)			
Initial Term 3 years	Effective Date November 1, 2012	Initial Expiration Date October 31, 2015	Available Options 3 – 1 year options
Payment Terms Net 45	F.O.B N/A	Shipped N/A	Shipped From N/A
Alternate Payment Options <input type="checkbox"/> P-card <input type="checkbox"/> Direct Voucher (DV) <input type="checkbox"/> Other:		Available to MiDeal Participants <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Minimum Delivery Requirements N/A			
Miscellaneous Information The terms and conditions of this Contract are those of ITB #RFP-JH-WL-751R2200810, this Contract Agreement and the vendor's quote. In the event of any conflicts between the specifications, and terms and conditions, indicated by the State and those indicated by the vendor, those of the State take precedence.			
ESTIMATED CONTRACT VALUE AT TIME OF EXECUTION: \$4,099,602.18			

THIS IS NOT AN ORDER: This Contract Agreement is awarded on the basis of our inquiry bearing the ITB No. RFP-JH-WL-751R2200810. Orders for delivery will be issued directly by the Michigan Department of Natural Resources through the issuance of a Purchase Order Form.

All terms and conditions of the invitation to bid are made a part hereof.

FOR THE CONTRACTOR:

Michigan State University

Firm Name
On-file in DNR Procurement

Authorized Agent Signature

FOR THE STATE:

On-file in DNR Procurement

Signature
Sharon Walenga-Maynard/Procurement Services Manager

Name/Title

Katherine Cook

Authorized Agent (Print or Type)

11/9/12

Date

Financial Services/Procurement

Office

11/15/12

Date

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Attachment A, Pricing

Article 1 – Statement of Work (SOW)

1.010 Project Identification

1.011 Project Request

This contract is to obtain professional botanical, zoological, and ecological conservation planning services. These services are required to help the Department of Natural Resources (DNR) meet their mission to protect and conserve the natural resources of the State. The duration of this contract will be three years, beginning October 1, 2012.

1.012 Background

DNR has been using contractual arrangements for over twenty (25) years to obtain, in part, the general services briefly described in Section 1.011. These services have been used by DNR Wildlife, Fisheries, Forest Resources, and Parks/Recreation Divisions. In order to comply with parts of Public Act 451, the Natural Resources and Environmental Protection Act, the DNR requires knowledge on plant and animal species that are classified as threatened, endangered, of special concern, or in greatest need of conservation, as well as the distribution, location, and overall ecological health of natural communities.

1.020 Scope of Work and Deliverables

1.021 In Scope

Upon request of the DNR the contractor will provide expertise to the Department of Natural Resources (DNR) regarding all aspects of professional botanical, zoological, and ecological conservation planning services across the State of Michigan specific to threatened, endangered, and of special concern plant and animal species and natural communities. Change Notices will be done to add projects to the contract and work will only be done on projects approved, funded and confirmed by the issuance of a Purchase Order each fiscal year.

Contractor Response:

MNFI understands and agrees with the overall scope of the services to be provided. This understanding is based on the provision of similar services to the DNR over an extended time frame, first as a program of The Nature Conservancy, and during the past 12 years under contract to provide such services related to consultation, and outreach to the DNR as a program within Michigan State University Extension. Furthermore, MNFI understands that work will only be done on studies and projects approved, funded, and confirmed by the issuance of a Purchase Order each fiscal year; work will not commence until authorized by the contracting office of the DNR. To this end, MNFI retains a complete complement of botanists, zoologists, and ecologists that can provide the wide range of services indicated in section 1.021 of the RFP.

1.022 Work and Deliverable

Contractor must provide Deliverables/Services and staff, and otherwise do all things necessary for or incidental to the performance of work, as set forth below:

The contractor is required to have demonstrated expertise using BIOTICS (NatureServe's biodiversity data management software); a sophisticated data model implemented in an Oracle database, or must be able to demonstrate competencies using BIOTICS within six months of the beginning of the contract.

Contractor Response:

MNFI has extensive expertise in using BIOTICS, has a current license for this software from NatureServe, and is currently using it to maintain the Natural Heritage Database (NHD). Staff members Ed Schools, Rebecca Rogers, and Mike Sanders have in-depth knowledge of BIOTICS; most MNFI staff scientists have a working knowledge of BIOTICS. MNFI has been a supporting member and close cooperater with NatureServe since the original development of BIOTICS, including serving as a beta-tester and NHP network expert for BIOTICS 4, the current version of BIOTICS. MNFI is, once again, discussing with

NatureServe the possibility of serving as a beta-tester for BIOTICS 5, which NatureServe plans to rollout to the Natural Heritage Program (NHP) network in 2013. MNFI is the sole holder of a BIOTICS license in the state of Michigan.

In addition, the contractor must have demonstrated expertise in interfacing BIOTICS (or similar) output to geographic information system (GIS) applications that support basic digital mapping, spatial analyses, and data visualization. The Contractor will be responsible for maintaining and populating the statewide database of occurrences of threatened, endangered, and of special concern plant and animal species and natural communities.

Contractor Response

As technology has developed over the past decades, geographic information systems (GIS) have arisen that facilitate the mapping, spatial analysis, and data visualization of location information. MNFI has been at the forefront of adopting this technology and has developed shapefiles, through internally-funded efforts, that complement the tabular data contained in the NHD. The GIS capabilities of MNFI are an invaluable tool in analyzing and presenting NHD data.

As in the use of BIOTICS itself, MNFI has extensive experience in the integration of BIOTICS output with GIS applications. Mr. Ed Schools and Ms. Rebecca Rogers of MNFI staff have in-depth knowledge of BIOTICS and are also college-level instructors in ESRI's ArcGIS software, which is the GIS software used to interface with BIOTICS output. Over the past decade, MNFI has developed shapefiles as a complement to the tabular data contained in BIOTICS, that facilitates spatial analysis, visualization of the location of the Element Occurrences contained in the tabular data, and mapping.

Virtually all scientific staff at MNFI has a working knowledge of an ESRI GIS product allowing them to produce maps and spatial analyses from the NHD. MNFI staff routinely use GPS devices in the execution of field work and members of the Conservation GIS section in MNFI have pioneered development of software and PDA uses that link data input in the field to computer input in real time. MNFI staff has presented papers on the system and will continue to provide support to DNR staff in facilitating use of these systems. The expertise of MNFI in spatial analysis and interfacing with NHD data is recognized throughout the NHP network with MNFI being asked to join the team that is creating a listed species modeling network to provide seamless maps of the known and modeled distribution of federally listed species throughout the US; MNFI will serve as the Midwest hub for this modeling network.

Contractor must have demonstrated expertise in fostering and maintaining excellent working relationships with NatureServe, Arlington, Virginia, or must be able to demonstrate an established relationship with NatureServe within six months of the beginning of the contract.

Contractor Response:

NatureServe is the umbrella organization that coordinates and facilitates the activities of the NHPs throughout the United States, Canada, and portions of Latin and South America. Through data exchanges with member organizations (*i.e.* NHPs), NatureServe maintains a nationwide, multi-jurisdictional aggregate NHD that facilitates conservation efforts on regional and national levels. MNFI has maintained a close working relationship with NatureServe since that organization was created and is currently a Constituent Member of NatureServe. Constituent Membership is the membership class with the greatest rights and responsibilities within NatureServe and consists solely of the subnational NHPs (*i.e.* designated state programs in the US) and is the only class with voting rights and access to BIOTICS licenses. As a Constituent Member, MNFI conducts periodic data exchanges with NatureServe in support of the multi-jurisdictional database and has done so since the creation of NatureServe.

Additionally, MNFI regularly teams with NatureServe to pursue contracts and grants. Most recently, MNFI is working with NatureServe to conduct assessments of species vulnerability to climate change using NatureServe's Climate Change Vulnerability Index (CCVI); this project is funded by the Doris Duke Foundation. MNFI is also using the CCVI as part of a project funded by NOAA through the Coastal Management Program to assess potential climate change impacts to coastal species and communities; with a focus on the DNR's list of Species of Greatest Conservation Need.

In addition to the above, various MNFI staff members maintain close professional networking relationships with NatureServe. The current Director of MNFI, Dr. Brian Klatt, serves on the US Section

Council of NatureServe. As a member of the Council, Dr. Klatt helped NatureServe develop the NHP program standards which sets out minimum operating standards for the NHPs; he was also selected from the Council to participate in the annual planning meeting in January 2012, at which NatureServe set their goals for the upcoming year. Ms. Yu Man Lee of MNFI was selected by NatureServe to participate in their first Leader-to-Leader executive training class; Ms. Lee completed the training in 2011. MNFI's data and technology staff worked with NatureServe to beta-test the current version of BIOTICS, are in discussions with NatureServe regarding beta-testing of the next release of BIOTICS, which will be cloud-based, and work closely with NatureServe data managers on data exchanges. Individual scientists at MNFI work with their NatureServe colleagues on various projects. Similarly, current and retired NatureServe staff, scientists, and executives have long-term professional relationships with MNFI. For example, Dr. Pat Comer and Larry Master are former MNFI staff members, Dr. Judy Soule recently retired Membership Coordinator for NatureServe is the former Director of MNFI and the current President and CEO of NatureServe, Dr. Mary Klein, is a former MNFI staff member.

The majority of the contractor's staff will be housed within the DNR's headquarters in Lansing, Michigan and will use DNR computers, networks, and other infrastructure, and will comply with the State's technology standards for hardware and software. Field work to fulfill the projects described will occur statewide in both aquatic and terrestrial habitats. DNR will not provide contractor with vehicles or administrative support necessary to perform the services of this contract.

Each year of the contract, the DNR will provide a detailed list of projects to be completed during the State's fiscal year, which is defined as October 1 through September 30. In collaboration with DNR, the contractor will develop detailed work plans describing how these projects will be completed and what deliverables are expected. The DNR will approve the annual work plans. Some of these projects are anticipated to last for the duration of the contract (three years).

It is anticipated the contractor will provide approximately 30,000 hours of service, each year. The work projects may include, but is not limited to:

- Management of the database of locations and attributes of element occurrences of threatened, endangered, and of special concern plant and animal species and natural communities;
- Technical and administrative support-to provide expertise regarding electronic data collection including setting up and running Global Positioning Systems (GPS), Personal Data Assistants (PDA), and other remote data collection modules. In addition contractor will provide administrative support;
- Transfer of data from contractor's to DNR database or vice-versa;
- Wildlife Action Plan (WAP) implementation support by providing expertise in assisting DNR with the actions laid out in the WAP;
- Forest Management compartment reviews - to provide an estimate of the reviews performed-in 2011 approximately 15 review documents were produced covering over 200 Forest Management compartments;
- Emergency surveys and technical advice on threatened, endangered, and of special concern plant and animal species and natural communities-to provide advice/expertise on rare species on an as needed basis;
- Technical training on threatened, endangered, and of special concern plant and animal species and natural communities;
- Information transfer on threatened, endangered, and of special concern plant and animal species and natural communities in accepted formats to agencies, local units of government, and other interested parties;
- Development of information, outreach, and educational materials such as species and community abstracts;
- Special surveys, monitoring, and inventory work on threatened, endangered, and of special concern plant and animal species and natural communities;
- Specific deliverables will be detailed in the approved annual work plans and may include, but are not limited to, the number of hours worked on projects, reports, publications, informational materials developed and disseminated, training sessions conducted, meeting minutes, and results of completed analyses.

The 30,000 hours estimate would likely be broken down into the following areas:

- Project Management Oversight: 5%
- Database Management and Information Technology: 10%
- Zoological Expertise: 20%
- Botanical Expertise: 15%
- Aquatic Ecology: 15%
- Terrestrial Ecology: 20%
- Conservation Planning and Education: 15%

Contractor Response:

Attachment A is a chart which the bidder must complete stating the name of the staff person assigned under each of the above categories, their area of expertise and hourly rate.

1.030 Roles and Responsibilities

1.031 Contractor Staff, Roles, and Responsibilities

The contractor must identify staff who will be involved, identify by name individuals that are to be designated as Key Personnel, and describe in detail their roles and responsibilities. If an overall organization chart is available, then provide a reference to that chart as well. The contractor should identify any part-time personnel. Descriptions of roles should be functional and not just by title. (See attached staffing chart).

- Areas of Expertise:
- Project Management Oversight
 - Database Management and Information Technology
 - Zoological Expertise
 - Botanical Expertise
 - Aquatic Ecology
 - Terrestrial Ecology
 - Conservation Planning and Education:

Contractor Response:

Name	Title	Role/Responsibility	Area of Expertise	% Time Estimated for this Contract
Badra, Peter J	Conservation Scientist	Key staff member and Principal Investigator (PI) on projects related to aquatic ecology in general, but with special emphasis on mollusks and gastropods. Co-leader of Aquatic and Water Quality thematic area. Discipline Lead for Aquatics.	Aquatic Ecology; Project Management Oversight	50
Campbell, Suzan Lyn	Conservation Associate	Facilitator and outreach specialist in general, with emphasis on brochure preparation and training.	Conservation Education	10
Cohen, Joshua G	Conservation	PI with respect to	Terrestrial Ecology;	50

	Scientist	issues of terrestrial ecology, especially evaluation of natural communities. Also serves as PI for compartment reviews, with over 10 years of experience in conducting compartment reviews.	Botanical Expertise; Project Management Oversight	
Cuthrell,David L	Conservation Scientist	Key staff member and PI for projects involving invertebrate zoology, especially insects. PI for projects involving ornithology in general, with emphasis on raptors.	Zoological Expertise; Project Management Oversight	50
Enander,Helen D	Information Technologist	Key staff member in computer modeling, especially species distributions and physiographic features. Lead for the Geographic Information Systems Discipline.	Database Management and Information Technology	50
Gehring,Joelle Lynn	Senior Conservation Scientist	Key staff member and PI with respect to studies on birds and mammals, with emphasis on impacts of human activities. Leads Alternative Energy area for MNFI. Discipline Lead for Zoology.	Zoological Expertise; Project Management Oversight	50
Higman,Phyllis J	Senior Conservation Scientist	Key staff member and PI for conservation education projects. Leads Invasive Species area for MNFI. Also provides expertise in botany. Discipline Lead for Conservation Education. Serves as supervisor for Conservation Education staff and may serve as acting director.	Conservation Education; Botanical Expertise; Project Management Oversight	50
Hyde,Daria A	Conservation Scientist	PI and team member for a variety of project types related including studies on insects, reptiles, and mammals. Leads and	Conservation Planning and Education; Project Management Oversight	50

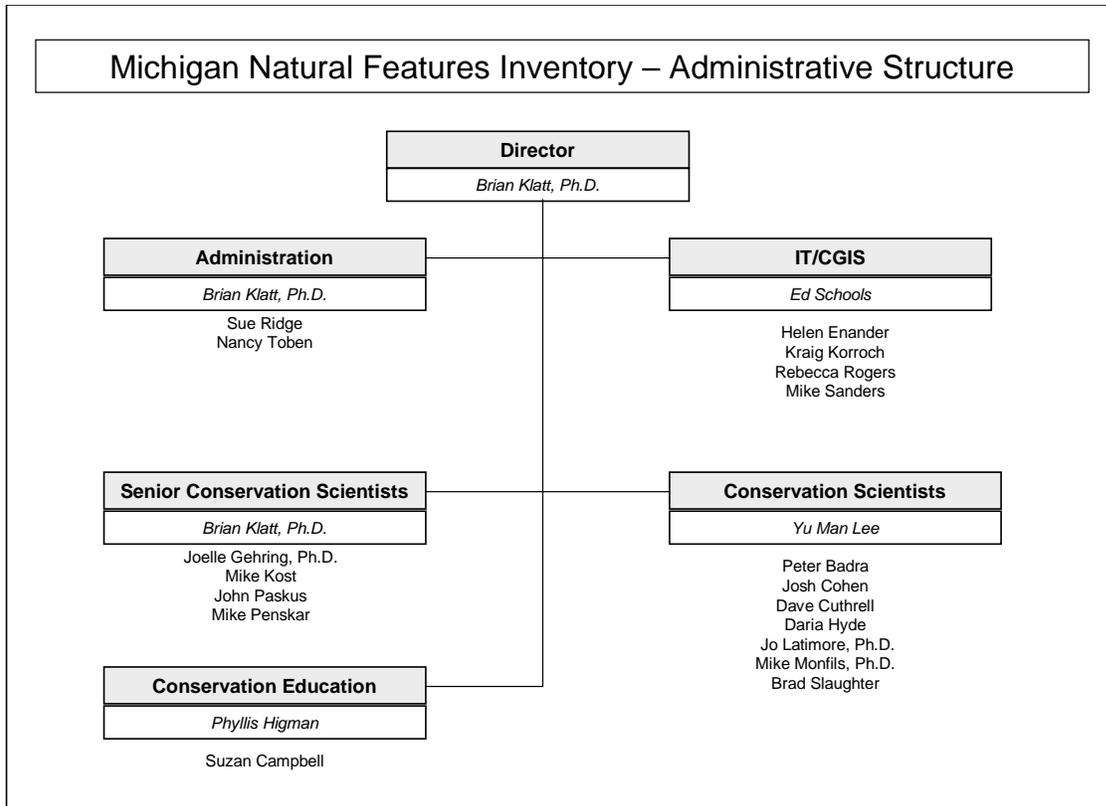
		participates in projects related to conservation planning, such as development of habitat conservation plans under the Endangered Species Act. Leads the MNFI thematic area of Natural Heritage Data.		
Klatt,Brian J	Director and Conservation Scientist	Chief administrator for MNFI; Key staff member and PI for a wide range of projects, but with emphasis on terrestrial ecology, wetlands, mammals, impact analyses, ecosystem services, and conservation planning. Primary liaison to NatureServe. Supervisor to the Senior Conservation Scientists, administrative staff, and other supervisors.	Project Management Oversight; Zoological Expertise; Botanical Expertise; Terrestrial Ecology; Conservation Planning	100
Korroch,Kraig M	Information Technologist	Key staff member for IT support on day-to-day basis and the unique systems connected with BIOTICS; web site, information requests, fee processing, liaison with MSU systems as well as DTMB, etc. Serves as resource on projects requiring sophisticated/complex data manipulation.	Database Management and Information Technology	100
Kost,Michael A	Senior Conservation Scientist	Key staff member and PI on projects involving natural communities; especially field surveys to assess the condition of known Element Occurrences and candidate areas. Defines and refines natural community definitions. Discipline Lead for Ecology.	Terrestrial Ecology; Botanical Expertise; Project Management Oversight	50
Latimore,Jo Anne	Extension Specialist	PI for aquatic projects. Assuming key role in emerging definition of	Aquatic Ecology; Project Management	38

		aquatic communities. Natural resource conflict resolution facilitator. Co-leader of Aquatics thematic area.	Oversight	
Lee, Yu Man	Conservation Scientist	Key staff member and PI for herpetological studies. Staff lead for the developing area of vernal pools. Leads Climate Change thematic. Supervisor for Conservation Scientists and may serve as acting director.	Zoological Expertise; Conservation Education; Project Management Oversight	50
Monfils, Michael J	Conservation Scientist	PI for studies of wetlands, waterfowl, climate change, statistical analyses and experimental design, potential impacts of energy development. Leads the Adaptive Management thematic area.	Zoological Expertise; Aquatic Ecology; Project Management Oversight	50
Paskus Jr, John Joseph	Senior Conservation Scientist	Key staff member and PI for conservation planning projects, ecosystem services studies, and facilitation of public access to natural resource information. Lead for Conservation Planning thematic area.	Conservation Planning; Conservation Education; Project Management Oversight	50
Penskar, Michael R	Senior Conservation Scientist	Key staff member and PI for all aspects of botanical studies. Key resource for botanical information throughout the state. Liaison to university herbaria. Lead for Botany Discipline.	Botanical Expertise; Terrestrial Ecology; Project Management Oversight	50
Ridge, Suzanne M	Administrative Assistant	Provides administrative and human resources support, including: position posting, hiring processing, invoicing, purchasing, service agreement processing, and record keeping.	Project Management Oversight	100

Rogers,Rebecca Leigh	Information Technologist	Key staff member and primary data manager for the NHD. Conducts data exchanges between the MNFI NHD and NatureServe, as well as with DNR databases. Liaison with NatureServe with respect to BIOTICS technical issues.	Database Management and Information Technology	100
Sanders,Michael A	Administrative Assistant	Conducts environmental review services for the public and in support of DNR Wildlife Division projects. Team member for field surveys and assessments.	Database Management and Information Technology	50
Schools,Edward H	Senior Conservation Scientist	Key staff member and PI for GIS and modeling studies. Responsible for identification, evaluation, and adoption recommendations for new technology. Supervisor for the IT/Conservation GIS group.	Database Management and Information Technology; Project Management Oversight	100
Slaughter,Bradford Shaw	Conservation Scientist	PI for studies involving botany and natural communities; especially field surveys to assess the condition of known Element Occurrences and candidate areas. Defines and refines natural community definitions. Staff expert on prairies, savannahs, and fens.	Botanical Expertise; Terrestrial Ecology; Project Management Oversight	50
Toben,Nancy L	Administrative Assistant	Serves as MNFI's contracts and grants administrator. Processes grant applications, work plans, identifies and tracks match opportunities, and assists in invoicing. Primary liaison with between DNR contracting office and	Project Management Oversight	100

MSU Contracts and Grants office.

Because of the unknown number and type of projects possible under the scope of work, as well as MNFI's experience in providing such services to the DNR over the past 12 years, the estimates for the amount of time to be spent under this contract as presented above are only for maintaining the NHD and administration and management of MNFI as a NHP in good standing in light of NHP standards established by NatureServe. Effort related to focused projects, such as the IFMAP project described in the RFP appendix are not included in the time estimates, though historic patterns indicate that such effort may amount to an additional 20,000 – 30,000 hours annually.



1.040 Project Plan

1.41 Project Plan Management

In January/February of each year the DNR will meet with the Contractor to review and discuss potential projects. By the beginning of March, the contractor will provide the DNR Project Manager pre-proposals of the priority projects on a template which will be provided and will be no more than a page long.

In March the Contractor will meet with the DNR Project Manager to determine priority projects.

The Contractor will develop work plans for projects identified as priority and provide to the DNR Project Manager by April 15th of each year.

The DNR Project Manager in conjunction with the DNR Accounting will determine which projects to add to the contract by August 1st of each year and submit the request to DNR Procurement.

An Advice of Change will be submitted to the Contractor by August 15th of each year by DNR Procurement to add potential projects for the upcoming fiscal year (October 1 – September 30). Once the Advice of Change is signed the Contract will be updated.

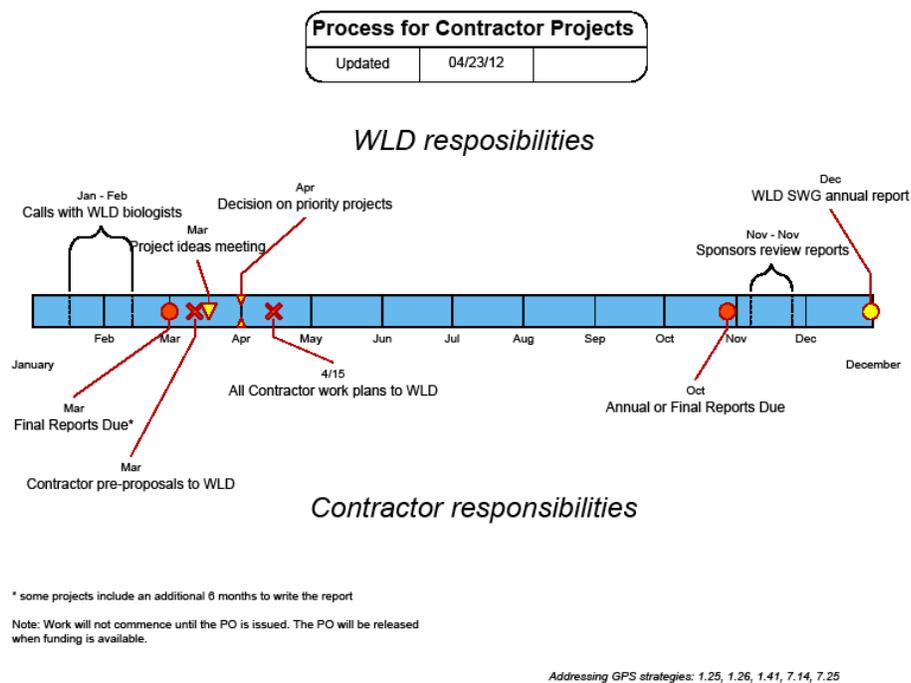
Though projects are added to the contract thru the Advice of Change process – The contractor must understand and agree that until a Purchase Order (a release against the contract) is issued for a particular project no work should be performed as the Purchase Order is the DNR’s commitment to fund any given project.

Once a Purchase Order is issued for a project, the DNR Sponsor (the DNR staff assigned to oversee the project) and the Contractor’s Principal (PI) shall meet at a minimum quarterly to discuss the project, any issues and make sure the project is on schedule. If there are any issues to be resolved that cannot be done between the DNR Sponsor and the Contractor’s Project Manager the issue will be elevated the DNR and Contractor’s Contract Managers for resolution.

Projects may be added or amended after the initial Advice of Change is completed for each fiscal year, however additional projects or changes to existing projects will require an additional Advice of Change before being added to the contract.

Contractor Response:

The DNR project management system as described in the RFP can be depicted graphically as:



In response to annual funding cycles, such as that depicted above, MNFI has established the following general process: 1) the funding opportunity is identified; 2) an informational notice is sent out to staff alerting them of the opportunity; 3) a staff meeting may be held to preliminarily identify studies that fit the funding opportunity; 4) staff collaborate, as appropriate, to develop focused or multi-disciplinary project proposals that meet the MNFI mission; 5) if allowed, MNFI staff discuss proposal ideas with the funder to gauge interest and appropriateness; 6) MNFI identifies priorities if multiple projects are being submitted under the same funding opportunity and the funder requests such input; 7) a proposal is prepared in conformance with the format requirements of the funder; 8) proposals are submitted to MSU contracts and grants for review; 9) budgets are checked and approved by MSU, or adjusted/reformatted as necessary; 10) the proposals are submitted to the

funding agency; 11) if funded, MNFI and MSU conduct post-award processing to establish the project in the university system; 12) the project is carried out with frequent communications between MNFI and the funder, required reporting is performed, invoices are prepared, usually on a quarterly basis, and deliverables are completed. Throughout step 12, budgets are monitored via "Budget Tracker" a program developed by MNFI and project spending is monitored at the university level to insure that expenditures conform to contractual guidelines. Similarly, MNFI uses a staff utilization spreadsheet to insure that adequate staff is available and assigned to projects.

The DNR generalized process outlined above fits well with the MNFI project management process. Indeed, the general process described for MNFI has been used in conjunction with the DNR process starting with the funding cycle for Fiscal Year 2012. Meshing of the two systems was worked out in a cooperative manner and continues to be refined.

1.042 Reports

At a minimum the Contractor PI shall either meet with or provide the DNR Sponsor a brief written summary of accomplishments and issues from the past quarter.

The Contractor PI will provide Annual Progress Report (1-5 pages maximum, a template will be provided) to the DNR Sponsor by the due date on the Project Work plan for each project.

The Contractor Project Manager will provide the DNR Project Manager with a detailed Final Report which will include a 1-5 page summary following a scientific paper format.

Contractor Response:

MNFI understands the general project reporting requirements to be:

- 1) Quarterly, the MNFI PI will meet or communicate with the Project Sponsor to discuss the project and address any issues, and/or the PI will provide the Project Sponsor with an update on the project, either in writing or by email.
- 2) The MNFI PI will provide an annual report regarding the project to the Project Sponsor. It is anticipated that these reports will be a maximum of five pages long and the DNR may provide a template for the report.
- 3) A final report will be submitted by the MNFI to the Project Sponsor, which will include a 1-5 page summary and be presented in scientific paper format, as appropriate.

MNFI agrees to these requirements and has, in fact, been complying with similar requirements for the past two years under the contract it currently has with the DNR.

1.050 Acceptance

1.051 Criteria

The following criteria will be used by the State to determine Acceptance of the Services or Deliverables provided under this SOW:

The following criteria will be used by the State to determine Acceptance of the Services and/or Deliverables provided under this SOW.

Criteria for acceptance will be based upon review and approval of the following deliverables:

- a) Receipt of annual reports
- b) Receipt and acceptance of final deliverable for each specific project

The above tasks will be reviewed and accepted by the following DNR program manager:

Michael Donovan
Wildlife Division
S.T. Mason Bldg.
P.O. Box 30444 (48909)
530 W. Allegan Street (48933)
Lansing, MI

1.052 Final Acceptance

Upon receipt and acceptance of the deliverables defined in Sections 1.022 and 1.042, DNR will make final payment.

1.060 Proposal Pricing

1.061 Proposal Pricing

MNFI has completed Attachment A has included it as Attachment A of this proposal. The attachment indicates the name of each MNFI staff member anticipated to provide services under this contract, their area of expertise, and their anticipated hourly rate during the first year of the contract. MNFI anticipates annual increases to these hourly rates reflecting annual changes in the MSU compensation package. MNFI will submit new rate requests as necessary. New rates typically become effective October 1st of each year and MNFI will submit the new rates at least 10 days prior to their effective date.

As noted in Attachment A, MSU does not offer quick payment terms. However, under previous contracts MSU has waived indirect costs associated with projects. This has benefits for the DNR; waiving of indirect costs allows a greater portion of the budget of each project to support the project objectives rather than university-related costs. Additionally, the waived indirect provides a source of match to the DNR allowing them to take advantage of certain federal funding opportunities, such as State and Tribal Wildlife Grants. This waiving of indirect costs is predicated on the DNR providing facility space for MNFI staff, as well as computing system access, and other administrative support. If such support continues, MNFI fully expects to be able to offer waived indirect costs under the new contract.

1.062 Price Term

Pricing will be determined each year by project, the costs of each project will be broken down and salaries provided per attachment A.

DNR-Procurement reserves the right to consider various pertinent information sources to evaluate price increase requests (such as the CPI and PPI, US City Average, as published by the US Department of Labor, Bureau of Labor Statistics). DNR-Procurement also reserves the right to consider other information related to special economic and/or industry circumstances, when evaluating a price change request. Requests for price changes must be RECEIVED IN WRITING AT LEAST 15 DAYS PRIOR TO THEIR EFFECTIVE DATE, and are subject to written acceptance before becoming effective. In the event new prices are not acceptable, the Contract may be cancelled. **The Contractor remains responsible for performing according to the Contract terms at the Contract price for all orders received before price revisions are approved or before the Contract is cancelled.**

1.063 Tax Excluded from Price

(a) Sales Tax: For purchases made directly by the State, the State is exempt from State and Local Sales Tax. Prices must not include the taxes. Exemption Certificates for State Sales Tax will be furnished upon request.

(b) Federal Excise Tax: The State may be exempt from Federal Excise Tax, or the taxes may be reimbursable, if articles purchased under any resulting Contract are used for the State's exclusive use. Certificates showing exclusive use for the purposes of substantiating a tax-free or tax-reimbursable sale will be sent upon request. If a sale is tax exempt or tax reimbursable under the Internal Revenue Code, prices must not include the Federal Excise Tax.

1.064 Holdback - Reserved

1.070 Additional Requirements

1.071 Additional Terms and Conditions specific to this RFP - Reserved

Article 2, Terms and Conditions

2.000 Contract Structure and Term

2.001 Contract Term

The Contract is for a period of three (3) years beginning November 1, 2012 through October 31, 2015. All outstanding Purchase Orders must also expire upon the termination (cancellation for any of the reasons listed in **Section 2.150**) of the Contract, unless otherwise extended under the Contract. Absent an early termination for any reason, Purchase Orders issued but not expired, by the end of the Contract's stated term, will remain in effect for the balance of the fiscal year for which they were issued.

2.002 Options to Renew

The Contract may be renewed in writing by mutual agreement of the parties not less than 30 days before its expiration. The Contract may be renewed for up to three (3) additional one (1) year periods.

2.003 Legal Effect

Contractor must show acceptance of the Contract by signing two (2) copies of the Contract and returning them to the Contract Administrator. The Contractor must not proceed with the performance of the work to be done under the Contract, including the purchase of necessary materials, until both parties have signed the Contract to show acceptance of its terms, and the Contractor receives a Contract release/purchase order that authorizes and defines specific performance requirements.

Except as otherwise agreed in writing by the parties, the State assumes no liability for costs incurred by Contractor or payment under the Contract, until Contractor is notified in writing that the Contract (or Change Order) has been approved by the State Administrative Board (if required), approved and signed by all the parties, and a Purchase Order against the Contract has been issued.

2.004 Attachments & Exhibits

All Attachments and Exhibits affixed to any and all Statement(s) of Work, or appended to or referencing the Contract, are incorporated in their entirety and form part of the Contract.

2.005 Ordering

The State will issue a written Purchase Order, Blanket Purchase Order, Direct Voucher or Procurement Card Order, which must be approved by the Contract Administrator or the Contract Administrator's designee, to order any Services/Deliverables under the Contract. All orders are subject to the terms and conditions of the Contract. No additional terms and conditions contained on either a Purchase Order or Blanket Purchase Order apply unless they are also specifically contained in that Purchase Order's or Blanket Purchase Order's accompanying Statement of Work. Exact quantities to be purchased are unknown; however, the Contractor must furnish all such materials and services as may be ordered during the CONTRACT period. Quantities specified, if any, are estimates based on prior purchases, and the State is not obligated to purchase in these or any other quantities.

2.006 Order of Precedence

(a) The Contract, including any Statements of Work and Exhibits, to the extent not contrary to the Contract, each of which is incorporated for all purposes, constitutes the entire agreement between the parties with respect to the subject matter and supersedes all prior agreements, whether written or oral, with respect to the subject matter and as additional terms and conditions on the purchase order must apply as limited by **Section 2.005**.

(b) In the event of any inconsistency between the terms of the Contract and a Statement of Work, the terms of the Statement of Work will take precedence (as to that Statement of Work only); provided, however, that a Statement of Work may not modify or amend the terms of the Contract, which may be modified or amended only by a formal Contract amendment.

2.007 Headings

Captions and headings used in the Contract are for information and organization purposes. Captions and headings, including inaccurate references, do not, in any way, define or limit the requirements or terms and conditions of the Contract.

2.008 Form, Function & Utility

If the Contract is for use of more than one (1) State agency and if the Deliverable/Service does not meet the form, function, and utility required by that State agency, that agency may, subject to State purchasing policies, procure the Deliverable/Service from another source.

2.009 Reformation and Severability

Each provision of the Contract is severable from all other provisions of the Contract and, if one (1) or more of the provisions of the Contract is declared invalid, the remaining provisions of the Contract remain in full force and effect.

2.010 Consents and Approvals

Except as expressly provided otherwise in the Contract, if either party requires the consent or approval of the other party for the taking of any action under the Contract, the consent or approval must be in writing and must not be unreasonably withheld or delayed.

2.011 No Waiver of Default

If a party fails to insist upon strict adherence to any term of the Contract then the party has not waived the right to later insist upon strict adherence to that term, or any other term, of the Contract.

2.012 Survival

Any provisions of the Contract that impose continuing obligations on the parties, including without limitation the parties' respective warranty, indemnity and confidentiality obligations, survive the expiration or termination of the Contract for any reason. Specific references to survival in the Contract are solely for identification purposes and not meant to limit or prevent the survival of any other section.

2.020 Contract Administration

2.021 Issuing Office

The Contract is issued by the Department of Natural Resources, DNR-Procurement. DNR-Procurement is the sole point of contact in the State with regard to all procurement and contractual matters relating to the Contract. **DNR-Procurement is the only State office authorized to change, modify, amend, alter or clarify the prices, specifications, terms and conditions of the Contract.** The Contractor Administrator within DNR-Procurement for the Contract is:

Jana Harding-Bishop
Procurement
Department of Natural Resources
Mason Bldg, 6th Floor
PO Box 30028
Lansing, MI 48909
Email: HardingJ3@michigan.gov
Phone: (517) 373-1190

2.022 Contract Compliance Inspector - Reserved

2.23 Project Manager

After DNR-Procurement receives the properly executed Contract, it is anticipated that DNR-Procurement, will direct the person named below, or any other person so designated, to monitor and coordinate the

activities for the Contract on a day-to-day basis during its term. However, monitoring of the Contract implies **no authority to change, modify, clarify, amend, or otherwise alter the prices, terms, conditions and specifications of the Contract as that authority is retained by DNR Procurement.**

The following individual will oversee the project:

Michael Donovan
Wildlife Division
Department of Natural Resources
Mason Bldg. 4th Floor
P.O. Box 30444
Lansing, MI 48909
Email: DonovanM@michigan.gov
Phone: (517) 373-7027

2.024 Change Requests

The State reserves the right to request, from time to time, any changes to the requirements and specifications of the Contract and the work to be performed by the Contractor under the Contract. During the course of ordinary business, it may become necessary for the State to discontinue certain business practices or create Additional Services/Deliverables. At a minimum, to the extent applicable, the State would like the Contractor to provide a detailed outline of all work to be done, including tasks necessary to accomplish the services/deliverables, timeframes, listing of key personnel assigned, estimated hours for each individual per task, and a complete and detailed cost justification.

If the Contractor does not so notify the State, the Contractor has no right to claim thereafter that it is entitled to additional compensation for performing that service or providing that deliverable.

Change Requests:

- (a) By giving Contractor written notice within a reasonable time, the State must be entitled to accept a Contractor proposal for Change, to reject it, or to reach another agreement with Contractor. Should the parties agree on carrying out a Change, a written Contract Change Notice must be prepared and issued under the Contract, describing the Change and its effects on the Services and any affected components of the Contract (a "Contract Change Notice").
- (b) No proposed Change may be performed until the proposed Change has been specified in a duly executed Contract Change Notice issued by the DNR-Procurement.
- (c) If the State requests or directs the Contractor to perform any activities that Contractor believes constitute a Change, the Contractor must notify the State that it believes the requested activities are a Change before beginning to work on the requested activities. If the Contractor fails to notify the State before beginning to work on the requested activities, then the Contractor waives any right to assert any claim for additional compensation or time for performing the requested activities. If the Contractor commences performing work outside the scope of the Contract and then ceases performing that work, the Contractor must, at the request of the State, retract any out-of-scope work that would adversely affect the Contract.

2.025 Notices

Any notice given to a party under the Contract must be deemed effective, if addressed to the State contact as noted in Section 2.021 and the Contractor's contact as noted on the cover page of the contract, upon: (i) delivery, if hand delivered; (ii) receipt of a confirmed transmission by facsimile if a copy of the notice is sent by another means specified in this Section; (iii) the third Business Day after being sent by U.S. mail, postage pre-paid, return receipt requested; or (iv) the next Business Day after being sent by a nationally recognized overnight express courier with a reliable tracking system.

Either party may change its address where notices are to be sent by giving notice according to this Section.

2.026 Binding Commitments

Representatives of Contractor must have the authority to make binding commitments on Contractor's behalf within the bounds set forth in the Contract. Contractor may change the representatives from time to time upon written notice.

2.027 Relationship of the Parties

The relationship between the State and Contractor is that of client and independent contractor. No agent, employee, or servant of Contractor or any of its Subcontractors must be deemed to be an employee, agent or servant of the State for any reason. Contractor is solely and entirely responsible for its acts and the acts of its agents, employees, servants and Subcontractors during the performance of the Contract.

2.028 Covenant of Good Faith

Each party must act reasonably and in good faith. Unless stated otherwise in the Contract, the parties must not unreasonably delay, condition, or withhold the giving of any consent, decision, or approval that is either requested or reasonably required of them in order for the other party to perform its responsibilities under the Contract.

2.029 Assignments

(a) Neither party may assign the Contract, or assign or delegate any of its duties or obligations under the Contract, to any other party (whether by operation of law or otherwise), without the prior written consent of the other party; provided, however, that the State may assign the Contract to any other State agency, department, division or department without the prior consent of Contractor and Contractor may assign the Contract to an affiliate so long as the affiliate is adequately capitalized and can provide adequate assurances that the affiliate can perform the requirements of the Contract. The State may withhold consent from proposed assignments, subcontracts, or novations when the transfer of responsibility would operate to decrease the State's likelihood of receiving performance on the Contract or the State's ability to recover damages.

(b) Contractor may not, without the prior written approval of the State, assign its right to receive payments due under the Contract. If the State permits an assignment, the Contractor is not relieved of its responsibility to perform any of its contractual duties, and the requirement under the Contract that all payments must be made to one (1) entity continues.

(c) If the Contractor intends to assign the Contract or any of the Contractor's rights or duties under the Contract, the Contractor must notify the State in writing at least 90 days before the assignment. The Contractor also must provide the State with adequate information about the assignee within a reasonable amount of time before the assignment for the State to determine whether to approve the assignment.

2.030 General Provisions

2.031 Media Releases

Media releases pertaining to this Contract or the services, study, data, or project to which it relates will not be made without prior written State approval, which will not be unduly withheld.

2.032 Contract Distribution

DNR-Procurement retains the sole right of Contract distribution to all State agencies and local units of government unless other arrangements are authorized by DNR-Procurement.

2.033 Permits

Contractor must obtain and pay any associated costs for all required governmental permits, licenses and approvals for the delivery, installation and performance of the Services. The State must pay for all costs and expenses incurred in obtaining and maintaining any necessary easements or right of way.

2.034 Website Incorporation

The State is not bound by any content on the Contractor's website, even if the Contractor's documentation specifically referenced that content and attempts to incorporate it into any other communication, unless the State has actual knowledge of the content and has expressly agreed to be bound by it in a writing that has been manually signed by an authorized representative of the State.

2.035 Future Bidding Preclusion

Contractor acknowledges that, to the extent the Contract involves the creation, research, investigation or generation of a future RFP; it may be precluded from bidding on the subsequent RFP. The State reserves the right to disqualify any bidder if the State determines that the bidder has used its position (whether as an incumbent Contractor, or as a Contractor hired to assist with the RFP development, or as a Vendor offering free assistance) to gain a competitive advantage on the RFP

2.036 Freedom of Information

All information in any proposal submitted to the State by Contractor and the Contract is subject to the provisions of the Michigan Freedom of Information Act, 1976 PA 442, MCL 15.231, et seq (the "FOIA").

2.037 Disaster Recovery

Contractor and the State recognize that the State provides essential services in times of natural or man-made disasters. Therefore, except as so mandated by Federal disaster response requirements, Contractor personnel dedicated to providing Services/Deliverables under the Contract must provide the State with priority service for repair and work around in the event of a natural or man-made disaster.

2.040 Financial Provisions

2.041 Fixed Prices for Services/Deliverables

Each Statement of Work or Purchase Order issued under the Contract must specify (or indicate by reference to the appropriate Contract Exhibit) the firm, fixed prices for all Services/Deliverables, and the associated payment milestones and payment amounts. The State may make progress payments to the Contractor when requested as work progresses, but not more frequently than monthly, in amounts approved by the Contract Administrator, after negotiation. Contractor must show verification of measurable progress at the time of requesting progress payments.

2.042 Adjustments for Reductions in Scope of Services/Deliverables

If the scope of the Services/Deliverables under any Statement of Work issued under the Contract is subsequently reduced by the State, the parties must negotiate an equitable reduction in Contractor's charges under such Statement of Work commensurate with the reduction in scope.

2.043 Services/Deliverables Covered

For all Services/Deliverables to be provided by Contractor (and its Subcontractors, if any) under the Contract, the State must not be obligated to pay any amounts in addition to the charges specified in the Contract.

2.044 Invoicing and Payment – In General

(a) Each Statement of Work issued under the Contract must list (or indicate by reference to the appropriate Contract Exhibit) the prices for all Services/Deliverables, equipment and commodities to be provided, and the associated payment milestones and payment amounts.

(b) Each Contractor invoice must show details as to charges by Service/Deliverable component and location at a level of detail reasonably necessary to satisfy the State's accounting and charge-back

requirements. Invoices for Services performed on a time and materials basis must show, for each individual, the number of hours of Services performed during the billing period, the billable skill/labor category for such person and the applicable hourly billing rate. Prompt payment by the State is contingent on the Contractor's invoices showing the amount owed by the State minus any holdback amount to be retained by the State in accordance with **Section 1.064**.

(c) Correct invoices will be due and payable by the State, in accordance with the State's standard payment procedure as specified in 1984 PA 279, MCL 17.51 et seq., within 45 days after receipt, provided the State determines that the invoice was properly rendered.

(d) **Contract Payment Schedule**

1. Contractor request for performance-based payment.
The Contractor may submit requests for payment of performance-based payments not more frequently than monthly, in a form and manner acceptable to the CCI. Unless otherwise authorized by the CCI, all performance-based payments in any period for which payment is being requested must be included in a single request, appropriately itemized and totaled.
2. Approval and payment of requests.
 - a) The Contractor is not entitled to payment of a request for performance-based payment prior to successful accomplishment of the event or performance criterion for which payment is requested. The CCI must determine whether the event or performance criterion for which payment is requested has been successfully accomplished in accordance with the terms of the Contract. The CCI may, at any time, require the Contractor to substantiate the successful performance of any event or performance criterion, which has been or is represented as being payable.
 - b) A payment under this performance-based payment clause is a contract financing payment under the Quick Payment Terms in **Section 1.061** of the Contract.
 - c) The approval by the CCI of a request for performance-based payment does not constitute an acceptance by the State and does not excuse the Contractor from performance of obligations under the Contract.

2.045 Pro-ration

To the extent there are any Services that are to be paid for on a monthly basis, the cost of such Services must be pro-rated for any partial month.

2.046 Antitrust Assignment

The Contractor assigns to the State any claim for overcharges resulting from antitrust violations to the extent that those violations concern materials or services supplied by third parties to the Contractor, toward fulfillment of the Contract.

2.047 Final Payment

The making of final payment by the State to Contractor does not constitute a waiver by either party of any rights or other claims as to the other party's continuing obligations under the Contract, nor will it constitute a waiver of any claims by one (1) party against the other arising from unsettled claims or failure by a party to comply with the Contract, including claims for Services and Deliverables not reasonably known until after acceptance to be defective or substandard. Contractor's acceptance of final payment by the State under the Contract must constitute a waiver of all claims by Contractor against the State for payment under the Contract, other than those claims previously filed in writing on a timely basis and still unsettled.

2.048 Electronic Payment Requirement

Electronic transfer of funds is required for payments on State contracts. The Contractor must register with the State electronically at <http://www.cpexpress.state.mi.us>. As stated in 1984 PA 431, all contracts that the State enters into for the purchase of goods and services must provide that payment will be made by Electronic Fund Transfer (EFT).

2.050 Taxes

2.051 Employment Taxes

Contractors are expected to collect and pay all applicable federal, state, and local employment taxes.

2.052 Sales and Use Taxes

Contractors are required to be registered and to remit sales and use taxes on taxable sales of tangible personal property or services delivered into the State. Contractors that lack sufficient presence in Michigan to be required to register and pay tax must do so as a volunteer. This requirement extends to: (1) all members of any controlled group as defined in § 1563(a) of the Internal Revenue Code and applicable regulations of which the company is a member, and (2) all organizations under common control as defined in § 414(c) of the Internal Revenue Code and applicable regulations of which the company is a member that make sales at retail for delivery into the State are registered with the State for the collection and remittance of sales and use taxes. In applying treasury regulations defining “two (2) or more trades or businesses under common control” the term “organization” means sole proprietorship, a partnership (as defined in § 701(a)(2) of the Internal Revenue Code), a trust, an estate, a corporation, or a limited liability company.

2.060 Contract Management

2.061 Contractor Personnel Qualifications

All persons assigned by Contractor to the performance of Services under the Contract must be employees of Contractor or its majority-owned (directly or indirectly, at any tier) subsidiaries (or a State-approved Subcontractor) and must be fully qualified to perform the work assigned to them. Contractor must include a similar provision in any subcontract entered into with a Subcontractor. For the purposes of the Contract, independent contractors engaged by Contractor solely in a staff augmentation role must be treated by the State as if they were employees of Contractor for the Contract only; however, the State understands that the relationship between Contractor and Subcontractor is an independent contractor relationship.

2.062 Contractor Key Personnel

(a) The Contractor must provide the CCI with the names of the Key Personnel.

(b) Key Personnel must be dedicated as defined in the Statement of Work to the Project for its duration in the applicable Statement of Work with respect to other individuals designated as Key Personnel for that Statement of Work.

(c) The State reserves the right to recommend and approve in writing the initial assignment, as well as any proposed reassignment or replacement, of any Key Personnel. Before assigning an individual to any Key Personnel position, Contractor must notify the State of the proposed assignment, must introduce the individual to the appropriate State representatives, and must provide the State with a resume and any other information about the individual reasonably requested by the State. The State reserves the right to interview the individual before granting written approval. In the event the State finds a proposed individual unacceptable, the State must provide a written explanation including reasonable detail outlining the reasons for the rejection.

(d) Contractor must not remove any Key Personnel from their assigned roles on the Contract without the prior written consent of the State. The Contractor’s removal of Key Personnel without the prior written consent of the State is an unauthorized removal (“Unauthorized Removal”). Unauthorized Removals does not include replacing Key Personnel for reasons beyond the reasonable control of Contractor, including illness, disability, leave of absence, personal emergency circumstances, resignation or for

cause termination of the Key Personnel's employment. Unauthorized Removals does not include replacing Key Personnel because of promotions or other job movements allowed by Contractor personnel policies or Collective Bargaining Agreement(s) as long as the State receives prior written notice before shadowing occurs and Contractor provides 30 days of shadowing unless parties agree to a different time period. The Contractor with the State must review any Key Personnel replacements and appropriate transition planning must be established. Any Unauthorized Removal may be considered by the State to be a material breach of the Contract, in respect of which the State may elect to exercise its termination and cancellation rights.

(e) The Contractor must notify the Contract Compliance Inspector and the Contract Administrator at least 10 business days before redeploying non-Key Personnel, who are dedicated to primarily to the Project, to other projects. If the State does not object to the redeployment by its scheduled date, the Contractor may then redeploy the non-Key Personnel.

2.063 Re-assignment of Personnel at the State's Request

The State reserves the right to require the removal from the Project of Contractor personnel found, in the judgment of the State, to be unacceptable. The State's request must be written with reasonable detail outlining the reasons for the removal request. Additionally, the State's request must be based on legitimate, good-faith reasons. Replacement personnel for the removed person must be fully qualified for the position. If the State exercises this right, and the Contractor cannot immediately replace the removed personnel, the State agrees to an equitable adjustment in schedule or other terms that may be affected by the State's required removal. If any incident with removed personnel results in delay not reasonably anticipatable under the circumstances and which is attributable to the State, the applicable SLAs for the affected Service will not be counted for a time as agreed to by the parties.

2.064 Contractor Personnel Location

All staff assigned by Contractor to work on the Contract must perform their duties either primarily at Contractor's offices and facilities or at State facilities. Without limiting the generality of the foregoing, Key Personnel must, at a minimum, spend at least the amount of time on-site at State facilities as indicated in the applicable Statement of Work. Subject to availability, selected Contractor personnel may be assigned office space to be shared with State personnel.

2.065 Contractor Identification

Contractor employees must be clearly identifiable while on State property by wearing a State-issued badge, as required. Contractor employees are required to clearly identify themselves and the company they work for whenever making contact with State personnel by telephone or other means.

2.066 Cooperation with Third Parties

Contractor must cause its personnel and the personnel of any Subcontractors to cooperate with the State and its agents and other contractors including the State's Quality Assurance personnel. As reasonably requested by the State in writing, the Contractor must provide to the State's agents and other contractors reasonable access to Contractor's Project personnel, systems and facilities to the extent the access relates to activities specifically associated with the Contract and will not interfere or jeopardize the safety or operation of the systems or facilities. The State acknowledges that Contractor's time schedule for the Contract is very specific and must not unnecessarily or unreasonably interfere with, delay, or otherwise impede Contractor's performance under the Contract with the requests for access.

2.067 Contractor Return of State Equipment/Resources

The Contractor must return to the State any State-furnished equipment, facilities, and other resources when no longer required for the Contract in the same condition as when provided by the State, reasonable wear and tear excepted.

2.068 Contract Management Responsibilities

The Contractor must assume responsibility for all contractual activities, whether or not that Contractor performs them. Further, the State considers the Contractor to be the sole point of contact with regard to contractual matters, including payment of any and all charges resulting from the anticipated Contract. If any part of the work is to be subcontracted, the Contract must include a list of Subcontractors, including

firm name and address, contact person and a complete description of work to be subcontracted. The State reserves the right to approve Subcontractors and to require the Contractor to replace Subcontractors found to be unacceptable. The Contractor is totally responsible for adherence by the Subcontractor to all provisions of the Contract. Any change in Subcontractors must be approved by the State, in writing, prior to such change.

2.070 Subcontracting by Contractor

2.071 Contractor Full Responsibility

Contractor has full responsibility for the successful performance and completion of all of the Services and Deliverables. The State will consider Contractor to be the sole point of contact with regard to all contractual matters under the Contract, including payment of any and all charges for Services and Deliverables.

2.072 State Consent to Delegation

Contractor must not delegate any duties under the Contract to a Subcontractor unless the DNR-Procurement has given written consent to such delegation. The State reserves the right of prior written approval of all Subcontractors and to require Contractor to replace any Subcontractors found, in the reasonable judgment of the State, to be unacceptable. The State's request must be written with reasonable detail outlining the reasons for the removal request. Additionally, the State's request must be based on legitimate, good-faith reasons. Replacement Subcontractor(s) for the removed Subcontractor must be fully qualified for the position. If the State exercises this right, and the Contractor cannot immediately replace the removed Subcontractor, the State will agree to an equitable adjustment in schedule or other terms that may be affected by the State's required removal. If any such incident with a removed Subcontractor results in delay not reasonable anticipatable under the circumstances and which is attributable to the State, the applicable SLA for the affected Work will not be counted for a time agreed upon by the parties.

2.073 Subcontractor Bound to Contract

In any subcontracts entered into by Contractor for the performance of the Services, Contractor must require the Subcontractor, to the extent of the Services to be performed by the Subcontractor, to be bound to Contractor by the terms of the Contract and to assume toward Contractor all of the obligations and responsibilities that Contractor, by the Contract, assumes toward the State. The State reserves the right to receive copies of and review all subcontracts, although Contractor may delete or mask any proprietary information, including pricing, contained in such contracts before providing them to the State. The management of any Subcontractor is the responsibility of Contractor, and Contractor must remain responsible for the performance of its Subcontractors to the same extent as if Contractor had not subcontracted such performance. Contractor must make all payments to Subcontractors or suppliers of Contractor. Except as otherwise agreed in writing by the State and Contractor, the State will not be obligated to direct payments for the Services other than to Contractor. The State's written approval of any Subcontractor engaged by Contractor to perform any obligation under the Contract will not relieve Contractor of any obligations or performance required under the Contract.

2.074 Flow Down

Except where specifically approved in writing by the State on a case-by-case basis, Contractor must flow down the obligations in **Sections 2.031, 2.060, 2.100, 2.110, 2.120, 2.130, 2.200** in all of its agreements with any Subcontractors.

2.075 Competitive Selection

The Contractor must select Subcontractors (including suppliers) on a competitive basis to the maximum practical extent consistent with the objectives and requirements of the Contract.

2.080 State Responsibilities

2.081 Equipment

The State must provide only the equipment and resources identified in the Statements of Work and other Contract Exhibits.

2.082 Facilities

The State must designate space as long as it is available and as provided in the Statement of Work, to house the Contractor's personnel whom the parties agree will perform the Services/Deliverables at State facilities (collectively, the "State Facilities"). The Contractor must have reasonable access to, and, unless agreed otherwise by the parties in writing, must observe and comply with all rules and regulations relating to each of the State Facilities (including hours of operation) used by the Contractor in the course of providing the Services. Contractor must not, without the prior written consent of the State, use any State Facilities or access any State information systems provided for the Contractor's use, or to which the Contractor otherwise gains access in the course of performing the Services, for any purpose other than providing the Services to the State.

2.090 Security

2.091 Background Checks

On a case-by-case basis, the State may investigate the Contractor's personnel before they may have access to State facilities and systems. The scope of the background check is at the discretion of the State and the results will be used to determine Contractor personnel eligibility for working within State facilities and systems. The investigations will include Michigan State Police Background checks (ICHAT) and may include the National Crime Information Center (NCIC) Finger Prints. Proposed Contractor personnel may be required to complete and submit an RI-8 Fingerprint Card for the NCIC Finger Print Check. Any request for background checks will be initiated by the State and will be reasonably related to the type of work requested.

All Contractor personnel must comply with the State's security and acceptable use policies for State IT equipment and resources. See <http://www.michigan.gov/dit>. Furthermore, Contractor personnel must agree to the State's security and acceptable use policies before the Contractor personnel will be accepted as a resource to perform work for the State. The Contractor must present these documents to the prospective employee before the Contractor presents the individual to the State as a proposed resource. Contractor staff must comply with all Physical Security procedures in place within the facilities where they are working.

2.092 Security Breach Notification

If the Contractor breaches this Section, the Contractor must (i) promptly cure any deficiencies and (ii) comply with any applicable federal and state laws and regulations pertaining to unauthorized disclosures. Contractor and the State will cooperate to mitigate, to the extent practicable, the effects of any breach, intrusion, or unauthorized use or disclosure. Contractor must report to the State, in writing, any use or disclosure of Confidential Information, whether suspected or actual, other than as provided for by the Contract within 10 days of becoming aware of the use or disclosure or the shorter time period as is reasonable under the circumstances.

2.093 PCI Data Security Standard

(a) Contractors that process, transmit or store credit/debit cardholder data, must adhere to the Payment Card Industry (PCI) Data Security Standards. The Contractor is responsible for the security of cardholder data in its possession. The data may only be used to assist the State or for other uses specifically authorized by law.

(b) The Contractor must notify the CCI (within 72 hours of discovery) of any breaches in security where cardholder data has been compromised. In that event, the Contractor must provide full cooperation to the Visa, MasterCard, Discover and state Acquirer representative(s), and/or a PCI approved third party to

conduct a thorough security review. The Contractor must make the forensic report available within two weeks of completion. The review must validate compliance with the current PCI Data Security Standards for protecting cardholder data.

(c) The Contractor must properly dispose of cardholder data, in compliance with DNR policy, when it is no longer needed. The Contractor must continue to treat cardholder data as confidential upon contract termination.

(d) The Contractor must provide the CCI with an annual Attestation of Compliance (AOC) or a Report on Compliance (ROC) showing the contractor is in compliance with the PCI Data Security Standards. The Contractor must notify the CCI of all failures to comply with the PCI Data Security Standard.

2.100 Confidentiality

2.101 Confidentiality

Contractor and the State each acknowledge that the other possesses, and will continue to possess, confidential information that has been developed or received by it. As used in this Section, "Confidential Information" of Contractor must mean all non-public proprietary information of Contractor (other than Confidential Information of the State as defined below) which is marked confidential, restricted, proprietary, or with a similar designation. "Confidential Information" of the State must mean any information which is retained in confidence by the State (or otherwise required to be held in confidence by the State under applicable federal, state and local laws and regulations) or which, in the case of tangible materials provided to Contractor by the State under its performance under the Contract, is marked as confidential, proprietary, or with a similar designation by the State. "Confidential Information" excludes any information (including the Contract) that is publicly available under the Michigan FOIA.

2.102 Protection and Destruction of Confidential Information

The State and Contractor must each use at least the same degree of care to prevent disclosing to third parties the Confidential Information of the other as it employs to avoid unauthorized disclosure, publication, or dissemination of its own confidential information of like character, but in no event less than reasonable care. Neither Contractor nor the State will (i) make any use of the Confidential Information of the other except as contemplated by the Contract, (ii) acquire any right in or assert any lien against the Confidential Information of the other, or (iii) if requested to do so, refuse for any reason to promptly return the other party's Confidential Information to the other party. Each party must limit disclosure of the other party's Confidential Information to employees and Subcontractors who must have access to fulfill the purposes of the Contract. Disclosure to, and use by, a Subcontractor is permissible where (A) use of a Subcontractor is authorized under the Contract, (B) the disclosure is necessary or otherwise naturally occurs in connection with work that is within the Subcontractor's scope of responsibility, and (C) Contractor obligates the Subcontractor in a written Contract to maintain the State's Confidential Information in confidence. At the State's request, any employee of Contractor and of any Subcontractor having access or continued access to the State's Confidential Information may be required to execute an acknowledgment that the employee has been advised of Contractor's and the Subcontractor's obligations under this Section and of the employee's obligation to Contractor or Subcontractor, as the case may be, to protect the Confidential Information from unauthorized use or disclosure.

Promptly upon termination or cancellation of the Contract for any reason, Contractor must certify to the State that Contractor has destroyed all State Confidential Information.

2.103 Exclusions

Notwithstanding the foregoing, the provisions of **Section 2.100** will not apply to any particular information which the State or Contractor can demonstrate (i) was, at the time of disclosure to it, in the public domain; (ii) after disclosure to it, is published or otherwise becomes part of the public domain through no fault of the receiving party; (iii) was in the possession of the receiving party at the time of disclosure to it without an obligation of confidentiality; (iv) was received after disclosure to it from a third party who had a lawful

right to disclose the information to it without any obligation to restrict its further disclosure; or (v) was independently developed by the receiving party without reference to Confidential Information of the furnishing party. Further, the provisions of **Section 2.100** will not apply to any particular Confidential Information to the extent the receiving party is required by law to disclose the Confidential Information, provided that the receiving party (i) promptly provides the furnishing party with notice of the legal request, and (ii) assists the furnishing party in resisting or limiting the scope of the disclosure as reasonably requested by the furnishing party.

2.104 No Implied Rights

Nothing contained in this Section must be construed as obligating a party to disclose any particular Confidential Information to the other party, or as granting to or conferring on a party, expressly or impliedly, any right or license to the Confidential Information of the other party.

2.105 Respective Obligations

The parties' respective obligations under this Section must survive the termination or expiration of the Contract for any reason.

2.110 Records and Inspections

2.111 Inspection of Work Performed

The State's authorized representatives must at all reasonable times and with 10 days prior written request, have the right to enter Contractor's premises, or any other places, where the Services are being performed, and must have access, upon reasonable request, to interim drafts of Deliverables or work-in-progress. Upon 10 Days prior written notice and at all reasonable times, the State's representatives must be allowed to inspect, monitor, or otherwise evaluate the work being performed and to the extent that the access will not reasonably interfere or jeopardize the safety or operation of the systems or facilities. Contractor must provide all reasonable facilities and assistance for the State's representatives.

2.112 Examination of Records

For three (3) years after a work project within the contract is completed (the "Audit Period"), the State may examine and copy any of Contractor's books, records, documents and papers pertinent to establishing Contractor's compliance with the Contract and with applicable laws and rules. The State must notify the Contractor 20 days before examining the Contractor's books and records. The State does not have the right to review any information deemed confidential by the Contractor to the extent access would require the confidential information to become publicly available. This provision also applies to the books, records, accounts, documents and papers, in print or electronic form, of any parent, affiliated or subsidiary organization of Contractor, or any Subcontractor of Contractor performing services in connection with the Contract.

2.113 Retention of Records

Contractor must maintain at least until the end of the Audit Period, all pertinent financial and accounting records (including time sheets and payroll records, information pertaining to the Contract, and to the Services, equipment, and commodities provided under the Contract) pertaining to the Contract according to generally accepted accounting principles and other procedures specified in this Section. Financial and accounting records must be made available, upon request, to the State at any time during the Audit Period. If an audit, litigation, or other action involving Contractor's records is initiated before the end of the Audit Period, the records must be retained until all issues arising out of the audit, litigation, or other action are resolved or until the end of the Audit Period, whichever is later.

2.114 Audit Resolution

If necessary, the Contractor and the State will meet to review each audit report promptly after issuance. The Contractor must respond to each audit report in writing within 30 days from receipt of the report, unless a shorter response time is specified in the report. The Contractor and the State must develop, agree upon and monitor an action plan to promptly address and resolve any deficiencies, concerns, and/or recommendations in the audit report.

2.115 Errors

(a) If the audit demonstrates any errors in the documents provided to the State, then the amount in error must be reflected as a credit or debit on the next invoice and in subsequent invoices until the amount is paid or refunded in full. However, a credit or debit may not be carried for more than four (4) invoices. If a balance remains after four (4) invoices, then the remaining amount will be due as a payment or refund within 45 days of the last quarterly invoice that the balance appeared on or termination of the Contract, whichever is earlier.

(b) In addition to other available remedies, the difference between the payment received and the correct payment amount is greater than 10%, then the Contractor must pay all of the reasonable costs of the audit.

2.120 Warranties

2.121 Warranties and Representations

The Contractor represents and warrants:

(a) It is capable in all respects of fulfilling and must fulfill all of its obligations under the Contract. The performance of all obligations under the Contract must be provided in a timely, professional, and workman-like manner and must meet the performance and operational standards required under the Contract.

(b) The Contract Appendices, Attachments and Exhibits identify the equipment and software and services necessary for the Deliverable(s) to perform and Services to operate in compliance with the Contract's requirements and other standards of performance.

(c) It is the lawful owner or licensee of any Deliverable licensed or sold to the State by Contractor or developed by Contractor under the Contract, and Contractor has all of the rights necessary to convey to the State the ownership rights or licensed use, as applicable, of any and all Deliverables. None of the Deliverables provided by Contractor to the State under the Contract, nor their use by the State, will knowingly infringe the patent, copyright, trade secret, or other proprietary rights of any third party.

(d) If, under the Contract, Contractor procures any equipment, software or other Deliverable for the State (including equipment, software and other Deliverables manufactured, re-marketed or otherwise sold by Contractor under Contractor's name), then in addition to Contractor's other responsibilities with respect to the items in the Contract, Contractor must assign or otherwise transfer to the State or its designees, or afford the State the benefits of, any manufacturer's warranty for the Deliverable.

(e) The Contract signatory has the power and authority, including any necessary corporate authorizations, necessary to enter into the Contract, on behalf of Contractor.

(f) It is qualified and registered to transact business in all locations where required.

(g) Neither the Contractor nor any affiliates, nor any employee of either, has, must have, or must acquire, any contractual, financial, business, or other interest, direct or indirect, that would conflict in any manner or degree with Contractor's performance of its duties and responsibilities to the State under the Contract or otherwise create an appearance of impropriety with respect to the award or performance of this Agreement. Contractor must notify the State about the nature of the conflict or appearance of impropriety within two (2) days of learning about it.

(h) If any of the certifications, representations, or disclosures made in the Contractor's original bid response change after the Contract start date, the Contractor must report those changes immediately to DNR-Procurement.

2.122 Warranty of Merchantability

Goods provided by Contractor under this agreement must be merchantable. All goods provided under

the Contract must be of good quality within the description given by the State, must be fit for their ordinary purpose, must be adequately contained and packaged within the description given by the State, must conform to the agreed upon specifications, and must conform to the affirmations of fact made by the Contractor or on the container or label.

2.123 Warranty of Fitness for a Particular Purpose

When the Contractor has reason to know or knows any particular purpose for which the goods are required, and the State is relying on the Contractor's skill or judgment to select or furnish suitable goods, there is a warranty that the goods are fit for such purpose.

2.124 Warranty of Title

Contractor must, in providing goods to the State, convey good title in those goods, whose transfer is right and lawful. All goods provided by Contractor must be delivered free from any security interest, lien, or encumbrance of which the State, at the time of contracting, has no knowledge. Goods provided by Contractor, under the Contract, must be delivered free of any rightful claim of any third person by of infringement or the like.

2.125 Equipment Warranty

To the extent Contractor is responsible under the Contract for maintaining equipment/system(s); Contractor must maintain the equipment/system(s) in good operating condition and must undertake all repairs and preventive maintenance according to the applicable manufacturer's recommendations for the period specified in the Contract.

The Contractor represents and warrants that the equipment/system(s) are in good operating condition and operate and perform to the requirements and other standards of performance contained in the Contract, when installed, at the time of Final Acceptance by the State, and for a period of one (1) year commencing upon the first day following Final Acceptance.

Within seven (7) business days of notification from the State, the Contractor must adjust, repair or replace all equipment that is defective or not performing in compliance with the Contract. The Contractor must assume all costs for replacing parts or units and their installation including transportation and delivery fees, if any.

The Contractor agrees that all warranty service it provides under the Contract must be performed by Original Equipment Manufacturer (OEM) trained, certified and authorized technicians.

The Contractor is the sole point of contact for warranty service. The Contractor warrants that it will pass through to the State any warranties obtained or available from the original equipment manufacturer, including any replacement, upgraded, or additional equipment warranties.

2.126 Equipment to be New

If applicable, all equipment provided under the Contract by Contractor must be new where Contractor has knowledge regarding whether the equipment is new or assembled from new or serviceable used parts that are like new in performance or has the option of selecting one or the other. Equipment that is assembled from new or serviceable used parts that are like new in performance is acceptable where Contractor does not have knowledge or the ability to select one or other, unless specifically agreed otherwise in writing by the State.

2.127 Prohibited Products

The State will not accept salvage, distressed, outdated or discontinued merchandise. Shipping of such merchandise to any State agency, as a result of an order placed against the Contract, is considered default by the Contractor of the terms and conditions of the Contract and may result in cancellation of the Contract by the State. The brand and product number offered for all items must remain consistent for the term of the Contract, unless DNR-Procurement has approved a change order pursuant to **Section 2.024**.

2.128 Consequences for Breach

In addition to any remedies available in law, if the Contractor breaches any of the warranties contained in this section, the breach may be considered as a default in the performance of a material obligation of the Contract.

2.130 Insurance

2.131 Liability Insurance

The Contractor shall purchase and maintain such insurance as will protect them from claims set forth below which may arise out of, or result from, the Contractor's operations under the Contract (Purchase Order), whether such operations be by themselves or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

NOTE: CONTRACTOR MAY SUBMIT EVIDENCE OF SELF-INSURANCE AND/OR AMENDMENT OF EXISTING LIABILITY COVERAGE IN FULFILLMENT OF ABOVE PROVISIONS, IF THE STATE ACCEPTS THE EVIDENCE OR AMENDED LIABILITY COVERAGE AS PROVIDING COMPARABLE PROTECTION OF THE STATE'S INTEREST.

The Contractor is required to provide proof of the minimum levels of insurance coverage as indicated below. The purpose of this coverage shall be to protect the State from claims which may arise out of, or result from, the Contractor's performance of services under the terms of this Contract, whether such services are performed by the Contractor, or by any subcontractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable.

The Contractor waives all rights against the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents for recovery of damages to the extent these damages are covered by the insurance policies the Contractor is required to maintain pursuant to this contract, unless such damages are the result of the negligence or omission of the State of Michigan.

The insurance shall be written for not less than any minimum coverage herein specified or required by law, whichever is greater.

BEFORE THE CONTRACT IS SIGNED BY BOTH PARTIES OR BEFORE THE PURCHASE ORDER IS ISSUED BY THE STATE, THE CONTRACTOR MUST FURNISH TO THE DNRE, FS, CERTIFICATE(S) OF INSURANCE VERIFYING INSURANCE COVERAGE. THE CERTIFICATE MUST BE ON THE STANDARD "ACCORD" FORM. THE CONTRACT OR PURCHASE ORDER NUMBER MUST BE SHOWN ON THE CERTIFICATE OF INSURANCE TO ASSURE CORRECT FILING. All such Certificate(s) shall contain a provision indicating that coverage afforded under the policies WILL NOT BE CANCELLED OR MATERIALLY CHANGED without THIRTY (30) days prior written notice having been given to the DNRE, FS. Such NOTICE must include the CONTRACT NUMBER affected.

The Contractor is required to provide the type and amount of insurance checked () below:

- 1. Commercial General Liability with the following minimum coverage:**
 - \$2,000,000 General Aggregate Limit other than Products/Completed Operations
 - \$2,000,000 Products/Completed Operations Aggregate Limit
 - \$1,000,000 Personal & Advertising Injury Limit
 - \$1,000,000 Each Occurrence Limit
 - \$500,000 Fire Damage Limit (any one fire)
- 2. If a motor vehicle is used to provide services or products under this Contract, the Contractor must have vehicle liability insurance for bodily injury and property damage as required by law.**
- 3. Worker's disability compensation, disability benefit or other similar employee benefit act with minimum statutory limits. NOTE: (1) If coverage is provided by a State fund or if Contractor has qualified as a self-insurer, separate certification must**

be furnished that coverage is in the state fund or that Contractor has approval to be a self-insurer; (2) Any citing of a policy of insurance must include a listing of the States where that policy's coverage is applicable; and (3) Any policy of insurance must contain a provision or endorsement providing that the insurers' rights of subrogation are waived. This provision shall not be applicable where prohibited or limited by the laws of the jurisdiction in which the work is to be performed.

4. Employers liability insurance with the following minimum limits:

\$100,000 each accident
\$100,000 each employee by disease
\$500,000 aggregate disease

2.132 Subcontractor Insurance Coverage

Except where the State has approved in writing a Contractor subcontract with other insurance provisions, Contractor must require all of its Subcontractors under the Contract to purchase and maintain the insurance coverage as described in this Section for the Contractor in connection with the performance of work by those Subcontractors. Alternatively, Contractor may include any Subcontractors under Contractor's insurance on the coverage required in this Section. Subcontractor must fully comply with the insurance coverage required in this Section. Failure of Subcontractor to comply with insurance requirements does not limit Contractor's liability or responsibility.

2.133 Certificates of Insurance and Other Requirements

Contractor must furnish to DNR-Procurement, certificate(s) of insurance verifying insurance coverage or providing satisfactory evidence of self-insurance as required in this Section (the "Certificates"). The Certificate must be on the standard "accord" form or equivalent. **THE CONTRACT OR PURCHASE ORDER NO. MUST BE SHOWN ON THE CERTIFICATE OF INSURANCE TO ASSURE CORRECT FILING.** All Certificate(s) are to be prepared and submitted by the Insurance Provider. All Certificate(s) must contain a provision indicating that coverage afforded under the policies **MUST NOT BE CANCELLED, MATERIALLY CHANGED, OR NOT RENEWED** without 30 days prior written notice, except for 10 days for non-payment of premium, having been given to the Director of Procurement, DNR. The notice must include the Contract or Purchase Order number affected. In the event the State approves the representation of the State by the insurer's attorney, the attorney may be required to be designated as a Special Assistant Attorney General by the Attorney General of the State of Michigan.

The Contractor must maintain all required insurance coverage throughout the term of the Contract and any extensions and, in the case of claims-made Commercial General Liability policies, must secure tail coverage for at least three (3) years following the expiration or termination for any reason of the Contract. The minimum limits of coverage specified above are not intended, and must not be construed, to limit any liability or indemnity of Contractor under the Contract to any indemnified party or other persons. Contractor is responsible for all deductibles with regard to the insurance. If the Contractor fails to pay any premium for required insurance as specified in the Contract, or if any insurer cancels or significantly reduces any required insurance as specified in the Contract without the State's written consent, then the State may, after the State has given the Contractor at least 30 days written notice, pay the premium or procure similar insurance coverage from another company or companies. The State may deduct any part of the cost from any payment due the Contractor, or the Contractor must pay that cost upon demand by the State.

2.140 Indemnification

2.141 General Indemnification

To the extent permitted by law, the Contractor must indemnify, defend and hold harmless the State from liability, including all claims and losses, and all related costs and expenses (including reasonable attorneys' fees and costs of investigation, litigation, settlement, judgments, interest and penalties), accruing or resulting to any person, firm or corporation that may be injured or damaged by the Contractor in the performance of the Contract and that are attributable to the negligence or tortious acts of the Contractor or any of its Subcontractors, or by anyone else for whose acts any of them may be liable.

2.142 Code Indemnification

To the extent permitted by law, the Contractor must indemnify, defend and hold harmless the State from any claim, loss, or expense arising from Contractor's breach of the No Surreptitious Code Warranty.

2.143 Employee Indemnification

In any claims against the State of Michigan, its departments, divisions, agencies, sections, commissions, officers, employees and agents, by any employee of the Contractor or any of its Subcontractors, the indemnification obligation under the Contract must not be limited in any way by the amount or type of damages, compensation or benefits payable by or for the Contractor or any of its Subcontractors under worker's disability compensation acts, disability benefit acts or other employee benefit acts. This indemnification clause is intended to be comprehensive. Any overlap in provisions, or the fact that greater specificity is provided as to some categories of risk, is not intended to limit the scope of indemnification under any other provisions.

2.144 Patent/Copyright Infringement Indemnification

To the extent permitted by law, the Contractor must indemnify, defend and hold harmless the State from and against all losses, liabilities, damages (including taxes), and all related costs and expenses (including reasonable attorneys' fees and costs of investigation, litigation, settlement, judgments, interest and penalties) incurred in connection with any action or proceeding threatened or brought against the State to the extent that the action or proceeding is based on a claim that any piece of equipment, software, commodity or service supplied by the Contractor or its Subcontractors, or the operation of the equipment, software, commodity or service, or the use or reproduction of any documentation provided with the equipment, software, commodity or service infringes any United States patent, copyright, trademark or trade secret of any person or entity, which is enforceable under the laws of the United States.

In addition, should the equipment, software, commodity, or service, or its operation, become or in the State's or Contractor's opinion be likely to become the subject of a claim of infringement, the Contractor must at the Contractor's sole expense (i) procure for the State the right to continue using the equipment, software, commodity or service or, if the option is not reasonably available to the Contractor, (ii) replace or modify to the State's satisfaction the same with equipment, software, commodity or service of equivalent function and performance so that it becomes non-infringing, or, if the option is not reasonably available to Contractor, (iii) accept its return by the State with appropriate credits to the State against the Contractor's charges and reimburse the State for any losses or costs incurred as a consequence of the State ceasing its use and returning it.

Notwithstanding the foregoing, the Contractor has no obligation to indemnify or defend the State for, or to pay any costs, damages or attorneys' fees related to, any claim based upon (i) equipment developed based on written specifications of the State; (ii) use of the equipment in a configuration other than implemented or approved in writing by the Contractor, including, but not limited to, any modification of the equipment by the State; or (iii) the combination, operation, or use of the equipment with equipment or software not supplied by the Contractor under the Contract.

2.145 Continuation of Indemnification Obligations

The Contractor's duty to indemnify under this Section continues in full force and effect, notwithstanding the expiration or early cancellation of the Contract, with respect to any claims based on facts or conditions that occurred before expiration or cancellation.

2.146 Indemnification Procedures

The procedures set forth below must apply to all indemnity obligations under the Contract.

(a) After the State receives notice of the action or proceeding involving a claim for which it will seek indemnification, the State must promptly notify Contractor of the claim in writing and take or assist Contractor in taking, as the case may be, any reasonable action to avoid the imposition of a default judgment against Contractor. No failure to notify the Contractor relieves the Contractor of its indemnification obligations except to the extent that the Contractor can prove damages attributable to the failure. Within 10 days following receipt of written notice from the State relating to any claim, the Contractor must notify the State in writing whether Contractor agrees to assume control of the defense and settlement of that claim (a "Notice of Election"). After notifying Contractor of a claim and before the

State receiving Contractor's Notice of Election, the State is entitled to defend against the claim, at the Contractor's expense, and the Contractor will be responsible for any reasonable costs incurred by the State in defending against the claim during that period.

(b) If Contractor delivers a Notice of Election relating to any claim: (i) the State is entitled to participate in the defense of the claim and to employ counsel at its own expense to assist in the handling of the claim and to monitor and advise the State about the status and progress of the defense; (ii) the Contractor must, at the request of the State, demonstrate to the reasonable satisfaction of the State, the Contractor's financial ability to carry out its defense and indemnity obligations under the Contract; (iii) the Contractor must periodically advise the State about the status and progress of the defense and must obtain the prior written approval of the State before entering into any settlement of the claim or ceasing to defend against the claim and (iv) to the extent that any principles of Michigan governmental or public law may be involved or challenged, the State has the right, at its own expense, to control the defense of that portion of the claim involving the principles of Michigan governmental or public law. But the State may retain control of the defense and settlement of a claim by notifying the Contractor in writing within 10 days after the State's receipt of Contractor's information requested by the State under clause (ii) of this paragraph if the State determines that the Contractor has failed to demonstrate to the reasonable satisfaction of the State the Contractor's financial ability to carry out its defense and indemnity obligations under this Section. Any litigation activity on behalf of the State, or any of its subdivisions under this Section, must be coordinated with the Department of Attorney General. In the event the insurer's attorney represents the State under this Section, the insurer's attorney may be required to be designated as a Special Assistant Attorney General by the Attorney General of the State of Michigan.

(c) If Contractor does not deliver a Notice of Election relating to any claim of which it is notified by the State as provided above, the State may defend the claim in the manner as it may deem appropriate, at the cost and expense of Contractor. If it is determined that the claim was one against which Contractor was required to indemnify the State, upon request of the State, Contractor must promptly reimburse the State for all the reasonable costs and expenses.

2.150 Termination/Cancellation

2.151 Notice and Right to Cure

If the Contractor breaches the Contract, and the State, in its sole discretion, determines that the breach is curable, then the State must provide the Contractor with written notice of the breach and a time period (not less than 30 days) to cure the Breach. The notice of breach and opportunity to cure is inapplicable for successive or repeated breaches or if the State determines in its sole discretion that the breach poses a serious and imminent threat to the health or safety of any person or the imminent loss, damage, or destruction of any real or tangible personal property.

2.152 Termination for Cause

(a) The State may terminate the Contract, for cause, by notifying the Contractor in writing, if the Contractor (i) breaches any of its material duties or obligations under the Contract (including a Chronic Failure to meet any particular SLA), or (ii) fails to cure a breach within the time period specified in the written notice of breach provided by the State

(b) If the Contract is terminated for cause, the Contractor must pay all costs incurred by the State in terminating the Contract, including but not limited to, State administrative costs, reasonable attorneys' fees and court costs, and any reasonable additional costs the State may incur to procure the Services/Deliverables required by the Contract from other sources. Re-procurement costs are not consequential, indirect or incidental damages, and cannot be excluded by any other terms otherwise included in the Contract, provided the costs are not in excess of 50% more than the prices for the Service/Deliverables provided under the Contract.

(c) If the State chooses to partially terminate the Contract for cause, charges payable under the Contract will be equitably adjusted to reflect those Services/Deliverables that are terminated and the State must pay for all Services/Deliverables for which Final Acceptance has been granted provided up to

the termination date. Services and related provisions of the Contract that are terminated for cause must cease on the effective date of the termination.

(d) If the State terminates the Contract for cause under this Section, and it is determined, for any reason, that Contractor was not in breach of contract under the provisions of this section, that termination for cause must be deemed to have been a termination for convenience, effective as of the same date, and the rights and obligations of the parties must be limited to that otherwise provided in the Contract for a termination for convenience.

2.153 Termination for Convenience

The State may terminate the Contract for its convenience, in whole or part, if the State determines that a termination is in the State's best interest. Reasons for the termination must be left to the sole discretion of the State and may include, but not necessarily be limited to (a) the State no longer needs the Services or products specified in the Contract, (b) relocation of office, program changes, changes in laws, rules, or regulations make implementation of the Services no longer practical or feasible, (c) unacceptable prices for Additional Services or New Work requested by the State, or (d) falsification or misrepresentation, by inclusion or non-inclusion, of information material to a response to any RFP issued by the State. The State may terminate the Contract for its convenience, in whole or in part, by giving Contractor written notice at least 30 days before the date of termination. If the State chooses to terminate the Contract in part, the charges payable under the Contract must be equitably adjusted to reflect those Services/Deliverables that are terminated.

2.154 Termination for Non-Appropriation

(a) Contractor acknowledges that, if the Contract extends for several fiscal years, continuation of the Contract is subject to appropriation or availability of funds for the Contract. If funds to enable the State to effect continued payment under the Contract are not appropriated or otherwise made available, the State must terminate the Contract and all affected Statements of Work, in whole or in part, at the end of the last period for which funds have been appropriated or otherwise made available by giving written notice of termination to Contractor. The State must give Contractor at least 30 days advance written notice of termination for non-appropriation or unavailability (or the time as is available if the State receives notice of the final decision less than 30 days before the funding cutoff).

(b) If funding for the Contract is reduced by law, or funds to pay Contractor for the agreed-to level of the Services or production of Deliverables to be provided by Contractor are not appropriated or otherwise unavailable, the State may, upon 30 days written notice to Contractor, reduce the level of the Services or the change the production of Deliverables in the manner and for the periods of time as the State may elect. The charges payable under the Contract will be equitably adjusted to reflect any equipment, services or commodities not provided by reason of the reduction.

(c) If the State terminates the Contract, eliminates certain Deliverables, or reduces the level of Services to be provided by Contractor under this Section, the State must pay Contractor for all Work-in-Process performed through the effective date of the termination or reduction in level, as the case may be and as determined by the State, to the extent funds are available. This Section will not preclude Contractor from reducing or stopping Services/Deliverables or raising against the State in a court of competent jurisdiction, any claim for a shortfall in payment for Services performed or Deliverables finally accepted before the effective date of termination.

2.155 Termination for Criminal Conviction

The State may terminate the Contract immediately and without further liability or penalty in the event Contractor, an officer of Contractor, or an owner of a 25% or greater share of Contractor is convicted of a criminal offense related to a State, public or private Contract or subcontract.

2.156 Termination for Approvals Rescinded

The State may terminate the Contract if any final administrative or judicial decision or adjudication disapproves a previously approved request for purchase of personal services under Constitution 1963, Article 11, § 5, and Civil Service Rule 7-1. In that case, the State must pay the Contractor for only the work completed to that point under the Contract. Termination may be in whole or in part and may be

immediate as of the date of the written notice to Contractor or may be effective as of the date stated in the written notice.

2.157 Rights and Obligations upon Termination

(a) If the State terminates the Contract for any reason, the Contractor must (a) stop all work as specified in the notice of termination, (b) take any action that may be necessary, or that the State may direct, for preservation and protection of Deliverables or other property derived or resulting from the Contract that may be in Contractor's possession, (c) return all materials and property provided directly or indirectly to Contractor by any entity, agent or employee of the State, (d) transfer title in, and deliver to, the State, unless otherwise directed, all Deliverables intended to be transferred to the State at the termination of the Contract and which are resulting from the Contract (which must be provided to the State on an "As-Is" basis except to the extent the amounts paid by the State in respect of the items included compensation to Contractor for the provision of warranty services in respect of the materials), and (e) take any action to mitigate and limit any potential damages, or requests for Contractor adjustment or termination settlement costs, to the maximum practical extent, including terminating or limiting as otherwise applicable those subcontracts and outstanding orders for material and supplies resulting from the terminated Contract.

(b) If the State terminates the Contract before its expiration for its own convenience, the State must pay Contractor for all charges due for Services provided before the date of termination and, if applicable, as a separate item of payment under the Contract, for Work In Process, on a percentage of completion basis at the level of completion determined by the State. All completed or partially completed Deliverables prepared by Contractor under the Contract, at the option of the State, becomes the State's property, and Contractor is entitled to receive equitable fair compensation for the Deliverables. Regardless of the basis for the termination, the State is not obligated to pay, or otherwise compensate, Contractor for any lost expected future profits, costs or expenses incurred with respect to Services not actually performed for the State.

(c) Upon a good faith termination, the State may assume, at its option, any subcontracts and agreements for Services and Deliverables provided under the Contract, and may further pursue completion of the Services/Deliverables under the Contract by replacement contract or otherwise as the State may in its sole judgment deem expedient.

2.158 Reservation of Rights

Any termination of the Contract or any Statement of Work issued under it by a party must be with full reservation of, and without prejudice to, any rights or remedies otherwise available to the party with respect to any claims arising before or as a result of the termination.

2.160 Termination by Contractor

2.161 Termination by Contractor

If the State breaches the Contract, and the Contractor in its sole discretion determines that the breach is curable, then the Contractor will provide the State with written notice of the breach and a time period (not less than 30 days) to cure the breach. The Notice of Breach and opportunity to cure is inapplicable for successive and repeated breaches.

The Contractor may terminate the Contract if the State (i) materially breaches its obligation to pay the Contractor undisputed amounts due and owing under the Contract, (ii) breaches its other obligations under the Contract to an extent that makes it impossible or commercially impractical for the Contractor to perform the Services, or (iii) does not cure the breach within the time period specified in a written notice of breach. But the Contractor must discharge its obligations under **Section 2.190** before it terminates the Contract.

2.170 Transition Responsibilities

2.171 Contractor Transition Responsibilities

If the State terminates the Contract, for convenience or cause, or if the Contract is otherwise dissolved, voided, rescinded, nullified, expires or rendered unenforceable, the Contractor agrees to comply with direction provided by the State to assist in the orderly transition of equipment, services, software, leases, etc. to the State or a third party designated by the State. If the Contract expires or terminates, the Contractor agrees to make all reasonable efforts to effect an orderly transition of services within a reasonable period of time that in no event will exceed ninety (90) days. These efforts must include, but are not limited to, those listed in **Sections 2.171, 2.172, 2.173, 2.174, and 2.175.**

2.172 Contractor Personnel Transition

The Contractor must work with the State, or a specified third party, to develop a transition plan setting forth the specific tasks and schedule to be accomplished by the parties to effect an orderly transition. The Contractor must allow as many personnel as practicable to remain on the job to help the State, or a specified third party, maintain the continuity and consistency of the services required by the Contract. In addition, during or following the transition period, in the event the State requires the Services of the Contractor's Subcontractors or vendors, as necessary to meet its needs, Contractor agrees to reasonably, and with good-faith, work with the State to use the Services of Contractor's Subcontractors or vendors. Contractor must notify all of Contractor's subcontractors of procedures to be followed during transition.

2.173 Contractor Information Transition

The Contractor agrees to provide reasonable detailed specifications for all Services/Deliverables needed by the State, or specified third party, to properly provide the Services/Deliverables required under the Contract. The Contractor must deliver to the State any remaining owed reports and documentation still in Contractor's possession subject to appropriate payment by the State.

2.174 Contractor Software Transition - Reserved

2.175 Transition Payments

If the transition results from a termination for any reason, reimbursement must be governed by the termination provisions of the Contract. If the transition results from expiration, the Contractor will be reimbursed for all reasonable transition costs (i.e. costs incurred within the agreed period after contract expiration that result from transition operations) at the rates agreed upon by the State. The Contractor must prepare an accurate accounting from which the State and Contractor may reconcile all outstanding accounts.

2.176 State Transition Responsibilities

In the event that the Contract is terminated, dissolved, voided, rescinded, nullified, or otherwise rendered unenforceable, the State agrees to perform the following obligations, and any others upon which the State and the Contractor agree:

- (a) Reconciling all accounts between the State and the Contractor;
- (b) Completing any pending post-project reviews.

2.180 Stop Work

2.181 Stop Work Orders

The State may, at any time, by written stop work order to Contractor, require that Contractor stop all, or any part, of the work called for by the Contract for a period of up to 90 calendar days after the stop work order is delivered to Contractor, and for any further period to which the parties may agree. The stop work

order must be identified as a stop work order and must indicate that it is issued under this **Section 2.180**. Upon receipt of the stop work order, Contractor must immediately comply with its terms and take all reasonable steps to minimize incurring costs allocable to the work covered by the stop work order during the period of work stoppage. Within the period of the stop work order, the State must either: (a) cancel the stop work order; or (b) terminate the work covered by the stop work order as provided in **Section 2.150**.

2.182 Cancellation or Expiration of Stop Work Order

The Contractor must resume work if the State cancels a Stop Work Order or if it expires. The parties will agree upon an equitable adjustment in the delivery schedule, the Contract price, or both, and the Contract must be modified, in writing, accordingly, if: (a) the stop work order results in an increase in the time required for, or in Contractor's costs properly allocable to, the performance of any part of the Contract; and (b) Contractor asserts its right to an equitable adjustment within 30 calendar days after the end of the period of work stoppage; provided that, if the State decides the facts justify the action, the State may receive and act upon a Contractor proposal submitted at any time before final payment under the Contract. Any adjustment must conform to the requirements of **Section 2.024**.

2.183 Allowance of Contractor Costs

If the stop work order is not canceled and the work covered by the stop work order is terminated for reasons other than material breach, the termination must be deemed to be a termination for convenience under **Section 2.150**, and the State will pay reasonable costs resulting from the stop work order in arriving at the termination settlement. For the avoidance of doubt, the State is not liable to Contractor for loss of profits because of a stop work order issued under this **Section 2.180**.

2.190 Dispute Resolution

2.191 In General

Any claim, counterclaim, or dispute between the State and Contractor arising out of or relating to the Contract or any Statement of Work must be resolved as follows. For all Contractor claims seeking an increase in the amounts payable to Contractor under the Contract, or the time for Contractor's performance, Contractor must submit a letter, together with all data supporting the claims, executed by Contractor's Contract Administrator or the Contract Administrator's designee certifying that (a) the claim is made in good faith, (b) the amount claimed accurately reflects the adjustments in the amounts payable to Contractor or the time for Contractor's performance for which Contractor believes the State is liable and covers all costs of every type to which Contractor is entitled from the occurrence of the claimed event, and (c) the claim and the supporting data are current and complete to Contractor's best knowledge and belief.

2.192 Informal Dispute Resolution

(a) All disputes between the parties must be resolved under the Contract Management procedures in the Contract. If the parties are unable to resolve any disputes after compliance with the processes, the parties must meet with the Director of Procurement, DNR, or designee, for the purpose of attempting to resolve the dispute without the need for formal legal proceedings, as follows:

(i) The representatives of Contractor and the State must meet as often as the parties reasonably deem necessary to gather and furnish to each other all information with respect to the matter in issue which the parties believe to be appropriate and germane in connection with its resolution. The representatives must discuss the problem and negotiate in good faith in an effort to resolve the dispute without the necessity of any formal proceeding.

(ii) During the course of negotiations, all reasonable requests made by one (1) party to another for non-privileged information reasonably related to the Contract must be honored in order that each of the parties may be fully advised of the other's position.

(iii) The specific format for the discussions will be left to the discretion of the designated State and Contractor representatives, but may include the preparation of agreed upon statements of fact or written statements of position.

(iv) Following the completion of this process within 60 calendar days, the Director of Procurement, DNR, or designee, must issue a written opinion regarding the issue(s) in dispute

within 30 calendar days. The opinion regarding the dispute must be considered the State's final action and the exhaustion of administrative remedies.

(b) This Section must not be construed to prevent either party from instituting, and a party is authorized to institute, formal proceedings earlier to avoid the expiration of any applicable limitations period, to preserve a superior position with respect to other creditors, or under **Section 2.193**.

(c) The State will not mediate disputes between the Contractor and any other entity, except state agencies, concerning responsibility for performance of work under the Contract.

2.193 Injunctive Relief

The only circumstance in which disputes between the State and Contractor will not be subject to the provisions of **Section 2.192** is where a party makes a good faith determination that a breach of the terms of the Contract by the other party is the that the damages to the party resulting from the breach will be so immediate, so large or severe and so incapable of adequate redress after the fact that a temporary restraining order or other immediate injunctive relief is the only adequate remedy.

2.194 Continued Performance

Each party agrees to continue performing its obligations under the Contract while a dispute is being resolved except to the extent the issue in dispute precludes performance (dispute over payment must not be deemed to preclude performance) and without limiting either party's right to terminate the Contract as provided in **Section 2.150**, as the case may be.

2.200 Federal and State Contract Requirements

2.201 Nondiscrimination

In the performance of the Contract, Contractor agrees not to discriminate against any employee or applicant for employment, with respect to his or her hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, religion, national origin, ancestry, age, sex, height, weight, marital status, or physical or mental disability. Contractor further agrees that every subcontract entered into for the performance of the Contract or any purchase order resulting from the Contract must contain a provision requiring non-discrimination in employment, as specified here, binding upon each Subcontractor. This covenant is required under the Elliot Larsen Civil Rights Act, 1976 PA 453, MCL 37.2101, et seq., and the Persons with Disabilities Civil Rights Act, 1976 PA 220, MCL 37.1101, et seq., and any breach of this provision may be regarded as a material breach of the Contract.

2.202 Unfair Labor Practices

Under 1980 PA 278, MCL 423.321, et seq., the State must not award a Contract or subcontract to an employer whose name appears in the current register of employers failing to correct an unfair labor practice compiled under Section 2 of the Act. This information is compiled by the United States National Labor Relations Board. A Contractor of the State, in relation to the Contract, must not enter into a contract with a Subcontractor, manufacturer, or supplier whose name appears in this register. Under Section 4 of 1980 PA 278, MCL 423.324, the State may void any Contract if, after award of the Contract, the name of Contractor as an employer or the name of the Subcontractor, manufacturer or supplier of Contractor appears in the register.

2.203 Workplace Safety and Discriminatory Harassment

In performing Services for the State, the Contractor must comply with the Department of Civil Services Rule 2-20 regarding Workplace Safety and Rule 1-8.3 regarding Discriminatory Harassment. In addition, the Contractor must comply with Civil Service regulations and any applicable agency rules provided to the Contractor. For Civil Service Rules, see <http://www.mi.gov/mdcs/0,1607,7-147-6877---,00.html>.

2.204 Prevailing Wage

The rates of wages and fringe benefits to be paid each class of individuals employed by the Contractor, its subcontractors, their subcontractors, and all persons involved with the performance of the Contract in privity of contract with the Contractor must not be less than the wage rates and fringe benefits established by the Michigan Department of Licensing and Regulatory Affairs, Wage and Hour Division, schedule of occupational classification and wage rates and fringe benefits for the local where the work is to be performed. The term Contractor must include all general contractors, prime contractors, project managers, trade contractors, and all of their contractors or subcontractors and persons in privity of contract with them.

The Contractor, its subcontractors, their subcontractors and all persons involved with the performance of the Contract in privity of contract with the Contractor must keep posted on the work site, in a conspicuous place, a copy of all wage rates and fringe benefits as prescribed in the contract. You must also post, in a conspicuous place, the address and telephone number of the Michigan Department of Licensing and Regulatory Affairs, the office responsible for enforcement of the wage rates and fringe benefits. The Contractor must keep an accurate record showing the name and occupation of the actual wage and benefits paid to each individual employed in connection with the Contract. This record must be available to the State upon request for reasonable inspection.

If any trade is omitted from the list of wage rates and fringe benefits to be paid to each class of individuals by the Contractor, it is understood that the trades omitted must also be paid not less than the wage rate and fringe benefits prevailing in the local where the work is to be performed.

2.210 Governing Law

2.211 Governing Law

The Contract must in all respects be governed by, and construed according to, the substantive laws of the State of Michigan without regard to any Michigan choice of law rules that would apply the substantive law of any other jurisdiction to the extent not inconsistent with, or pre-empted by federal law.

2.212 Compliance with Laws

Contractor must comply with all applicable state, federal and local laws and ordinances in providing the Services/Deliverables.

2.213 Jurisdiction

Any dispute arising from the Contract must be resolved in the State of Michigan. With respect to any claim between the parties, Contractor consents to venue in Ingham County, Michigan, and irrevocably waives any objections it may have to the jurisdiction on the grounds of lack of personal jurisdiction of the court or the laying of venue of the court or on the basis of forum non convenience or otherwise.

Contractor agrees to appoint agents in the State of Michigan to receive service of process.

2.220 Limitation of Liability

2.221 Limitation of Liability

Neither the Contractor nor the State is liable to each other, regardless of the form of action, for consequential, incidental, indirect, or special damages. This limitation of liability does not apply to claims for infringement of United States patent, copyright, trademark or trade secrets; to claims for personal

injury or damage to property caused by the gross negligence or willful misconduct of the Contractor; to claims covered by other specific provisions of the Contract calling for liquidated damages; or to court costs or attorney's fees awarded by a court in addition to damages after litigation based on the Contract.

2.230 Disclosure Responsibilities

2.231 Disclosure of Litigation

(a) Disclosure. Contractor must disclose any material criminal litigation, investigations or proceedings involving the Contractor (and each Subcontractor) or any of its officers or directors or any litigation, investigations or proceedings under the Sarbanes-Oxley Act. In addition, each Contractor (and each Subcontractor) must notify the State of any material civil litigation, arbitration or proceeding which arises during the term of the Contract and extensions, to which Contractor (or, to the extent Contractor is aware, any Subcontractor) is a party, and which involves: (i) disputes that might reasonably be expected to adversely affect the viability or financial stability of Contractor or any Subcontractor; or (ii) a claim or written allegation of fraud against Contractor or, to the extent Contractor is aware, any Subcontractor by a governmental or public entity arising out of their business dealings with governmental or public entities. The Contractor must disclose in writing to the Contract Administrator any litigation, investigation, arbitration or other proceeding (collectively, "Proceeding") within 30 days of its occurrence. Details of settlements which are prevented from disclosure by the terms of the settlement may be annotated. Information provided to the State from Contractor's publicly filed documents referencing its material litigation will be deemed to satisfy the requirements of this Section.

(b) Assurances. If any Proceeding disclosed to the State under this Section, or of which the State otherwise becomes aware, during the term of the Contract would cause a reasonable party to be concerned about:

- (i) the ability of Contractor (or a Subcontractor) to continue to perform the Contract according to its terms and conditions, or
- (ii) whether Contractor (or a Subcontractor) in performing Services for the State is engaged in conduct which is similar in nature to conduct alleged in the Proceeding, which conduct would constitute a breach of the Contract or a violation of Michigan law, regulations or public policy, then the Contractor must provide the State all reasonable assurances requested by the State to demonstrate that:

- (a) Contractor and its Subcontractors must be able to continue to perform the Contract and any Statements of Work according to its terms and conditions, and
- (b) Contractor and its Subcontractors have not and will not engage in conduct in performing the Services which is similar in nature to the conduct alleged in the Proceeding.

(c) Contractor must make the following notifications in writing:

- (1) Within 30 days of Contractor becoming aware that a change in its ownership or officers has occurred, or is certain to occur, or a change that could result in changes in the valuation of its capitalized assets in the accounting records, Contractor must notify DNR-Procurement.
- (2) Contractor must also notify DNR Procurement within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership or officers.
- (3) Contractor must also notify DNR Procurement within 30 days whenever changes to company affiliations occur.

2.232 Call Center Disclosure - Reserved

2.233 Bankruptcy

The State may, without prejudice to any other right or remedy, terminate the Contract, in whole or in part, and, at its option, may take possession of the "Work in Process" and finish the Works in Process by whatever appropriate method the State may deem expedient if:

- (a) the Contractor files for protection under the bankruptcy laws;
- (b) an involuntary petition is filed against the Contractor and not removed within 30 days;
- (c) the Contractor becomes insolvent or if a receiver is appointed due to the Contractor's insolvency;
- (d) the Contractor makes a general assignment for the benefit of creditors; or
- (e) the Contractor or its affiliates are unable to provide reasonable assurances that the Contractor or its affiliates can deliver the services under the Contract.

Contractor will fix appropriate notices or labels on the Work in Process to indicate ownership by the State. To the extent reasonably possible, materials and Work in Process must be stored separately from other stock and marked conspicuously with labels indicating ownership by the State.

2.240 Performance

2.241 Time of Performance

- (a) Contractor must use reasonable efforts to provide the resources necessary to complete all Services and Deliverables according to the time schedules contained in the Statements of Work and other Exhibits governing the work, and with professional quality.
- (b) Without limiting the generality of **Section 2.241(a)**, Contractor must notify the State in a timely manner upon becoming aware of any circumstances that may reasonably be expected to jeopardize the timely and successful completion of any Deliverables/Services on the scheduled due dates in the latest State-approved delivery schedule and must inform the State of the projected actual delivery date.
- (c) If the Contractor believes that a delay in performance by the State has caused or will cause the Contractor to be unable to perform its obligations according to specified Contract time periods, the Contractor must notify the State in a timely manner and must use commercially reasonable efforts to perform its obligations according to the Contract time periods notwithstanding the State's failure. Contractor will not be in default for a delay in performance to the extent the delay is caused by the State.

2.242 Service Level Agreements (SLAs) - Reserved

2.243 Liquidated Damages - Reserved

2.244 Excusable Failure

Neither party will be liable for any default, damage, or delay in the performance of its obligations under the Contract to the extent the default, damage or delay is caused by government regulations or requirements (executive, legislative, judicial, military, or otherwise), power failure, lightning, earthquake, war, water or other forces of nature or acts of God, delays or failures of transportation, equipment shortages, suppliers' failures, or acts or omissions of common carriers, fire; riots, civil disorders; strikes or other labor disputes, embargoes; injunctions (provided the injunction was not issued as a result of any fault or negligence of the party seeking to have its default or delay excused); or any other cause beyond the reasonable control of a party; provided the non-performing party and its Subcontractors are without fault in causing the default or delay, and the default or delay could not have been prevented by reasonable precautions and cannot reasonably be circumvented by the non-performing party through the use of alternate sources, workaround plans or other means, including disaster recovery plans.

If a party does not perform its contractual obligations for any of the reasons listed above, the non-performing party will be excused from any further performance of its affected obligation(s) for as long as the circumstances prevail. But the party must use commercially reasonable efforts to recommence performance whenever and to whatever extent possible without delay. A party must promptly notify the other party in writing immediately after the excusable failure occurs, and also when it abates or ends.

If any of the above-enumerated circumstances substantially prevent, hinder, or delay the Contractor's performance of the Services/provision of Deliverables for more than 10 Business Days, and the State determines that performance is not likely to be resumed within a period of time that is satisfactory to the State in its reasonable discretion, then at the State's option: (a) the State may procure the affected Services/Deliverables from an alternate source, and the State is not be liable for payment for the unperformed Services/ Deliverables not provided under the Contract for so long as the delay in performance continues; (b) the State may terminate any portion of the Contract so affected and the charges payable will be equitably adjusted to reflect those Services/Deliverables terminated; or (c) the State may terminate the affected Statement of Work without liability to Contractor as of a date specified by the State in a written notice of termination to the Contractor, except to the extent that the State must pay for Services/Deliverables provided through the date of termination.

The Contractor will not have the right to any additional payments from the State as a result of any Excusable Failure occurrence or to payments for Services not rendered/Deliverables not provided as a result of the Excusable Failure condition. Defaults or delays in performance by Contractor which are caused by acts or omissions of its Subcontractors will not relieve Contractor of its obligations under the Contract except to the extent that a Subcontractor is itself subject to an Excusable Failure condition described above and Contractor cannot reasonably circumvent the effect of the Subcontractor's default or delay in performance through the use of alternate sources, workaround plans or other means.

2.250 Approval of Deliverables

2.251 Delivery Responsibilities

Unless otherwise specified by the State within an individual order, the following must be applicable to all orders issued under the Contract.

(a) Shipment responsibilities - Services performed/Deliverables provided under the Contract must be delivered "F.O.B. Destination, within Government Premises." The Contractor must have complete responsibility for providing all Services/Deliverables to all site(s) unless otherwise stated. Actual delivery dates must be specified on the individual purchase order.

(b) Delivery locations - Services must be performed/Deliverables must be provided at every State of Michigan location within Michigan unless otherwise stated in the SOW. Specific locations will be provided by the State or upon issuance of individual purchase orders.

(c) Damage Disputes - At the time of delivery to State Locations, the State must examine all packages. The quantity of packages delivered must be recorded and any obvious visible or suspected damage must be noted at time of delivery using the shipper's delivery document(s) and appropriate procedures to record the damage.

Where there is no obvious or suspected damage, all deliveries to a State Location must be opened by the State and the contents inspected for possible internal damage not visible externally within 14 days of receipt. Any damage must be reported to the Contractor within five days of inspection

2.252 Delivery of Deliverables

Where applicable, the Statements of Work/POs contain lists of the Deliverables to be prepared and delivered by Contractor including, for each Deliverable, the scheduled delivery date and a designation of whether the Deliverable is a document ("Written Deliverable"), a good ("Physical Deliverable") or a Service. All Deliverables must be completed and delivered for State review and written approval and, where applicable, installed according to the State-approved delivery schedule and any other applicable terms and conditions of the Contract.

2.253 Testing

(a) Before delivering any of the above-mentioned Statement of Work Physical Deliverables or Services to the State, Contractor must first perform all required quality assurance activities to verify that the Physical Deliverable or Service is complete and conforms with its specifications listed in the

applicable Statement of Work or Purchase Order. Before delivering a Physical Deliverable or Service to the State, Contractor must certify to the State that (1) it has performed the quality assurance activities, (2) it has performed any applicable testing, (3) it has corrected all material deficiencies discovered during the quality assurance activities and testing, (4) the Deliverable or Service is in a suitable state of readiness for the State's review and approval, and (5) the Deliverable/Service has all Critical Security patches/updates applied.

(b) If a Deliverable includes installation at a State Location, then Contractor must (1) perform any applicable testing, (2) correct all material deficiencies discovered during the quality assurance activities and testing, and (3) inform the State that the Deliverable is in a suitable state of readiness for the State's review and approval. To the extent that testing occurs at State Locations, the State is entitled to observe or otherwise participate in testing.

2.254 Approval of Deliverables, In General

(a) All Deliverables (Physical Deliverables and Written Deliverables) and Services require formal written approval by the State, according to the following procedures. Formal approval by the State requires the State to confirm in writing that the Deliverable meets its specifications. Formal approval may include the successful completion of Testing as applicable in **Section 2.253**, to be led by the State with the support and assistance of Contractor. The approval process will be facilitated by ongoing consultation between the parties, inspection of interim and intermediate Deliverables and collaboration on key decisions.

(b) The State's obligation to comply with any State Review Period is conditioned on the timely delivery of Deliverables/Services being reviewed.

(c) Before commencement of its review or testing of a Deliverable/Service, the State may inspect the Deliverable/Service to confirm that all components of the Deliverable/Service have been delivered without material deficiencies. If the State determines that the Deliverable/Service has material deficiencies, the State may refuse delivery of the Deliverable/Service without performing any further inspection or testing of the Deliverable/Service. Otherwise, the review period will be deemed to have started on the day the State receives the Deliverable or the Service begins, and the State and Contractor agree that the Deliverable/Service is ready for use and, where applicable, certification by Contractor according to **Section 2.253**.

(d) The State must approve in writing a Deliverable/Service after confirming that it conforms to and performs according to its specifications without material deficiency. The State may, but is not be required to, conditionally approve in writing a Deliverable/Service that contains material deficiencies if the State elects to permit Contractor to rectify them post-approval. In any case, Contractor will be responsible for working diligently to correct within a reasonable time at Contractor's expense all deficiencies in the Deliverable/Service that remain outstanding at the time of State approval.

(e) If, after three (3) opportunities (the original and two (2) repeat efforts), the Contractor is unable to correct all deficiencies preventing Final Acceptance of a Deliverable/Service, the State may: (i) demand that the Contractor cure the failure and give the Contractor additional time to cure the failure at the sole expense of the Contractor; or (ii) keep the Contract in force and do, either itself or through other parties, whatever the Contractor has failed to do, and recover the difference between the cost to cure the deficiency and the contract price plus an additional sum equal to 10% of the cost to cure the deficiency to cover the State's general expenses provided the State can furnish proof of the general expenses; or (iii) terminate the particular Statement of Work for default, either in whole or in part by notice to Contractor provided Contractor is unable to cure the breach. Notwithstanding the foregoing, the State cannot use, as a basis for exercising its termination rights under this Section, deficiencies discovered in a repeat State Review Period that could reasonably have been discovered during a prior State Review Period.

(f) The State, at any time and in its reasonable discretion, may halt the testing or approval process if the process reveals deficiencies in or problems with a Deliverable/Service in a sufficient quantity or of a sufficient severity that renders continuing the process unproductive or unworkable. If that happens, the

State may stop using the Service or return the applicable Deliverable to Contractor for correction and re-delivery before resuming the testing or approval process.

2.255 Process for Approval of Written Deliverables

The State Review Period for Written Deliverables will be the number of days set forth in the applicable Statement of Work following delivery of the final version of the Deliverable (and if the Statement of Work does not state the State Review Period, it is by default five (5) Business Days for Written Deliverables of 100 pages or less and 10 Business Days for Written Deliverables of more than 100 pages). The duration of the State Review Periods will be doubled if the State has not had an opportunity to review an interim draft of the Written Deliverable before its submission to the State. The State agrees to notify Contractor in writing by the end of the State Review Period either stating that the Deliverable is approved in the form delivered by Contractor or describing any deficiencies that must be corrected before approval of the Deliverable (or at the State's election, after approval of the Deliverable). If the State notifies the Contractor about deficiencies, the Contractor must correct the described deficiencies and within 30 Business Days resubmit the Deliverable in a form that shows all revisions made to the original version delivered to the State. Contractor's correction efforts must be made at no additional charge. Upon receipt of a corrected Deliverable from Contractor, the State must have a reasonable additional period of time, not to exceed the length of the original State Review Period, to review the corrected Deliverable to confirm that the identified deficiencies have been corrected.

2.256 Process for Approval of Services

The State Review Period for approval of Services is governed by the applicable Statement of Work (and if the Statement of Work does not state the State Review Period, it is by default 30 Business Days for Services). The State agrees to notify the Contractor in writing by the end of the State Review Period either stating that the Service is approved in the form delivered by the Contractor or describing any deficiencies that must be corrected before approval of the Services (or at the State's election, after approval of the Service). If the State delivers to the Contractor a notice of deficiencies, the Contractor must correct the described deficiencies and within 30 Business Days resubmit the Service in a form that shows all revisions made to the original version delivered to the State. The Contractor's correction efforts must be made at no additional charge. Upon implementation of a corrected Service from Contractor, the State must have a reasonable additional period of time, not to exceed the length of the original State Review Period, to review the corrected Service for conformity and that the identified deficiencies have been corrected.

2.257 Process for Approval of Physical Deliverables

The State Review Period for approval of Physical Deliverables is governed by the applicable Statement of Work (and if the Statement of Work does not state the State Review Period, it is by default 30 continuous Business Days for a Physical Deliverable). The State agrees to notify the Contractor in writing by the end of the State Review Period either stating that the Deliverable is approved in the form delivered by the Contractor or describing any deficiencies that must be corrected before approval of the Deliverable (or at the State's election, after approval of the Deliverable). If the State delivers to the Contractor a notice of deficiencies, the Contractor must correct the described deficiencies and within 30 Business Days resubmit the Deliverable in a form that shows all revisions made to the original version delivered to the State. The Contractor's correction efforts must be made at no additional charge. Upon receipt of a corrected Deliverable from the Contractor, the State must have a reasonable additional period of time, not to exceed the length of the original State Review Period, to review the corrected Deliverable to confirm that the identified deficiencies have been corrected.

2.258 Final Acceptance

Unless otherwise stated in the Article 1, Statement of Work or Purchase Order, "Final Acceptance" of each Deliverable must occur when each Deliverable/Service has been approved by the State following the State Review Periods identified in **Sections 2.251-2.257**. Payment will be made for Deliverables installed and accepted. Upon acceptance of a Service, the State will pay for all Services provided during the State Review Period that conformed to the acceptance criteria.

2.260 Ownership

2.261 Ownership of Work Product by State

To the extent permitted by law, all data and information collected under this Contract will be submitted to State at least 30 days before the data and information may be available to the public by the Contractor or by any person employed by the Contractor. The Contractor will provide an electronic and hard copy of each publication of these data, which should provide acknowledgment of all funding sources and disclaimer of State responsibility regarding form and content of data presented in each publication. Publication rights to information obtained during the project study belong to the Contractor. The Contractor will, however, send a copy of any proposed publication to State not later than 30 days prior to the date the proposed publication is submitted for publication for review of confidential material. If the State does not respond within 30 days it shall be conclusively determined that the proposed publication does not contain confidential material and the Contractor is free to publish. Authorship of publications will depend on individual projects and may include persons from both the Contractor and State. The aid provided by the State will be acknowledged in such publication. The Contractor will grant the State an irrevocable, royalty free, non-exclusive right to produce, translate, and otherwise use for governmental purposes any published reports or other copyrighted materials created as a direct result of this Contract.

2.262 Vesting of Rights

With the sole exception of any preexisting licensed works identified in the SOW, the Contractor assigns, and upon creation of each Deliverable automatically assigns, to the State, ownership of all United States and international copyrights, trademarks, patents, or other proprietary rights in each and every Deliverable, whether or not registered by the Contractor, insofar as any the Deliverable, by operation of law, may not be considered work made for hire by the Contractor for the State. From time to time upon the State's request, the Contractor must confirm the assignment by execution and delivery of the assignments, confirmations of assignment, or other written instruments as the State may request. The State may obtain and hold in its own name all copyright, trademark, and patent registrations and other evidence of rights that may be available for Deliverables.

2.263 Rights in Data

(a) The State will be and remain the owner of all data made available by the State to Contractor or its agents, Subcontractors or representatives pursuant to the Contract. Contractor will not use the State's data for any purpose other than providing the Services, nor will any part of the State's data be disclosed, sold, assigned, leased or otherwise disposed of to the general public or to specific third parties or commercially exploited by or on behalf of Contractor, nor will any employee of Contractor other than those on a strictly need to know basis have access to the State's data. Contractor will not possess or assert any lien or other right against the State's data. Without limiting the generality of this Section, Contractor shall only use personally identifiable information as strictly necessary to provide the Services and shall disclose such information only to its employees who have a strict need to know such information. Contractor shall comply at all times with all laws and regulations applicable to such personally identifiable information.

(b) The DNR may use the data directly generated from this contract for any purpose consistent with the terms and conditions of this Contract. Use of, and access to, the NHD, by agencies of the State other than the DNR, will be negotiated directly between the Contractor and the requesting agency and are not under the jurisdiction of this contract. The DNR and the State will not possess or assert any lien or other right against the Contractor's interest in the NHD. Without limiting the generality of this Section, the State shall only use personally identifiable information as strictly necessary to utilize the Services and shall disclose such information only to its employees who have a strict need to know such information, except as provided by law. The State shall comply at all times with all laws and regulations applicable to such personally identifiable information.

2.264 Ownership of Materials

The State and the Contractor will continue to own their respective proprietary technologies developed before entering into the Contract. Any hardware bought through the Contractor by the State, and paid for

by the State, will be owned by the State. Any software licensed through the Contractor and sold to the State, will be licensed directly to the State.

2.270 State Standards

2.271 Existing Technology Standards

The Contractor must adhere to all existing and applicable standards as described within the comprehensive listing of the State's existing technology standards at <http://www.michigan.gov/dit>.

2.272 Acceptable Use Policy

To the extent that Contractor has access to the State computer system, Contractor must comply with the State's Acceptable Use Policy, see <http://www.michigan.gov/dit/service>. All Contractor employees must be required, in writing, to agree to the State's Acceptable Use Policy before accessing the State system. The State reserves the right to terminate Contractor's access to the State system if a violation occurs.

2.273 Systems Changes

Contractor is not responsible for and not authorized to make changes to any State systems without written authorization from the Project Manager. Any changes Contractor makes to State systems with the State's approval must be done according to applicable State procedures, including security, access, and configuration management procedures.

2.280 Extended Purchasing

2.281 MIDEAL - RESERVED

2.282 State Employee Purchases - Reserved

2.290 Environmental Provision

2.291 Environmental Provision

Hazardous Materials:

For the purposes of this Section, "Hazardous Materials" is a generic term used to describe asbestos, ACBMs, PCBs, petroleum products, construction materials including paint thinners, solvents, gasoline, oil, and any other material the manufacture, use, treatment, storage, transportation, or disposal of which is regulated by the federal, State, or local laws governing the protection of the public health, natural resources, or the environment. This includes, but is not limited to, materials such as batteries and circuit packs, and other materials that are regulated as (1) "Hazardous Materials" under the Hazardous Materials Transportation Act, (2) "chemical hazards" under the Occupational Safety and Health Administration standards, (3) "chemical substances or mixtures" under the Toxic Substances Control Act, (4) "pesticides" under the Federal Insecticide Fungicide and Rodenticide Act, and (5) "hazardous wastes" as defined or listed under the Resource Conservation and Recovery Act.

(a) The Contractor must use, handle, store, dispose of, process, transport and transfer any material considered a Hazardous Material according to all federal, State, and local laws. The State must provide a safe and suitable environment for performance of Contractor's Work. Before the commencement of Work, the State must advise the Contractor of the presence at the work site of any Hazardous Material to the extent that the State is aware of the Hazardous Material. If the Contractor encounters material reasonably believed to be a Hazardous Material and which may present a substantial danger, the Contractor must immediately stop all affected Work, notify the State in writing about the conditions encountered, and take appropriate health and safety precautions.

(b) Upon receipt of a written notice, the State will investigate the conditions. If (a) the material is a Hazardous Material that may present a substantial danger, and (b) the Hazardous Material was not

brought to the site by the Contractor, or does not result in whole or in part from any violation by the Contractor of any laws covering the use, handling, storage, disposal of, processing, transport and transfer of Hazardous Materials, the State must order a suspension of Work in writing. The State must proceed to have the Hazardous Material removed or rendered harmless. In the alternative, the State must terminate the affected Work for the State's convenience.

(c) Once the Hazardous Material has been removed or rendered harmless by the State, the Contractor must resume Work as directed in writing by the State. Any determination by the Michigan Department of Community Health or the Michigan Department of Environmental Quality that the Hazardous Material has either been removed or rendered harmless is binding upon the State and Contractor for the purposes of resuming the Work. If any incident with Hazardous Material results in delay not reasonable anticipatable under the circumstances and which is attributable to the State, the applicable SLAs for the affected Work will not be counted in **Section 2.242** for a time as mutually agreed by the parties.

(d) If the Hazardous Material was brought to the site by the Contractor, or results in whole or in part from any violation by the Contractor of any laws covering the use, handling, storage, disposal of, processing, transport and transfer of Hazardous Material, or from any other act or omission within the control of the Contractor, the Contractor must bear its proportionate share of the delay and costs involved in cleaning up the site and removing and rendering harmless the Hazardous Material according to Applicable Laws to the condition approved by applicable regulatory agency(ies).

Michigan has a Consumer Products Rule pertaining to labeling of certain products containing volatile organic compounds. For specific details visit http://www.michigan.gov/deq/0,1607,7-135-3310_4108-173523--,00.html

Refrigeration and Air Conditioning:

The Contractor must comply with the applicable requirements of Sections 608 and 609 of the Clean Air Act (42 U.S.C. 7671g and 7671h) as each or both apply to the Contract.

Environmental Performance:

Waste Reduction Program: Contractor must establish a program to promote cost-effective waste reduction in all operations and facilities covered by the Contract. The Contractor's programs must comply with applicable Federal, State, and local requirements, specifically including Section 6002 of the Resource Conservation and Recovery Act (42 U.S.C. 6962, et seq.).

2.300 Other Provisions

2.311 Forced Labor, Convict Labor, Forced or Indentured Child Labor, or Indentured Servitude Made Materials

Equipment, materials, or supplies, that will be furnished to the State under the Contract must not be produced in whole or in part by forced labor, convict labor, forced or indentured child labor, or indentured servitude.

"Forced or indentured child labor" means all work or service: exacted from any person under the age of 18 under the menace of any penalty for its nonperformance and for which the worker does not offer himself voluntarily; or performed by any person under the age of 18 under a contract the enforcement of which can be accomplished by process or penalties.

Attachment A

The 30,000 hours estimate would likely be broken down into the following areas:

Expertise Area	Percent of Contract Work	Est Number of hours per yr	Average Salary	Est Cost per year
Project Mgt/Oversight	5%	1500	\$44.59	\$66,892.06
Database Mgt/IT	10%	3000	\$40.21	\$120,630.00
Zoological	20%	6000	\$47.88	\$287,304.00
Botanical	15%	4500	\$48.36	\$217,620.00
Aquatic	15%	4500	\$39.96	\$179,805.00
Terrestrial	20%	6000	\$47.63	\$285,768.00
Conservation Planning/Education	15%	4500	\$46.34	\$208,515.00
	100%	30,000		\$1,366,534.06

Estimated Yearly cost \$1,366,534.06 * 3 years = \$4,099,602.18

Salary Pricing Chart

Name	Area of Expertise as stated above.	Hourly Rate
Badra, Peter J	Aquatic Ecology; Project Management Oversight	\$ 38.02
Campbell, Suzan Lyn	Conservation Education	\$ 28.66
Cohen, Joshua G	Terrestrial Ecology; Botanical Expertise; Project Management Oversight	\$ 38.28
Cuthrell, David L	Zoological Expertise; Project Management Oversight	\$ 41.59
Enander, Helen D	Database Management and Information Technology	\$ 40.72
Gehring, Joelle Lynn	Zoological Expertise; Project Management Oversight	\$ 45.14
Higman, Phyllis J	Conservation Education; Botanical Expertise; Project Management Oversight	\$ 52.02
Hyde, Daria A	Conservation Planning and Education; Project Management Oversight	\$ 38.54
Klatt, Brian J	Project Management Oversight; Zoological Expertise; Botanical Expertise; Terrestrial Ecology; Conservation Planning	\$ 66.37
Korroch, Kraig M	Database Management and Information Technology	\$ 39.29
Kost, Michael A	Terrestrial Ecology; Botanical Expertise; Project Management Oversight	\$ 48.57

Latimore,Jo Anne	Aquatic Ecology; Project Management Oversight	\$ 39.12
Lee,Yu Man	Zoological Expertise; Conservation Education; Project Management Oversight	\$ 43.59
Monfils,Michael J	Zoological Expertise; Aquatic Ecology; Project Management Oversight	\$ 42.73
Paskus Jr,John Joseph	Conservation Planning; Conservation Education; Project Management Oversight	\$ 48.84
Penskar,Michael R	Botanical Expertise; Terrestrial Ecology; Project Management Oversight	\$ 52.44
Ridge,Suzanne M	Project Management Oversight	\$ 35.86
Rogers,Rebecca Leigh	Database Management and Information Technology	\$ 36.75
Sanders,Michael A	Database Management and Information Technology	\$ 31.44
Schools,Edward H	Database Management and Information Technology; Project Management Oversight	\$ 52.85
Slaughter,Bradford Shaw	Botanical Expertise; Terrestrial Ecology; Project Management Oversight	\$ 32.48
Toben,Nancy L	Project Management Oversight	\$ 41.67

The rates provided in this table apply to the period 1 October 2012 - 30 September 2013; new rates will be submitted annually as required by the proposed terms and conditions reflecting adjusted salaries; it is anticipated these rates will increase by approximately 2% annually reflecting increases due to inflation. MNFI concurs with the 30,000 hour/year estimate as it applies to direct support of maintenance of the Natural Heritage Database, including data entry, QA/QC, evaluation of the data by appropriate scientific disciplines, field inventory to assess potential new Element Occurrences, updating a portion of the aging Element Occurrence Records, and management and administration of the Natural Heritage Program; but is exclusive of outreach products typically developed on a yearly basis in conjunction with the DNR.

MSU does not offer quick payment terms. However, under previous contracts MSU has waived indirect costs. Waiving of indirect costs allows a greater portion of the budget of each project to support the project objectives rather than university-level costs. Additionally, the waived indirect provides a source of match to the DNR allowing them to take advantage of certain federal funding opportunities, such as State and Tribal Wildlife Grants. This waiving of indirect costs is predicated on the DNR providing facility space for MNFI staff, as well as computing system access, and other administrative support. If such support continues, MSU fully expects to be able to offer waived indirect costs under the new contract.

