

Authorization for Incidental Take and Implementing Agreement

Pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/5.5) [on behalf of Green River Wind Farm Phase I, LLC (Green River), a wholly owned subsidiary of Mainstream Renewable Power Ltd., who retained Environmental Resources Management, Inc. (ERM) to prepare a Conservation Plan in application to the Illinois Department of Natural Resources (IDNR) for an Incidental Take Authorization (ITA) authorization for the incidental take of the State listed Species: Ornate Box Turtle [*Terrapene ornata ornata*], Plains/Western Hognose Snake [*Heterodon nasicus nasicus*], Blanding's Turtle [*Emydoidea blandingii*], Illinois/Yellow Mud Turtle [*Kinosternon flavescens*] and Regal Fritillary Butterfly [*Speyeria idaliaas*] in Whiteside, Bureau, and Lee Counties, Illinois - associated with the Green River Wind Farm Phase I Project; as described/shown in the conservation plan received by the Department on 13 November 2012] is hereby granted, subject to the terms and conditions described in the attached Authorization and Implementing Agreement. The Illinois Department of Natural Resources has determined that this authorized take is incidental to the construction of the Green River Wind Farm Phase I Project in Whiteside, Bureau, and Lee Counties, Illinois.

Procedural History

ERM prepared a conservation plan for the Green River Windpower Project (GRWP) as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and Green River's request for authorization for incidental take of the Ornate Box Turtle [*Terrapene ornata ornata*], Western/Plains Hognose Snake [*Heterodon nasicus nasicus*], Blanding's Turtle [*Emydoidea blandingii*], Illinois/ Yellow Mud Turtle [*Kinosternon flavescens*] and Regal Fritillary Butterfly [*Speyeria idaliaas*] in Whiteside, Bureau, and Lee Counties, Illinois were received by the Illinois Department of Natural Resources (Department) on 13 November 2012. Public notice of GRWP's request for authorization of incidental take of these State listed species was published in the Breeze Courier (Official State newspaper), the Walnut Leader (Bureau County) and the Sauk Valley Gazette (Lee & Whiteside Counties) on November 26, 2012, as well as on December 3, and December 10, 2012. Public comments on Green River, LLC's conservation plan were accepted by the Department until December 25, 2012. During the period of November 26, 2012 through December 25, 2012, one document from Hinshaw and Culbertson, LLP (Rockford, Illinois) representing various citizens from Bureau and Lee Counties was received by the IDNR on 24 December 2012. These comments were forwarded to ERM on 2 January 2013. A formal response to these comments was prepared by ERM and received by the IDNR on 14 January 2013. All comments and the subsequent response(s) are kept within the official Incidental Take Authorization files (IDNR Endangered Species Program) housed in the IDNR main facility in Springfield, Illinois.

This project was initially submitted to the IDNR's Office of Realty and Environmental Planning (OREP) for review under the Endangered Species Consultation Process. Upon review within OREP, this project was then elevated to the IDNR's internal Incidental Take Authorization (ITA) committee. The ITA committee decided that this project should formally participate in the Incidental Take Authorization process and seek a formal ITA. At the request of the ITA committee, the OREP project manager was instructed to prepare a letter to the applicant suggesting modifications to the project [which would reduce impacts to the species of concern] and pursuit of a formal ITA - via submission of a Conservation Plan. As stated above, ERM, on behalf of the Green River Wind Farm Phase I, LLC prepared a conservation plan as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and GRWP's request for authorization for incidental take of the Ornate Box Turtle [*Terrapene ornata ornata*], Western/Plains Hognose Snake [*Heterodon nasicus nasicus*], Blanding's Turtle [*Emydoidea blandingii*], Illinois/Yellow Mud Turtle [*Kinosternon flavescens*] and Regal Fritillary Butterfly [*Speyeria idaliaas*] in Whiteside, Bureau, and Lee Counties, Illinois were received by the Illinois Department of Natural Resources (Department) on 13 November 2012. Public notice of GRWP's request for authorization of incidental take of these State listed species was published in the Breeze Courier (Official State newspaper), the Walnut

Leader (Bureau County) and the Sauk Valley Gazette (Lee & Whiteside Counties) on November 26, 2012, as well as on December 3, and December 10, 2012. Public comments on Green River, LLC's conservation plan were accepted by the Department until December 25, 2012. During the period of November 26, 2012 through December 25, 2012, one document from Hinshaw and Culbertson, LLP (Rockford, Illinois) representing various citizens from Bureau and Lee Counties was received by the IDNR on 24 December 2012. These comments were forwarded to ERM on 2 January 2013. A formal response to these comments was prepared by ERM and received by the IDNR 14 January 2013. All comments and the subsequent response(s) are kept within the official Incidental Take Authorization files (IDNR Endangered Species Program) housed in the IDNR main facility in Springfield, Illinois.

The Project will be comprised of approximately 81 wind turbine generators in Lee, Whiteside, and Bureau County (total project area covers approximately 57,600 acres). The Project currently is proposed to total 212 megawatts (MW) of renewable energy generation, enough to provide electricity for over 50,000 US homes. The current design layout by Green River is based on utilizing the Siemens (SWT) 2.3-113 or the Siemens (SWT) 2.3-101 wind turbines. The Siemens 2.3-113 wind turbine has a 99.5 meter tower and a rotor diameter of 113 meters. Thus the maximum height for this machine is 156 meters (512 feet). The Siemens 2.3-101 wind turbine has a 99.5 meter tower and a rotor diameter of 101 meters. Thus the maximum height for this machine is 150 meters (492 feet). Green River proposes to install approximately 81 turbines, the final quantity being dependent on the final turbine selection.

The Project area is located in portions of three counties: the southwestern portion of Lee County, the northwestern portion of Bureau County, and the southeastern portion of Whiteside County, Illinois. The topography of the site consists of a series of low, undulating ridges (glacial end moraines) with pronounced elevation and undulating ridges located in the northern part of the Project area. The Project area is dominated by agricultural fields (corn) with small, isolated patches of forest. Pockets of hay and pasture are located throughout the Project area, along with deciduous tree cover. Tree cover in the Project area outside of the Green River State Wildlife Area is limited and is typically associated with homesteads and a few shelterbelts, as well as some forested fence lines and riparian areas. The Green River State Wildlife Area, which is managed for wetland habitats, as well as grasslands and savannahs are located outside the Project area. Situated near the mid-north boundary of the Project area are the Foley Sand Prairie Nature Preserve and the Sand Prairie Habitat Area.

Target Species

Ornate box turtle (*Terrapene ornata ornata*) – “(Illinois) State” Threatened

Blanding's Turtle (*Emydoidea blandingii*) – “ Endangered

Illinois/Yellow Mud Turtle (*Kinosternon flavescens*) – “ Endangered

Western/Plains Hognose Snake (*Heterodon nasicus*) – “ Threatened

Regal Fritillary Butterfly (*Speyeria idaliaas*) – “ Threatened

Compliance with the Endangered Species Protection Act

The Illinois Endangered Species Protection Act includes six (6) criteria which must be met for the authorization of incidental take of an endangered or threatened species. These criteria and the Department's determination for each criteria are listed below.

1. The taking will not be the purpose of, but will only be incidental to, the carrying out of an otherwise lawful activity:

The Project area is located in portions of three counties: the southwestern portion of Lee County, the northwestern portion of Bureau County, and the southeastern portion of Whiteside County, Illinois. The topography of the site consists of a series of low, undulating ridges (glacial end moraines) with pronounced elevation and undulating ridges located in the northern part of the Project area. The Project area is dominated by agricultural fields (corn) with small, isolated patches of forest. Pockets of hay and pasture are located throughout the Project area, along with deciduous tree cover. Tree cover in the Project area outside of the Green River State Wildlife Area is limited and is typically associated with homesteads and a few shelterbelts, as well as some forested fence lines and riparian areas. The Green River State Wildlife Area, which is managed for wetland habitats, as well as grasslands and savannahs are located outside the Project area. Situated near the mid-north boundary of the Project area are the Foley Sand Prairie Nature Preserve and the Sand Prairie Habitat Area.

All turbines will be connected by an underground electrical collection system that will route the power generated to a Project substation for interconnection to the local electrical transmission system. Once turbines are constructed, they will enter into commercial operation with no restrictions planned for day and night time hours. The Project’s minimum life span after construction is expected to be about 25 years.

The *Action Area* for the Conservation Plan and this ITA is defined as the area within the Green River Project area which includes the leased lands, surrounding lands, as well as the Foley Sand Prairie Nature Preserve, Sand Prairie Habitat Area Illinois Natural Areas Inventory (INAI) Site, Green River Prairie & Wetland INAI Site, Dickenson INAI Site, and East Grove INAI Site; and includes the construction, operation, and maintenance of up 81 turbines and their associated access roads and collector lines located within the Action Area.

The Action Area is composed of the following coordinates:

County	Township	Range	Section
Whiteside	19N	7E	12, 13, 14, 23, 24, 25, 26, 27, 32, 33, 34, 35, 36
Bureau	18N	7E	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18
	18N	8E	1, 2, 6, 7
	18N	9E	3, 4, 5, 6
Lee	19N	8E	1, 2, 3, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
	19N	9E	7, 8, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, 30, 31, 32, 33, 34

2. The parties to the conservation plan will, to the maximum extent practicable, minimize and mitigate the impact caused by the taking.

Part A: The Project area is dominated by agricultural/tilled lands that are managed by private landowners. In accordance with Part a.1.D of 17 IAC Section 1080, the proposed Project has the potential to minimally affect the five listed species and/or their habitat beyond the currently existing conditions. Since the majority of the Project area is composed of tilled lands, it is anticipated that there would be little to no impact on the five species and a minor potential for lost habitat for the species. These species could be potentially harassed, injured or killed during the construction, operation, and/or maintenance of the Project; and there could be a potential for lost habitat as a result of the construction, operation, and maintenance of the wind farm.

Target Species

Ornate box turtle (*Terrapene ornata ornata*) – “(Illinois) State” Threatened

Blanding’s Turtle (*Emydoidea blandingii*) – “ Endangered

Illinois/Yellow Mud Turtle (*Kinosternon flavescens*) – “ Endangered

Western Hognose Snake (*Heterodon nasicus*) – “ Threatened

Regal Fritillary Butterfly (*Speyeria idaliaas*) – “ Threatened

In accordance with *Illinois* Part a.1.C of 17 IAC Section 1080, the following Project-related activities that could potentially result in a take of the five state listed species include:

- Construction of the wind turbines;
- Construction of associated infrastructure including but not limited to roads, staging areas, and an operation and maintenance facility;
- Operation of the turbines over the 25-year life of the Project; and
- Maintenance of the Project (and all associated facilities including, but not limited to, the substation and collection lines).

Construction, operation, and maintenance effects that may constitute a “take” for the Ornate Box Turtle, Yellow Mud Turtle, Blanding’s Turtle, and Plains Hognose Snake include the following:

- Entrapment in excavation; sealing of burrows; occupation of brumation sites; road-kills; alteration and/or fragmentation of habitat; crushing from vehicles; active persecution or collection by construction workers; erecting barriers to their movements; and inaccessibility, less usefulness and/or destruction of aestivation, hibernation, and nesting sites;
- Shadow flicker may interfere with basking, foraging, and/or feeding reducing breeding, reproductive success, fitness, and survival; and predator-evasion responsiveness;
- Turbine-generated noise could mask the species communications leading to a decrease in reproductive success; mask the approach of predators rendering predator detection and evasion more difficult resulting in a decrease to survival; and interfere with use of brumation sites and/or aquatic habitats;
- Turbine vibration may affect species, supply of prey, and successful detection and feeding of prey reducing fitness and reproductive success; winter brumation sites and/or aquatic habitats; and
- Thermal radiation from the underground collection lines could affect gender determination; and winter brumation by preventing species from achieving the body temperature needed for survival.

Operational effects that may constitute a “take” of the Regal Fritillary Butterfly could include shadow flicker interrupting feeding and resting. The potential for adverse effects of shadow flicker on the Regal Fritillary Butterfly has not been reported at this time. While it is possible for this adverse effects to occur, Green River has requested during IDNR consultation even approximate guidance on how this type of investigation could be achieved and has, in conjunction with IDNR statements, concluded that it is difficult, if not impossible to, provide a meaningful scientific study to investigate any possible effects now.

Part B: Based on agency consultation with IDNR, ERM performed a desktop habitat assessment for the proposed Project to identify potential habitat for the five state listed species known to utilize the Project area as indicated by the EcoCat results. Following the desktop study, field verification was performed for potentially suitable habitat that was located in a vicinity of a proposed turbine location. The field verification involved a site visit to the potential habitats, assessment of the vegetative communities present, and assessment of proposed turbine locations with respect to the habitat with the use of GPS data. The desktop habitat assessment with field verification was reviewed by IDNR in February 2012.

The majority of the Project area is under agricultural cultivation, with corn and soy beans planted as the dominant crops. It was determined based on the terrestrial habitat assessment that the potentially suitable habitats for the state species of concern exist as small patches intermixed in agricultural landscape. The majority of the potential habitats for the reptile species, as based on the desktop assessment and field verification, are located in the northwestern and southwestern portion of the Project. Patches of habitat for the target species exist within and around the Sand Prairie Habitat Area (SPHA) and the Foley Sand Prairie Nature Preserve (FSPNP); however neither of these areas will be crossed or altered by the Project and any wind facilities components, if any, would be located adjacent to these areas. Generally, these patches contain vegetation similar to that found in the SPHA and the FSPNP. As based on the IDNR data, protected species have been documented in the SPHA and the FSPNP and the habitat patches surrounding those areas may contain species dispersing from the SPHA and the FSPNP.

The remaining habitats potentially suitable for reptile species are spread out in the eastern portion of the Project area. These habitats generally consist of patches of prairie vegetation, grasses, wetlands, and wooded areas surrounding wetlands. Some of the habitats may be old agricultural fields that are reverting back to a natural state.

Habitats for Regal Fritillary Butterfly are expected to be limited to protected areas, such as the Sand Prairie Habitat Area, due to a restricted presence of high quality habitat that could support the *Viola* species that serve as a larval food source. If the *Viola* species exist outside these protected areas, they are most likely in the prairie habitats identified and delineated as part of the reptile habitat assessment.

Turbines were placed to create and maintain a protective buffer around suitable habitat. Turbine locations that had the potential to be located within suitable habitat were *shifted* to be located a minimum of 100 feet outside of the habitat.

Part C: A pre-construction survey was performed to document the distribution of the four species and to address potential habitat impacts associated with the Project. The amount of habitat that would be covered during the pre-construction survey was approximately 416 acres over the three counties. This acreage is specific to lands within the Project area boundary that Green River has a lease for and excludes the habitat that falls within 0.6 miles of a turbine that is on state-owned lands (e.g., Foley, Sand Prairie or Green River Wildlife Area). The state-owned lands were not evaluated since no infrastructure would be placed within these lands as well as Green River committing to a setback distance of 1/3-mile from the Green River Wildlife Area and the Sand Prairie Habitat Area and 1 mile from the Foley Sand Prairie Nature Preserve.

In addition to the Project area, a control site was evaluated which was approximately 50 acres. The goal of the survey was to assess the relative abundance and condition of the four state-listed reptile species at the Project.

Site evaluations were conducted at specific locations regardless of whether species were actually observed to evaluate the likelihood of target species presence based on species range, habitat quality, ecosystem connectivity, food, shelter, and historic land uses. Although only a shell fragment of an Ornate Box Turtle was observed at only one site, three sites were identified as high quality target species habitat. For the purposes of this Project, those locations may be considered to support target species for purposes of protection and incidental take authorization, thus making additional surveys unnecessary. Furthermore, no infrastructure would be placed within these areas. Prior to and concurrent with surveys, drought conditions and high temperatures may have influenced species movement. To optimize detection of target species, dog tracking surveys and turtle trapping recommended by IDNR was used along with visual encounter and cover object surveys to maximize species detectability. Shell fragments from one Ornate Box Turtle were observed in Lee County during the survey, and habitat for the Ornate Box Turtle, Plains Hognose Snake, and Yellow Mud Turtle was present within portions of the surveyed areas; however, no live animals of these target species were observed.

In accordance with Part a.2.E of 17 IAC Section 1080, Green River will monitor post-construction as described herein and if Green River determines that significant impacts have occurred as a result of the project, then new mitigation measures will be developed in consultation with the IDNR based on the nature and cause of the impacts observed.

In addition to the mitigation measures for the five state listed species, Green River has committed to a setback of 1/3-mile from INAI sites and 1-mile from Foley Sand Prairie Nature Preserve. These setbacks are not specific to any species but are designed to provide protection to the three habitat areas. A 1/3-mile was selected as a reasonable distance from the INAI as a 1/3-mile complies with the state standard/threshold for noise. While this threshold is set for humans and not wildlife, it will likely still be protective of wildlife.

3. The parties to the conservation plan will ensure that adequate funding for the conservation plan will be provided:

In an official correspondence to the Department dated 13 November 2012, Green River verified that adequate funding exists to support and implement all (mitigation) activities described in the official Conservation Plan. This correspondence states that during site development, and continuing through routine monitoring Green River will provide all of the necessary funding for the implementation of the taking minimization measures. Green River is licensed to perform business in the State of Illinois and, as such, has the legal authority to enact all measures in their Conservation Plan and this Authorization document. Green River has complied with all other federal, state, and local regulations that are pertinent to the proposed action. Federal, state, and local permit requirements, ordinances, and approvals regarding siting, construction, and operation of the proposed Project were reviewed. ERM has evaluated the applicability of the environmental local, state, and federal permits and their status for the Project.

4. Based on the best available scientific data, the Department has determined that the taking will *not* reduce the likelihood of the survival or recovery of the endangered species or threatened species in the wild in Illinois, the biotic community of which the species is a part, or the habitat essential to the species' existence in Illinois:

Part A: In accordance with Part a.2.A of 17 IAC Section 1080, the amount of habitat that is considered to be high quality habitat based on the pre-construction survey that can support the four reptile species within the Project Area is approximately 60 acres over the three counties. As pre-construction studies resulted in only fragments of an Ornate Box Turtle's shell and no other listed species detection, insufficient data exists to quantify predicted impacts of the number of individuals of listed species that may be taken. However, the number is expected to be very low based on the limited amount of habitat, few if any observed occurrences, turbine and infrastructure placement to avoid habitat, and lack of available studies at operating wind farms documenting actual impacts.

Please see Appendix A of this document for all specific survey results discussed below.

Based on the studies performed to date and the steps taken to avoid and/or minimize impacts to the five state listed species, Green River believes that the proposed taking will not reduce the likelihood of the survival of the species in the wild within the State of Illinois, the biotic community of which the species is a part, or the habitat essential to the species existence in Illinois (Part 4 of 17 IAC). Some of the proposed mitigation steps, particularly instituting a predator control program and dissemination of information to the public, are intended to increase the chance of survival beyond existing conditions. Much of the landscape where the proposed Project will be located has been dramatically altered by agriculture. The majority of prairie and wetland areas are now actively farmed and provide little habitat for reptiles. The pre-settlement landscape matrix of wetlands and prairie has been fragmented or degraded, and has likely negatively impacted reptiles in the region. As a result, useable habitat is limited in the Project area, and the Project is not expected to adversely affect listed species survival.

Part B: Based on the studies performed to date and the steps taken to avoid and/or minimize impacts to the five state listed species, the IDNR has determined that the proposed taking will more than likely not reduce the likelihood of the survival of the species in the wild within the State of Illinois, the biotic community of which the species is a part, or the habitat essential to the species existence in Illinois. This determination has been based on various factors such as, but not restricted to, Green River pre-construction survey results and the following results/figures obtained from the Illinois Natural Heritage Element Occurrence Database in April, 2013:

NOTE: The *Action Area* for the Conservation Plan and this ITA is defined as the area within the Green River Project area which includes the leased lands, surrounding lands, as well as the Foley Sand Prairie Nature Preserve, Sand Prairie Habitat Area Illinois Natural Areas Inventory (INAI) Site, Green River Prairie & Wetland INAI Site, Dickenson INAI Site, and East Grove INAI Site; and includes the construction, operation, and maintenance of up 81 turbines and their associated access roads and collector lines located within the Action Area.

-Ornate box turtle (*Terrapene ornata ornata*): As of April, 2013, there are 50 EORs (element occurrence records) for this species in the State of Illinois. The Green River project site encompasses portions of Whiteside, Bureau, and Lee Counties. As of April, 2013, the number of EORs for this species within the Action Area is 6. The Green River Wind Power Project therefore represents approximately 12% of all ornate box turtle EORs in the State of Illinois. The most recent EOR for the ornate box turtle in Whiteside is 2011; Bureau = none; Lee = 2011. The major risk at this site for the ornate box turtle is likely not habitat loss, but possible road mortality. This project represents less than 1/5 of the ornate box turtle EORs in the State of Illinois. No direct (financial) mitigation will be sought for this species.

-Blanding's Turtle (*Emydoidea blandingii*): As of April, 2013, there are 144 EORs (element occurrence records) for this species in the State of Illinois. The Green River project site encompasses portions of Whiteside, Bureau, and Lee Counties. As of April, 2013, the number of EORs for this species within the Action Area is 10. The Green River Wind Power Project therefore represents approximately 7% of all Blanding's turtle EORs in the State of Illinois. The most recent EOR for this turtle in Whiteside is 2007; Bureau = 2003; Lee = 2012. The major risk at this site for the Blanding's turtle is likely not habitat loss, but possible road mortality. This project represents less than 1/5 of the Blanding's turtle EORs in the State of Illinois. No direct (financial) mitigation will be sought for this species.

-Illinois/Yellow Mud Turtle (*Kinosternon flavescens*): As of April, 2013, there are 17 EORs (element occurrence records) for this species in the State of Illinois. The Green River project site encompasses portions of Whiteside, Bureau, and Lee Counties. As of April, 2013, the number of EORs for this species within the Action Area is 2. The Green River Wind Power Project therefore represents approximately 12% of all Illinois/Yellow mud turtle EORs in the State of Illinois. The most recent EOR for this turtle in Whiteside is 1989; Bureau = none; Lee = 1989. This project represents less than 1/5 of the Illinois/Yellow mud turtle EORs in the State of Illinois. The major risk at this site for the Mud turtle is possible habitat loss and possible road mortality. No direct (financial) mitigation will be sought for this species.

-Western Hognose Snake (*Heterodon nasicus*): As of April, 2013, there are 25 EORs (element occurrence records) for this species in the State of Illinois. The Green River project site encompasses portions of Whiteside, Bureau, and Lee Counties. As of April, 2013, the number of EORs for this species within the Action Area is 5. The Green River Wind Power Project therefore represents 20% of all western hognose snake EORs in the State of Illinois. The most recent EOR for this snake in Whiteside is 2011; Bureau = 2006; Lee = 2008. This project represents greater than or equal to 1/5 of the Western hognose snake EORs in the State of Illinois. The major risk at this site for the western hognose snake is possible habitat loss and possible road mortality. Therefore, direct (financial) mitigation will be sought for this species – please see the Authorization section of this document for details.

-Regal Fritillary Butterfly (*Speyeria idalia*): As of April, 2013, there are 26 EORs (element occurrence records) for this species in the State of Illinois. The Green River project site encompasses portions of Whiteside, Bureau, and Lee Counties. As of April, 2013, the number of EORs for this species within the Action Area is 3. The Green River Wind Power Project therefore represents approximately 11% of all regal fritillary butterfly EORs in the State of Illinois. The most recent EOR for this butterfly in Whiteside is 2011; Bureau = 2009; Lee = 2011. The major risk at this site for the regal fritillary butterfly is possible habitat loss and likely road mortality via contractor vehicle collisions. There is also the possibility of shadow flicker interrupting feeding and resting. Although the Green River Wind Power Project represents approximately 11% of all regal fritillary butterfly EORs in the State of Illinois (less than 1/5 of the regal fritillary butterfly EORs in the State of Illinois), direct (financial) mitigation will however be sought for this species due to the elevated likelihood of take due to contractor vehicle collisions. Please see the Authorization section of this document for details.

Part C:

Ornate Box Turtle

Below are the following commitments that Green River will make to minimize and/or mitigate potential effects to the Ornate Box Turtle:

- Green River will provide all contractors and employees with training and an environmental information package for this species detailing protocol for how to identify the species and what to do if observed or encountered in the Project area during the Project construction, operation and maintenance.
- Green River has performed a pre-construction survey for this species within the potential terrestrial habitat that was identified within the Project area and provided to IDNR on January 11, 2012 and February 9, 2012. The area that was surveyed included leased lands within the overall Project area boundary and within 0.6 miles of turbines (excluding collector lines or access roads). The surveys were conducted on lands within the Project area boundary that Green River has a lease for and excluded the habitat that fell within 0.6 miles of a turbine that is on state-owned lands (e.g., Foley, Sand Prairie or Green River Wildlife Area). See Appendix A of this document.
- Green River *shall* perform an initial post-construction survey for this species during the most appropriate time of year for surveying this species (per current scientific literature/research). Following construction of all turbines associated with this project [note: for this Authorization, the official “post-construction” period shall commence on the first day following construction of all turbines associated with this project. Please note that “construction” refers solely to the date all turbines are safely ready for operation and not the actual date when turbines are put into service (i.e. blades are spinning and power is generated). A post-construction inventory survey *shall be* conducted, with the objective of replicating the pre-construction survey, except that surveys shall be conducted during the most appropriate time of year for surveying this species. A 14-day post-construction monitoring period will be conducted which would include a combination of visual encounter surveys, cover objects (artificial structures used to attract and optimize the collection of the target species), and mark-recapture methods to gather spatial distribution, home range, and habitat data for each identified target species. The timing of the post-construction survey would coincide with the seasonal period in which initial pre-construction survey was conducted. The first (this initial) post-construction monitoring report shall be sent to the following within 60 days of survey completion:

Illinois Department of Natural Resources
Division of Natural Heritage
Attn: Joseph Kath
One Natural Resources Way
Springfield, Illinois 62702-1271

Illinois Endangered Species Protection Board
Attn: Anne Mankowski
One Natural Resources Way
Springfield, Illinois 62702-1271

Illinois Department of Natural Resources
Natural Heritage Database
Attn: Tara Kieninger
One Natural Resources Way
Springfield, Illinois 62702-1271

- Green River, in coordination with the IDNR, will develop a reasonable predator control program to reduce predation to this species on leased lands within the Project area. The predator control program would be developed to reduce non-listed predator species (e.g. skunks, raccoons, etc.) that could affect this turtle species. The program could include, but not limited to, the following types of controls: education, reduction in the number of predators through management activities, trapping program, etc. This predator control plan of work/document shall be submitted to the IDNR – Attn: Joseph Kath, within one (1) year of the official signature date on this Authorization document. The FINAL/official version of this predator control document shall be signed by both the Department and the applicant (Green River) within one (1) year of the date the first version of the predator control document is received by the Department. If this FINAL document is not signed by both parties within this time frame, the Department reserves the right to immediately cancel/rescind this Incidental Take Authorization, thereby making the applicant (Green River) fully liable/responsible for the take of any listed species within the defined action area, and hence any violation(s) of the Illinois Endangered Species Protection Act.
- Green River will post signage accordingly to help alert motorists to the risk of killing or injuring this species.
- Green River, in coordination with IDNR, will develop an acceptable study approach for post-construction surveys during the most appropriate time of year for surveying this species (per current scientific literature/research) to periodically assess the species populations within the Project area on those lands that are leased. This study approach shall be designed such that post-construction surveys take place in years 5, 10, 15, and 20 of this specific Green River project. For this Authorization, the official “post-construction” period shall commence on the first day following construction of all turbines associated with this project. Please note that “construction” refers solely to the date all turbines are safely ready for operation and not the actual date when turbines are put into service (i.e. blades are spinning and power is generated). This study approach shall be submitted to the IDNR – Attn: Joseph Kath, within the first six (6) months of construction commencing. The FINAL/official version of this study approach shall be signed by both the Department and the applicant (Green River) within one (1) year of the date the first version of this study plan is received by the Department. If this FINAL study plan is not signed by both parties within this time frame, the Department reserves the right to immediately cancel/rescind this Incidental Take Authorization, thereby making the applicant (Green River) fully liable/responsible for the take of any listed species within the defined action area, and hence any violation(s) of the Illinois Endangered Species Protection Act.

Western/Plains Hognose Snake

Below are the following commitments that Green River will make to minimize and/or mitigate potential effects to the Western/Plains Hognose Snake:

- Green River will provide all contractors and employees with training and an environmental information package for this species detailing protocol for how to identify the species and what to do if observed or encountered in the Project area during the Project construction, operation and maintenance.
- Green River has performed a pre-construction survey for this species within the potential terrestrial habitat that was identified within the Project area and provided to IDNR on January 11, 2012 and February 9, 2012. The area that was surveyed included leased lands within the overall Project area boundary and within 0.6 miles of turbines (excluding collector lines or access roads). The surveys were conducted on lands within the Project area boundary that Green River has a lease for and excluded the habitat that fell within 0.6 miles of a turbine that is on state-owned lands (e.g., Foley, Sand Prairie or Green River Wildlife Area).
- Green River *will/shall* perform an initial post-construction survey for this species during the most appropriate time of year for surveying this species (per current scientific literature/research). Following construction of all turbines, a post-construction inventory survey *shall be* conducted, with the objective of replicating the pre-construction survey. A 14-day post-construction monitoring period will be conducted which would include a combination of visual encounter surveys, cover objects (artificial structures used to attract and optimize the collection of the target species), and mark-recapture methods to gather spatial distribution, home range, and habitat data for each identified target species. The timing of the post-construction survey would coincide with the seasonal period in which initial pre-construction survey was conducted, except that surveys shall be conducted during the most appropriate time of year for surveying this species. The first (this initial) post-construction monitoring report shall be sent to the following within 60 days of survey completion:

Illinois Department of Natural Resources
Division of Natural Heritage
Attn: Joseph Kath
One Natural Resources Way
Springfield, Illinois 62702-1271

Illinois Endangered Species Protection Board
Attn: Anne Mankowski
One Natural Resources Way
Springfield, Illinois 62702-1271

Illinois Department of Natural Resources
Natural Heritage Database
Attn: Tara Kieninger
One Natural Resources Way

- Green River, in coordination with the IDNR, will develop a reasonable predator control program to reduce predation to this species within the Project area. The predator control program would be developed to reduce non-listed predator species (e.g. skunks, raccoons, etc.) that could affect this species. The program could include, but not limited to, the following types of controls: education, reduction in the number of predator through management activities, trapping program, etc. This predator control plan of work/document shall be submitted to the IDNR – Attn: Joseph Kath, within one (1) year of the official signature date on this Authorization document. The FINAL/official version of this predator control document shall be signed by both the Department and the applicant (Green River) within one (1) year of the date the first version of the predator control document is received by the Department. If this FINAL document is not signed by both parties within this time frame, the Department reserves the right to immediately cancel/rescind this Incidental Take Authorization, thereby making the applicant (Green River) fully liable/responsible for the take of any listed species within the defined action area, and hence any violation(s) of the Illinois Endangered Species Protection Act.
- Green River will post signage accordingly to help alert motorists to the risk of killing or injuring this species.
- Green River, in coordination with IDNR, will develop an acceptable study approach for post-construction surveys during the most appropriate time of year for surveying this species (per current scientific literature/research) to periodically assess the species populations within the Project area on those lands that are leased. This study approach shall be designed such that post-construction surveys take place in years 5, 10, 15, and 20 of this specific Green River project. For this Authorization, the official “post-construction” period shall commence on the first day following construction of all turbines associated with this project. Please note that “construction” refers solely to the date all turbines are safely ready for operation and not the actual date when turbines are put into service (i.e. blades are spinning and power is generated). This study approach shall be submitted to the IDNR – Attn: Joseph Kath, within the first six (6) months of construction commencing. The FINAL/official version of this study approach shall be signed by both the Department and the applicant (Green River) within one (1) year of the date the first version of this study plan is received by the Department. If this FINAL study plan is not signed by both parties within this time frame, the Department reserves the right to immediately cancel/rescind this Incidental Take Authorization, thereby making the applicant (Green River) fully liable/responsible for the take of any listed species within the defined action area, and hence any violation(s) of the Illinois Endangered Species Protection Act.

Blanding's Turtle

Below are the following commitments that Green River will make to minimize and/or mitigate potential effects to the Blanding's turtle:

- Green River has performed a pre-construction survey for this species within the potential terrestrial habitat that was identified within the Project area and provided to IDNR on January 11, 2012 and February 9, 2012. The areas that were evaluated in Whiteside County included ponds within Section

24 on lands are leased by Green River and/or where permission to access lands is granted. The survey area in Lee County included those ponds that are within 0.6 miles of proposed turbine locations and located on lands that are leased by Green River. No aquatic trapping surveys were planned for Bureau County as these two species were not identified to be a concern by the IDNR in this county.

- Green River *will/shall* perform an initial post-construction survey for this species during the most appropriate time of year for surveying this species (per current scientific literature/research). Following construction of all turbines, a post-construction inventory survey *shall be* conducted, with the objective of replicating the pre-construction survey. A 14-day post-construction monitoring period will be conducted which would include a combination of visual encounter surveys, cover objects (artificial structures used to attract and optimize the collection of the target species), and mark-recapture methods to gather spatial distribution, home range, and habitat data for each identified target species. The timing of the post-construction survey would coincide with the seasonal period in which initial pre-construction survey was conducted except that surveys shall be conducted during the most appropriate time of year for surveying this species. The first (this initial) post-construction monitoring report shall be sent to the following within 60 days of survey completion:

Illinois Department of Natural Resources
Division of Natural Heritage
Attn: Joseph Kath
One Natural Resources Way
Springfield, Illinois 62702-1271

Illinois Endangered Species Protection Board
Attn: Anne Mankowski
One Natural Resources Way
Springfield, Illinois 62702-1271

Illinois Department of Natural Resources
Natural Heritage Database
Attn: Tara Kieninger
One Natural Resources Way
Springfield, Illinois 62702-1271

- Green River will provide all contractors and employees with training and an environmental information package for this species detailing protocol for how to identify the species and what to do if observed or encountered in the Project area during the Project construction, operation and maintenance.
- Green River will screen Whiteside, Bureau, and Lee County construction sites within 0.6 miles of suitable habitat with silt fences to exclude wandering turtles from entering hazardous areas. These perimeter fences will be inspected each morning, along both the interior and exterior, to detect turtles attempting to enter the site or which have been prevented from leaving. Any such observations will be promptly reported to the IDNR.

- Green River, in coordination with the IDNR, will develop a reasonable predator control program to reduce predation to this species within the Project area. The predator control program would be developed to reduce non-listed predator species (e.g. skunks, raccoons, etc.) that could affect this species. The program could include, but not limited to, the following types of controls: education, reduction in the number of predator through management activities, trapping program, etc. This predator control plan of work/document shall be submitted to the IDNR – Attn: Joseph Kath, within one (1) year of the official signature date on this Authorization document. The FINAL/official version of this predator control document shall be signed by both the Department and the applicant (Green River) within one (1) year of the date the first version of the predator control document is received by the Department. If this FINAL document is not signed by both parties within this time frame, the Department reserves the right to immediately cancel/rescind this Incidental Take Authorization, thereby making the applicant (Green River) fully liable/responsible for the take of any listed species within the defined action area, and hence any violation(s) of the Illinois Endangered Species Protection Act.
- Green River will post signage accordingly to help alert motorists to the risk of killing or injuring this species.
- Green River, in coordination with IDNR, will develop an acceptable study approach for post-construction surveys during the most appropriate time of year for surveying this species (per current scientific literature/research) to periodically assess the species populations within the Project area on those lands that are leased. This study approach shall be designed such that post-construction surveys take place in years 5, 10, 15, and 20 of this specific Green River project. For this Authorization, the official “post-construction” period shall commence on the first day following construction of all turbines associated with this project. Please note that “construction” refers solely to the date all turbines are safely ready for operation and not the actual date when turbines are put into service (i.e. blades are spinning and power is generated). This study approach shall be submitted to the IDNR – Attn: Joseph Kath, within the first six (6) months of construction commencing. The FINAL/official version of this study approach shall be signed by both the Department and the applicant (Green River) within one (1) year of the date the first version of this study plan is received by the Department. If this FINAL study plan is not signed by both parties within this time frame, the Department reserves the right to immediately cancel/rescind this Incidental Take Authorization, thereby making the applicant (Green River) fully liable/responsible for the take of any listed species within the defined action area, and hence any violation(s) of the Illinois Endangered Species Protection Act.

Yellow/Illinois Mud Turtle

Below are the following commitments that Green River will make to minimize and/or mitigate potential effects to the Yellow/Illinois Mud turtle:

- Green River has performed a pre-construction survey for this species within the potential terrestrial habitat that was identified within the Project area and provided to IDNR on January 11, 2012 and February 9, 2012. The areas that were evaluated in Whiteside County included ponds within Section

24 on lands are leased by Green River and/or where permission to access lands is granted. The survey areas in Lee County included ponds with past records of this species and that were located on lands that are leased by Green River. No aquatic trapping surveys were planned for Bureau County as these two species were not identified to be a concern by the IDNR for this county (via IDNR-OREP: Consultation Process).

- Green River *will/shall* perform an initial post-construction survey for this species. Following construction of all turbines, a post-construction inventory survey *shall be* conducted, with the objective of replicating the pre-construction survey except that surveys shall be conducted during the most appropriate time of year for surveying this species. A 14-day post-construction monitoring period will be conducted which would include a combination of visual encounter surveys, cover objects (artificial structures used to attract and optimize the collection of the target species), and mark-recapture methods to gather spatial distribution, home range, and habitat data for each identified target species. The timing of the post-construction survey would coincide with the seasonal period in which initial pre-construction survey was conducted except that surveys shall be conducted during the most appropriate time of year for surveying this species. The first (this initial) post-construction monitoring report shall be sent to the following within 60 days of survey completion:

Illinois Department of Natural Resources
Division of Natural Heritage
Attn: Joseph Kath
One Natural Resources Way
Springfield, Illinois 62702-1271

Illinois Endangered Species Protection Board
Attn: Anne Mankowski
One Natural Resources Way
Springfield, Illinois 62702-1271

Illinois Department of Natural Resources
Natural Heritage Database
Attn: Tara Kieninger
One Natural Resources Way
Springfield, Illinois 62702-1271

- Green River will provide all contractors and employees with training and an environmental information package for this species detailing protocol for how to identify the species and what to do if observed or encountered in the Project area during the Project construction, operation and maintenance.
- Green River, in coordination with the IDNR, will develop a reasonable predator control program to reduce predation to this species within the Project area. The predator control program would be developed to reduce non-listed predator species (e.g. skunks, raccoons, etc.) that could affect this species. The program could include, but not limited to, the following types of controls: education, reduction in the number of predator through management activities, trapping program, etc. This predator control plan of work/document shall be submitted to the IDNR – Attn: Joseph Kath, within one

(1) year of the official signature date on this Authorization document. The FINAL/official version of this predator control document shall be signed by both the Department and the applicant (Green River) within one (1) year of the date the first version of the predator control document is received by the Department. If this FINAL document is not signed by both parties within this time frame, the Department reserves the right to immediately cancel/rescind this Incidental Take Authorization, thereby making the applicant (Green River) fully liable/responsible for the take of any listed species within the defined action area, and hence any violation(s) of the Illinois Endangered Species Protection Act.

- Green River performed pre-construction surveys on those lands that they were able to secure land owner permission to determine if water bodies in Section 24 contained Yellow Mud Turtles. Furthermore, Green River surveyed water bodies in Lee County on those lands that will be leased and were located within 0.6 miles of a turbine.
- Green River will post signage accordingly to help alert motorists to the risk of killing or injuring this species.
- Green River, in coordination with IDNR, will develop an acceptable study approach for post-construction surveys during the most appropriate time of year for surveying this species (per current scientific literature/research) to periodically assess the species populations within the Project area on those lands that are leased. This study approach shall be designed such that post-construction surveys take place in years 5, 10, 15, and 20 of this specific Green River project. For this Authorization, the official “post-construction” period shall commence on the first day following construction of all turbines associated with this project. Please note that “construction” refers solely to the date all turbines are safely ready for operation and not the actual date when turbines are put into service (i.e. blades are spinning and power is generated). This study approach shall be submitted to the IDNR – Attn: Joseph Kath, within the first six (6) months of construction commencing. The FINAL/official version of this study approach shall be signed by both the Department and the applicant (Green River) within one (1) year of the date the first version of this study plan is received by the Department. If this FINAL study plan is not signed by both parties within this time frame, the Department reserves the right to immediately cancel/rescind this Incidental Take Authorization, thereby making the applicant (Green River) fully liable/responsible for the take of any listed species within the defined action area, and hence any violation(s) of the Illinois Endangered Species Protection Act.

Regal Fritillary:

Below are the following commitments that Green River will make to minimize and/or mitigate potential effects to the Regal fritillary butterfly:

Green River has committed to the IDNR that if the following recommendations that were presented in the County letters would fulfill the substantive part of the requirements for obtaining an ITA, then Green River would seek an ITA for this species. Below are the following commitments that Green River will make to minimize and/or mitigate potential effects to the Regal Fritillary Butterfly:

- Green River will provide all contractors and employees with training and an environmental information package for this species detailing protocol for how to identify the species and what to do if observed or encountered in the Project area during the Project construction, operation and maintenance.
- Green River will report any sightings found within the Project area and/or any collected road mortality specimens (vehicle-collision mortalities) to the IDNR and applicable County(ies) within 72 hours of the initial sighting. Sightings/collections shall be reported to:

Illinois Department of Natural Resources
 Division of Natural Heritage
 Attn: Joseph Kath
 One Natural Resources Way
 Springfield, Illinois 62702-1271
 Phone: (217)785-8764; Email: Joe.Kath@illinois.gov

Illinois Endangered Species Protection Board
 Attn: Anne Mankowski
 One Natural Resources Way
 Springfield, Illinois 62702-1271
 Email: Anne.Mankowski@illinois.gov

Illinois Department of Natural Resources
 Natural Heritage Database
 Attn: Tara Kieninger
 One Natural Resources Way
 Springfield, Illinois 62702-1271
 Email: Tara.Kieninger@illinois.gov

- Green River will instruct all contractors and employees to use reduced speeds during construction during the season when this species is active (June through August). These reduced speeds shall be employed throughout the entire project site, excluding State Highways 26, 40, and 92. Such speeds shall be implemented immediately by any and all contractors associated with the Green River project and continue through to the end of the official construction period.
- To mitigate for the potential loss associated with contractor vehicle collisions and/or loss of habitat/shadow flicker life-cycle interruptions, Green River will provide suitable mitigation as deemed appropriate by the Illinois Department of Natural Resources. Please see the Authorization Section of this document for endangered species habitat mitigation costs that are the responsibility of Green River as part of this wind power project.

5. Any measures required under Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.40(b)], will be performed:

Additional measures are listed below under "Authorization." This authorization is, by definition, subject to those terms and conditions and official Green River signature(s) on this authorization indicates their commitment to performing those measures.

The proposed Project has the potential to affect the five listed species and/or their habitat beyond the currently existing conditions. Since the majority of the Project area is composed of tilled lands, it is anticipated that there would be little to no impact on the five species and a minor potential for lost habitat for the subject species. These species could be potentially harassed, injured or killed during the construction, operation, and/or maintenance of the Project; and there could be a potential for lost habitat as a result of the construction, operation, and/or maintenance of the Green River wind farm.

6. The public has received notice of the application and has had the opportunity to comment before the Department made any decision regarding the application:

ERM prepared a conservation plan for the Green River Windpower Project (GRWP) as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and GRWP's request for authorization for incidental take of the Ornate Box Turtle [*Terrrapene ornata ornata*], Western/Plains Hognose Snake [*Heterodon nasicus nasicus*], Blanding's Turtle [*Emydoidea blandingii*], Illinois/Yellow Mud Turtle [*Kinosternon flavescens*] and Regal Fritillary Butterfly [*Speyeria idaliaas*] in Whiteside, Bureau, and Lee Counties, Illinois were received by the Illinois Department of Natural Resources (Department) on 13 November 2012. Public notice of GRWP's request for authorization of incidental take of these State listed species was published in the Breeze Courier (Official State newspaper), the Walnut Leader (Bureau County) and the Sauk Valley Gazette (Lee & Whiteside Counties) on November 26, 2012, as well as on December 3, and December 10, 2012. Public comments on GRWP's conservation plan were accepted by the Department until December 25, 2012. During the period of November 26, 2012 through December 25, 2012, one document from Hinshaw and Culbertson, LLP (Rockford, Illinois) representing various citizens from Bureau and Lee Counties was received by the IDNR on 24 December 2012. These comments were forwarded to ERM on 2 January 2013. A formal response to these comments was prepared by ERM and received by the IDNR 14 January 2013. All comments and the subsequent response(s) are kept within the official Incidental Take Authorization files (IDNR Endangered Species Program) housed in the IDNR main facility in Springfield, Illinois

Authorization

It is the determination of the Department that the measures to be implemented by Green River, LLC will adequately minimize and mitigate for the anticipated taking (disturbance/harassment) of a small number of: Regal fritillary butterflies, Blanding's turtles, Ornate box turtles, Illinois mud turtles, and Western hognose snakes due to the construction of the Green River Windpower Project, in Whiteside, Bureau, and Lee Counties, Illinois. Further, it is our opinion that the take (disturbance/harassment) authorized herein would not diminish the likelihood of the survival of either these aforementioned species in the wild within the State of Illinois, the biotic community of which the species is a part, or the habitat essential to the species' existence in Illinois. Pursuant to Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.40(b)], this authorization is issued subject to the following additional terms and conditions:

1. This authorization is effective upon signature of the Department and shall remain in effect for a period of 11 (eleven) years from the date of final signature on this Authorization document, unless terminated pursuant to Section 5.5. of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.80]. Within six months (6) prior to this 11 year deadline, the applicant shall submit a summary report of any and all post-construction surveys conducted to date as described above in Section #4 of this Authorization document. Copies of this summary report shall be sent to:

Illinois Department of Natural Resources
Division of Natural Heritage
Attn: Joseph Kath
One Natural Resources Way
Springfield, Illinois 62702-1271
Phone: (217)785-8764; Email: Joe.Kath@illinois.gov

Illinois Endangered Species Protection Board
Attn: Anne Mankowski
One Natural Resources Way
Springfield, Illinois 62702-1271
Email: Anne.Mankowski@illinois.gov

Illinois Department of Natural Resources
Natural Heritage Database
Attn: Tara Kieninger
One Natural Resources Way
Springfield, Illinois 62702-1271
Email: Tara.Kieninger@illinois.gov

*After the initial 11 year period of this ITA, various Offices within the IDNR will review, and if necessary, revise/amend the initial ITA and then progress towards renewal of the overall ITA for the remainder of the project – i.e. next 14 years. According to Green River, the Project's minimum life span after construction is expected to be about 25 years.

2. The following Daily Monitoring Measures shall be implemented with regards to the Green River Wind Farm Phase I Windpower Project:

Daily monitoring shall consist of routine observations of species and reporting of road kills by Green River and/or construction staff in conjunction with their normal duties. The IDNR shall be notified of any Regal fritillary, Blanding's turtle, Illinois mud turtle, Ornate box turtle, and/or Western hognose snakes observations and/or road kills in the project area within 72 hours of detection. Green River will report any endangered species road kills found within the Project area to the IDNR within 72 hours of the initial sighting. Sightings shall be reported to:

Illinois Department of Natural Resources
Division of Natural Heritage
Attn: Joseph Kath
One Natural Resources Way
Springfield, Illinois 62702-1271
Phone: (217)785-8764; Email: Joe.Kath@illinois.gov

3. With regards to the Green River Wind Farm Phase I Windpower Project in Whiteside, Bureau, and Lee Counties, Illinois: Green River LLC will be responsible for overseeing all minimization, monitoring, and mitigation efforts identified within the 13 November 2012 Conservation Plan and this Final Authorization document.

4. Direct financial mitigation responsibilities of Green River for this Project:

-For the Western Hognose Snake: Using home range information from Johns, 2000; Platt, 1969, the Department has calculated that of the 60 acres deemed to be high quality habitat based on the pre-construction surveys contracted by Green River, that 9 acres of suitable habitat will likely be impacted.

-For the Regal Fritillary Butterfly: Using home range information from Barton, 1993; Barton, 1994, the Department has calculated that of the 60 acres deemed to be high quality habitat based on the pre-construction surveys contracted by Green River, that 26 acres of suitable habitat will likely be impacted.

Accordingly, the number of acres that will likely be impacted [for the above listed species] totals 35 acres. As derived from the State of Illinois' Interagency Wetlands Mitigation Act, a mitigation ratio of 5.5:1 is employed when endangered/threatened species are at risk. Accordingly, it is the responsibility of the applicant (Green River) to provide the Department with a mitigation -compensation cost equal to the value of approximately: 192.5 acres (35 x 5.5) of land in the local project area. According to April 2013 calculations from IDNR's Office of Realty and Environmental Planning, land values in Bureau, Lee, and Whiteside Counties range from a low of \$4,025/acre to a high of \$7,800/acre. Given the condition and proximity of the impact zone, as well as assigned post-construction monitoring responsibilities of Green River for this project, a value of \$4,025/acre will be employed in this Incidental Take Authorization for mitigation purposes.

Accordingly, this yields a total mitigation amount of:

-The total project area encompasses: 57,600 acres

-The number of mitigation acres due for this project: 192.5 acres

-Of the 60 acres identified as high quality habitat for the species above, we will assume an average wildlife occupancy rate of: 0.20 or 20% of this habitat actually being utilized by the subject species (Gould et. al., 2011; Schowalter, 2011).

-192.5 mitigation acres x 0.20 occupancy rate = 38.5 assigned mitigation acres

-38.5 assigned mitigation acres x \$4,025/acre = \$154,962.50 due to the Department from Green River

*Therefore, the applicant (Green River) shall provide the Department with a check made out to the Illinois Wildlife Preservation Fund in the amount of: \$154,962.50. This check shall be received prior to construction. If construction has not started within two (2) years from the execution of this contract, the applicant (Green River) will be required by the Department to submit an updated Conservation Plan and must formally participate in the entire Incidental Take Authorization process whereby a new ITA agreement (and subsequent mitigation measures) will be developed and signed by both the applicant and the Department before any construction begins. Any and all mitigation funds will be used solely for management and recovery actions of the Western Hognose Snake and Regal Fritillary Butterfly in Illinois.

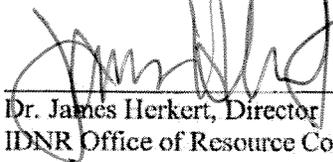
5. The effective period of this authorization may be altered by mutual agreement between Green River, LLC and the Department.

6. This authorization may be revoked pursuant to Section 5.5 of the Act if the Department finds that Green River, LLC has failed to comply with any of these terms and conditions or has been responsible for the take of any State Listed Species beyond that which is incidental to the construction of the Green River Wind Farm Phase I Windpower Project in Whiteside, Bureau, and Lee Counties, Illinois.

7. Please note that the conditions of this agreement do not apply to any lands protected under the Illinois Natural Areas Preservation Act (525 ILCS 30/) (INAPA). Any adverse impacts to said protected lands and the species therein is considered a violation of the INAPA and grounds for referral to the Office of the Attorney General or State's Attorney.

8. The Green River, LLC official(s) identified below is/are authorized to execute this agreement. Execution by an official from any one of these organizations indicates acceptance of all terms and conditions described in this document.

For the IL. Department of Natural Resources



Dr. James Herkert, Director
IDNR Office of Resource Conservation

Date Signed

8/6/13

Green River Wind Farm Phase I, LLC
For Green River, LLC



Signature

Vince Green - Project Manager
Please print name and official title

7/1/2013

Date Signed

APPENDIX A: Summary of Report submitted to IDNR on 13 November 2012

*NOTE: This Appendix A does not include any photographs, maps, figures, references, or additional Appendices. All of these items are on file with the IDNR-Endangered Species Program in Springfield, Illinois.

Executive Summary

In 2012, Green River Wind Farm Phase I LLC began an endeavor to document the distribution of rare reptiles and address potential habitat impacts for several state-listed reptile species associated with the proposed wind farm site within Whiteside, Bureau, and Lee Counties. The survey was conducted at the recommendation of the Illinois Department of Natural Resources (IDNR), Division of Ecosystems and Environment.

Four reptile species were targeted as part of this survey. The Ornate Box Turtle (*Terrapene ornata*) and Plains Hog-nose Snake (*Heterodon nasicus*) are threatened and Yellow Mud Turtle (*Kinosternon flavescens*) and Blanding's Turtle (*Emydoidea blandingii*) are endangered in Illinois. These species rely on sand prairie, wetlands, and other water bodies, and historical observations of all species are known from within the project area or nearby.

Herpetological Resource and Management (HRM), a privately owned environmental firm specializing in the inventory and assessment of wildlife with expertise in amphibian and reptile surveys, was contracted by Environmental Resources Management (ERM) to assess the survey area for the presence and distribution of target species. The goal of the project was to assess the relative abundance and condition of state-listed reptile species at the Green River Wind Farm Phase I project site.

Atypical weather conditions at the time of survey likely affected survey results and species detection; however, surveyed sites were able to be assessed for their ability to provide target species habitat. Site evaluations were conducted at each location regardless of species detected to evaluate the likelihood of target species presence based on species range, habitat quality, ecosystem connectivity, food, shelter, and historic land uses. Although a target species was observed at only one site, three sites were identified as high quality target species habitat. For the purposes of this project, those locations may be considered to support target species. If no work is proposed for this area, then risk to target species would be minimized and additional surveys likely would not be necessary. Prior to and concurrent with surveys, drought conditions and high temperatures may have influenced species movement. To optimize detection of target species, dog tracking surveys and turtle trapping recommended by the IDNR was used along with visual encounter and cover object surveys to maximize species detectability. Shell fragments from one Ornate Box Turtle were observed in Lee County during the survey, and habitat for Ornate Box Turtle, Plains Hog-nose Snake, and Yellow Mud Turtle was present within portions of the surveyed areas; however, no live animals of these target species were observed.

Data collected on these species during the pre-construction survey can be used to 1) assess species' populations and habitats (i.e., healthy, degraded, impaired), 2) identify areas where protection or incidental take authorization for state-listed reptiles will be necessary during construction and wind farm operation, and 3) help identify management targets for state-listed reptile populations post-construction and concurrent with wind farm operation

to minimize negative effects and take. The objective was to inventory and assess relative abundance and distribution of Ornate Box Turtle, Plains Hog-nose Snake, Yellow Mud Turtle, and Blanding's Turtle. The study assessed the presence of listed reptiles, documented the distribution of target species, and noted potential for species presence within survey areas where target species were not observed within the Green River Wind Farm Phase I project area. Although atypical weather conditions were not optimal for surveying for reptiles, HRM was able to evaluate the survey sites within the survey area for their potential as habitat for target species and the likelihood of species presence. The data collected will help establish baseline data for expected or typical herpetofaunal diversity for the site.

Introduction

The Ornate Box Turtle (*Terrapene ornata*) and Plains Hog-nose Snake (*Heterodon nasicus*) are listed as threatened, and Yellow Mud Turtle (*Kinosternon flavescens*) and Blanding's Turtle (*Emydoidea blandingii*) are considered endangered in Illinois, and therefore are of conservation concern to the State as identified in the letters dated March 27, 2012, April 4, 2012, and June 20, 2012 from the Illinois Department of Natural Resources (IDNR) (Shank 2012a, b, c). Presence, distribution, and relative abundance of these reptile species can be important tools in identifying and implementing a successful management plan that minimizes potential negative effects from the proposed wind energy farm.

In 2012, Herpetological Resource and Management, LLC (HRM) was contracted by Environmental Resources Management (ERM) to conduct surveys for rare reptiles within Whiteside, Bureau, and Lee Counties within an area proposed for the placement of a wind farm. The objective of this study was to provide an assessment of species presence to better determine potential habitat impacts for target species within the survey area (Maps 1 and 2). The results are intended to help address Illinois Department of Natural Resources (IDNR) concerns of potential impacts.

Surveys were conducted from July 9 to July 13, 2012. Properties surveyed were private properties with leased access to Mainstream Renewable Power (Mainstream) in Whiteside, Bureau, and Lee Counties within 0.6 miles of proposed turbine locations per IDNR recommendations (Shank 2012a, b, c) with the exception of one of the properties in Whiteside County (Section 24). The property in Section 24 in Whiteside County is not a leased property, and access was granted by the landowner to evaluate the potential for

Yellow Mud Turtle and Blanding's Turtle. Access to another property in Section 24 was sought but access was not obtained; therefore no evaluation for Yellow Mud Turtle and Blanding's Turtle was able to be conducted at this location. Habitats surveyed included sandy prairie, mesic prairie, old agricultural field, woodlots, marsh, drainage channel, ponds, and vernal pools. Sampling methods included visual encounter surveys, dogs trained in turtle detection, trapping, and inspection of cover objects for presence of target species.

Site Locations and Descriptions

The survey area consisted of private properties with leased access to Mainstream within Whiteside, Bureau, and Lee Counties in Illinois (Map 1). Survey sites were primarily chosen by ERM staff based on a habitat assessment that was submitted and reviewed by IDNR (IDNR 2011a,b,c) in February 2012 with some sites field located by HRM. A Work Plan for Listed Reptilian Inventory Survey was developed and submitted to IDNR on June 21, 2012

and was reviewed and approved by IDNR on July 2, 2012 (Koster and Heater 2012). Sites in Whiteside County were selected based on the letter from the IDNR, and these locations required landowner permission as these lands are not leased for the Project. Furthermore, selection for sites in Bureau and Lee County was based on the letters from IDNR, habitat type, and the potential for listed reptile species to be present based on known adjacent element occurrences or habitat features. All areas were evaluated based on the IDNR recommendations as identified in the letters dated March 27, 2012, April 4, 2012, and June 20, 2012 from the IDNR (Shank 2012a,b,c). All surveyed sites are described below.

Ornate Box Turtle 1 (OBT/PHS 1) – This site consists of a moderate quality prairie habitat adjacent to active agricultural fields, residential land use, and train tracks (Photos 1-4). The vegetation at this site is dominated by smooth brome grass (*Bromus* spp.). Some prairie associated plants were also present. Along the western slope of the main section vegetation is more prairie-like and lacks brome. Historically (1998), this site was primarily agricultural fields (Google Earth 2012a,j).

OBT/PHS 2 – This site is mainly old field with a few trees, sandy soil, and portions of sparse vegetation (Photos 5-7). Over the past eight years the tree cover on this site has increased (Google Earth 2012d,j).

OBT/PHS 3 – This site is primarily old field surrounded by agricultural fields, old field with some prairie plants visible, and single family residential (Photos 8 and 9). A few species of prairie plants are growing in the sandy soil. There is no evidence of farming on this site for at least the past 14 years (Google Earth 2012a,j).

OBT/PHS 4 – This site is an old agricultural field surrounded by an organic agriculture farm (Photos 10-12). A hedgerow of trees separates corn fields from fallow agricultural fields vegetated in common agronomic weed species. Portions of the old field are higher quality and contain little blue stem (*Schizachyrium scoparium*). This site was changed from non-contour plowing to contour plowing sometime after April 1999 (Google Earth 2012c,j).

OBT/PHS 5 – This site is surrounded by active agricultural lands and residential areas, and a road is adjacent to the site (Photos 13-17). This site historically (1998) had relatively small areas of wildlife habitat present amongst active agricultural fields (Google Earth 2012a,j). Based on expert opinion, relatively recent restoration efforts have transformed this old field into a high quality shortgrass sand prairie that covers roughly two-thirds of the site. In the restored prairie area there is some evidence of grassland agronomic weeds, though the highest quality prairie features are in the western half of the site. The central portion of the assessment area is somewhat forested and old farm equipment and debris are present. Mixed trees including mulberry (*Morus* sp.), cherry (*Prunus* sp.), and conifers cover a majority of the eastern third of this site. Along the road and east of the tree farm vegetation is sparser and the soil is very sandy. Old barn planks and farm debris are present.

OBT/PHS 6 – This site has been old field since at least 1998 (Google Earth 2012a,i). The vegetation at this site is dense and dominated by smooth brome grass (Photos 18-20). This site is bordered by agricultural fields and a single family home. A woodlot is present to the northeast and marsh is present to the south just past a narrow swath of active agriculture. No water was present in the wetland at time of survey.

OBT/PHS 7 – This site is mainly composed of old field and moderate quality prairie with open sandy patches interspersed throughout these habitats (Photos 21-26). The west side of the property is planted in rows of young oak trees. The old field has abundant wildflowers, and trees line the south side of the site. A drainage pond in the southwest corner of the site likely holds water year-round, and water was present during drought conditions at the time of survey (Photo 24). The site is bordered by agricultural fields, mature woods, old field, and single family residential. Across the street to the north a large contiguous patch of habitat conducive to supporting target species is present. This site is a half mile south of Foley Sand Prairie Nature Preserve.

OBT/PHS 8 – This site is primarily old field composed of a mix of dense agronomic weeds and some prairie plants (Photos 27-32). The vegetation further from the road has a greater proportion of prairie plants and is more identifiable as a prairie vegetation type. All vegetation is very thick; however, there are also a few sandy areas. A large depression on this site holds water year-round and other smaller depressions on this site likely hold water seasonally. The smaller depressions were likely dry as a result of drought weather conditions at the time of the survey. These depressions are potential breeding locations for various amphibians including Fowler's (Bufo fowleri) and American Toads (Bufo americanus). Reed canarygrass (Phalaris arundinacea) occurs along the perimeter of the depressions. This site is adjacent to agricultural fields, major roadways, and power lines. Between March 1999 and April 2005 this site was taken out of agriculture (Google Earth 2012a,b).

OBT/PHS 9 – This site is primarily old field with a seasonally inundated cattail (Typha spp.) marsh in the center which was dry at the time of survey. Thistle and agronomic weeds are abundant in the field (Photos 33-35). Adjacent to this site is agriculture to the north and south, a train track to the west, and a road to the east. The west side of this site was likely taken out of agriculture between 2007 and 2009 (Google Earth 2012h,i).

OBT/PHS 10 – This site is primarily old field with sparse tree cover. Herbaceous vegetation was predominately brome mixed with various prairie grasses, and mature mulberry and cherry trees are distributed throughout the field (Photos 36-39). This site is adjacent to agricultural fields and an old homestead, and debris that could support target snakes is present.

OBT/PHS 11 – This site is primarily old field with a few trees (Photos 40 and 41). Adjacent to this site is agriculture, single family residential, and road. Brome dominates the herbaceous vegetation, and young mulberry and cherry trees are present. The south end of the property is mowed.

OBT/PHS 12 – This site is an old field with portions of dense agronomic weeds, little to no topsoil, and sandy soil (Photos 42-45). A few undisturbed areas of this site have prairie vegetation. The site is bordered to the west by a road and surrounded by active agriculture. This site is located less than 0.25mi south of the Foley Sand Prairie Nature Preserve.

OBT/PHS 13 – This site is primarily old field with relatively thin vegetation compared to other sites (Photos 46-48). Sandy slopes are present. The site appears to have been mowed recently at time of survey. Large areas of this site were planted in hay and recently harvested at time of survey. This site is surrounded by active agricultural fields and road.

OBT/PHS 14 – This site is old field dominated by brome and portions have dense agronomic weeds (Photos 49-52). This site is surrounded by agricultural fields and low quality second growth forest. A ravine and floodplain habitat is present toward the center of the property on the west half and most of the eastern half of the site. Between 2007 and 2009 this site was taken out of agricultural production (Google Earth 2012h,i).

Blanding's Turtle 1 (BT 1) – Part of this site has cattail and other wetland associated plants (Photo 53). At the time of survey the wetland was dry. The property is bordered by old field with a moderate diversity of prairie plants. As recently as 2006 this site was in agricultural production (Google Earth 2012g).

BT 2 – This site is a seasonal wetland with an open water center surrounded by active agriculture and old field (Photo 54). During the assessment this wetland was dry and being invaded by upland agronomic vegetation. Sometime after 2005 this site was removed from agricultural production (Google Earth 2012f).

BT 3 – This site is a seasonal wetland within a small woodlot (Photo 55). The site appears to typically have an inundated open water center; however, the wetland was dry at the time of survey. Tall dense vegetation has taken over the center of the wetland indicating this site has been dry for some time. There is a small band of old field surrounding the woodlot. The site is bordered on all sides by active agricultural fields.

BT 4 – This site is a seasonal wetland that is surrounded by agricultural fields (Photo 56). The site was dry during this survey, and appears to have been without water for a significant period of time. Few wetland associated plants remained during the assessment, while upland vegetation has become dominant at this site. Between 2007 and 2009 this site was taken out of agricultural production (Google Earth 2012h,i).

BT 5 – This site contains a pond within a small wood lot bordered by a narrow band of old field (Photos 57-61). The woodlot is of relatively low quality and is dominated by invasive shrubs. The pond has few aquatic plants and is primarily open water except for small areas of dense algae. The site is bordered by agriculture outside the band of old field.

BT 6 – This site is composed of a pond within a small woodlot surrounded by agricultural fields (Photos 62-64). The woodlot is of relatively low quality and is dominated by invasive shrubs. The pond appears to have been much larger in the recent past. Exposed banks of the pond were three feet or greater below the watermarks and the dock. During the survey, the remaining water in the pond was completely covered by a mat of duck weed and algae.

BT 7 – This site is a seasonal wetland that at the time of survey was partly vegetated with cattails and other wetland associated herbaceous vegetation (Photo 65). At the time of survey, this site appeared to have been dry for an extended period of time and was being colonized by upland vegetation. This site is surrounded by agricultural fields. Between 2006 and 2007 this site was taken out of agricultural production (Google Earth 2012g,h).

BT 8 - Between 1999 and 2005 this site was taken out of agricultural production, and then between 2011 and 2012 this site was returned to agricultural production (Photo 66; Google Earth 2012c,e,k). At the time of survey the site was active corn field.

Yellow Mud Turtle 1 (YM 1) – This site is a wooded depressional wetland with portions of emergent marsh (Photos 67 and 68). Vegetation on site includes raspberry (*Rubus* sp.), various woody plants, mature trees, and dry wetland vegetation including cattails. This site is adjacent to an agricultural ditch and active farm fields.

YM 2 – This site is an agricultural drainage ditch. The water was approximately one foot in depth and covered by duckweed at time of survey (Photos 69-73). Dense herbaceous vegetation lines the steep slopes of the ditch, and trees are present at the top of slope. This site is bordered by agricultural fields and YM1.

YM 3/BT 9 – This site is open prairie with a small strip of agricultural field separating prairie areas (Photos 74 and 75). Wetland vegetation in and surrounding a seasonal pond is present. This pond was dry at the time of survey.

Control Site: Nachusa Grasslands – This control site is located about 20 miles north east of the survey site. Located between Oregon, Dixon, and Franklin Grove, IL, this 3,000 acre site is owned and managed by the Nature Conservancy. This site is dominated by old field, restored prairie and remnant prairie, and efforts are underway to remove non-native plants (Photo 76-81). Portions are dominated by brome, although less dense than observed in most areas within the survey area. At sandy locations vegetation is sparser than most locations within the survey area.

Methods

Herpetofaunal Surveys

Multiple techniques were utilized to maximize target species detection. Use of trained dogs to detect Ornate Box Turtle and Plains Hognose Snake and turtle traps to detect Blanding's Turtle and Yellow Mud Turtle were recommended by IDNR (IDNR 2012a,b,c). In addition to this recommended methodology, visual encounter and cover object surveys (when appropriate) were used to increase detection probability of target species. These techniques were conducted to determine species presence, spatial distribution, and

help estimate the relative abundance of these rare reptiles. Herpetofaunal surveys were conducted daily from July 9-13, 2012. Intensive surveys were conducted within the survey

area by multiple teams of no less than two surveyors trained in identification of target species. Surveys for Ornate Box Turtle and Plains Hog-nose Snake were conducted in upland habitats utilizing visual encounter surveys (Photo 82), opportunistic cover object surveys (Photo 83), and trained dogs skilled at detecting turtles (Photos 84 and 85). Blanding's and Yellow Mud Turtle surveys included use of visual encounter surveys and turtle traps baited with sardines (Photo 86).

No voucher specimens were collected, but photographs were taken when possible. All survey activities were in accordance with HRM's Scientific Collecting and Endangered or Threatened Species permits issued by the State of Illinois (See Appendix). Incidental observations of non-target species were also documented.

Terrestrial Habitats

Time-constrained visual encounter surveys and ground searches were used to inventory all terrestrial habitats (prairie, old agricultural field, woodlots) for evidence of target reptiles by survey teams. Ground searches consisted of visual inspection of potential basking and nesting areas as well as turning and lifting natural and artificial cover objects (logs, boards, debris, etc.). Reptiles discovered during ground searches were identified and locations recorded.

The team of dogs traveled within 50-100 feet of their handler and tracked scents to vector in on turtles and snakes. The dogs were able to detect the scent of turtles that had moved within approximately the past 48 hours, and then locate the turtle on the surface or below the ground. The dogs were trained to gently pick up turtles in their jaws, carry the turtles to their handler, and release the turtle in the handler's hands. When tracking a snake, the dogs circle the snake and bark in a distinct way to alert the handler to the presence of the snake, but the dogs do not pick up the snake. Nachusa Grasslands was used as a control to demonstrate the turtle-tracking dogs' ability to locate Ornate Box Turtle. Due to the hot dry conditions at the time of survey it was important to determine the dogs' ability to detect under these conditions. The site was selected because the dogs had been able to detect Ornate Box Turtle at Nachusa a few weeks prior to the Green River Wind Farm Phase I surveys.

Aquatic Habitats

Aquatic searches involved examining each type of aquatic habitat (marsh, drainage channel, ponds, and vernal pools). Aquatic habitats were searched for all life stages of reptiles. Sampling for these species involved capturing individuals by hand or dip net, trapping using baited traps, and observation through binoculars.

Data Collection

Locations of observed target species were recorded using Trimble® Juno SB GPS units, mapped using ArcMap 9.3.1®, and organized according to site. Additional herpetofauna species observed in the field were recorded to the species level.

Results and Discussion

During the July 2012 survey of sites associated with the Green River Wind Farm Phase I project (Maps 1 and 2) no live target species were observed, and only shell fragments of an Ornate Box Turtle were observed. This observation was at OBT/PHS 12 in an area of suitable Ornate Box Turtle habitat (Map 3, Photo 45). Although Ornate Box Turtle fragments were found here, it is likely that this turtle also utilized habitat across the street to the west. Foley Sand Prairie Nature Preserve is less than 0.25mi west of this site, which is within the range of movement for Ornate Box Turtles (up to 1.03mi, Metcalf and Metcalf 1970). The proximity of these two areas increases potential for connectivity within the local Ornate Box Turtle population, which could help sustain population numbers. Shell fragments were collected under HRM's Illinois Threatened and Endangered Species Permit. Live Ornate Box Turtle were not found by the turtle-tracking dogs at survey sites. Initial sampling protocol stated that any located target species would be fitted with a passive integrated transponding (PIT) Tag and released for subsequent mark recapture activities. Since no live target species were observed, none were fitted with PIT Tags.

Survey areas identified as containing high quality prairie habitat for Ornate Box Turtle and Plains Hog-nose Snake are OBT/PHS 5, OBT/PHS 7, and OBT/PHS 12 (Map

1). OBT/PHS 7 is a half mile south of OBT/PHS 12, the site where Box Turtle was found, and Foley Sand Prairie Nature Preserve. OBT/PHS 7 is also high quality habitat for Yellow Mud Turtle and Blanding's Turtle. For purposes of protection or incidental take during wind farm construction and operation, these sites may be considered as supporting target species based on available habitat. To ensure presence of target species, additional investigation during cooler and wetter weather conditions could be conducted. However, avoidance of sites containing high quality habitat should negate the need for additional surveys, provided no work or impacts are conducted at these locations. Avoidance would likely minimize impacts to target species. Several sites of low quality Ornate Box Turtle and Plains Hog-nose Snake habitat (OBT/PHS 1, OBT/PHS 6, OBT/PHS8 - OBT/PHS 11, OBT/PHS 13, and OBT/PHS 14) were once likely suitable habitat for these species; however, they are now established in thick agronomic weeds and/or invasive plant species such as reed canarygrass or smooth brome grass. All other sites were not identified as being suitable habitat for these target species.

Within Ornate Box Turtle and Plains Hog-nose Snake survey sites, other non-target species (i.e., not threatened or endangered) observed included Eastern Garter Snake (*Thamnophis sirtalis*; OBT/PHS 8, OBT/PHS 10), Midland Painted Turtle (*Chrysemys picta marginata*) and Western Painted Turtle (*Chrysemys picta belli*) intergrades (OBT/PHS 7), Midland Brown Snake (*Storeria dekayi wrightorum*, OBT/PHS 4), Western Fox Snake (*Pantherophis vulpinus*; OBT/PHS 7), and Six-lined Racerunner (*Aspidozelis sexlineata*; OBT/PHS 5, OBT/PHS 13). Rodents that could serve as food for Plains Hog-nose Snake were observed at OBT/PHS 5, OBT/PHS 7, OBT/PHS 8, OBT/PHS 12, and OBT/PHS 13. Amphibians that are potential food sources for turtles and Plains Hog-nose Snake were

present at OBT/PHS 7 (Bullfrogs, *Rana catesbeiana*; Green Frogs, *Rana clamitans*) and OBT/PHS 6 and OBT/PHS 12 (American Toad). Grasshoppers and/or crickets that could serve as a food source were observed at OBT/PHS 2, OBT/PHS 5, and OBT/PHS 8. A small mammal skull was observed at OBT/PHS 14; however, this animal likely does not represent a food source for target species. Based on the available habitat and the ability of both species to occupy relatively small home ranges and survive in somewhat degraded habitats, it is likely that Ornate Box Turtle and Plains Hog-nose Snake may be present within a few sites. Additional surveys are warranted for a subset of the previously surveyed locations to rule out species presence. Alternatively, these sites may be considered to support target species, which would eliminate the need for additional surveys provided no work or impacts are conducted at these locations.

Sites selected for potential of Yellow Mud Turtle habitat, YM 1, YM 2, and YM 3/BT 9, were identified as low quality habitat (Map 2). This species tends to be less active in summer, and in cases of extreme heat or dry conditions will estivate underground making detection more difficult. Yellow Mud Turtle has been historically observed in one location northeast of the survey area at least 5 miles from the nearest Yellow Mud Turtle survey site. This distance and hazards (roads and agricultural fields) between potential Yellow Mud Turtle habitat areas and observed populations decrease the likelihood that Yellow Mud Turtle would be able to transverse the landscape and survive at YM 1, YM2, or YM 3/BT 9. There have been no past known recording for YM 1 and YM 2 according to the Natural Heritage data provided. However, non-target species that could serve as a food source for turtles were observed. At YM 2, tadpoles and juveniles of both Bullfrog and Green Frog, Brown Bullhead (*Ameiurus nebulosus*), Pumpkinseed Sunfish (*Lepomis gibbosus*), White River

Crayfish (*Procambarus acutus*), Grass Pickerel (*Esox americanus vermiculatus*), Bluegill Sunfish (*Lepomis macrochirus*), Common Shiner (*Luxilus cornutus*), and other minnows were observed. At YM 3/BT 9, the presence of adult and juvenile Green Frog and Bullfrog indicates that tadpoles may be present seasonally, and Brown Bullhead and Bluegill Sunfish were observed. Based on the surrounding land use, available habitat, and landscape connectivity, it is unlikely that Yellow Mud Turtle is present within the sites surveyed with the exception of OBT/PHS 7.

Blanding's Turtles were not observed within the survey area. Historical records indicate observations of Blanding's Turtle adjacent to BT 1 and northeast of the project boundary. At sites near these historical observations there may be an increased likelihood for Blanding's Turtle to occur if turtles can migrate to a site and if suitable Blanding's Turtle habitat exists at a site. BT 2, BT3, and BT 4 are the survey sites closest to historical records of Blanding's Turtles within these counties. No survey area was identified as containing high quality Blanding's Turtle habitat, and survey area BT 8 was identified as low quality Blanding's Turtle habitat (Map 2). BT 1 though BT 7 are seasonally inundated, and since Blanding's Turtle populations rely on a network of wetland and upland areas these sites could provide habitat for local populations of Blanding's Turtle if the landscape within this area was less fragmented. At sites surveyed for Blanding's Turtle, non-target species that could serve as a food source for turtles were observed. At BT 5, Bullfrog, Green Frog, American Toad, and various fish species were observed. In addition, Midland-Western Painted Turtle intergrades, which typically cohabitate with Blanding's Turtles, were observed. At BT 6, Painted Turtle, Bullfrogs, Green Frog tadpoles, and Yellow Bullhead (*Ameiurus natalis*) were observed. Although Blanding's Turtle are known for their ability to travel long

distances, based on the surrounding land use (agriculture fields and roads) and lack of landscape connectivity, it is likely that Blanding's Turtle is not present within the targeted sites surveyed for this species. Based on the comprehensive assessment HRM has conducted, species natural history, and known historic locations, the most likely location to support this species was OBT/PHS 7.

At the control site, the turtle-tracking dogs located an Ornate Box Turtle, and retrieved it as described in the methods. Several Ornate Box Turtles at this site were fitted with radio transmitters as part of another study, and their movements were known. The dogs were able to detect one turtle that had moved within the past 48 hours and turtles that were in a form, if the dogs were led to that form. Dogs were not successful in detecting turtles that had not moved for two weeks. At Nachusa, likelihood of detection was high since presence of Ornate Box Turtle was known. Based on our observations, the ability of the turtle-tracking dogs to locate sedentary turtles is unknown.

Much of the landscape where the proposed Green River Wind Farm Phase I will be located has been dramatically altered by agriculture. The majority of prairie and wetland areas are now actively farmed and provide little habitat for reptiles. The pre-settlement landscape matrix of wetlands and prairie has been fragmented or degraded which likely negatively impacted reptiles in the region.

Lower than normal detection of common species as well as target species may be a result of the drought conditions and hot temperatures that discouraged turtle movement (Tables 1 and 2). The hot, dry conditions likely reduced Ornate Box Turtle movements and thus lowered detectability by the survey team and turtle tracking dogs. Without recent turtle movements to create a trail of scent for the dogs to track, the ability of the dogs to detect Ornate Box Turtle is reduced. The hot, dry weather also likely reduced movements and thus detectability of the other target species, as reptile activity and observation is largely dependent on temperature and water availability.

Conclusions

Although Ornate Box Turtle was the only target species observed, several of the surveyed sites may provide suitable habitat for target species. The low number of overall (target and non-threatened species) herpetofaunal observations is likely due in part to decreased detection probability resulting from drought conditions and atypically high temperatures prior to and during the survey (Tables 1 and 2). However, target species were observed at one site, and three sites were identified as high quality target species habitat. These sites may be considered as supporting target species for purposes of protection and incidental take authorization during wind farm construction and operation, thus making additional surveys unnecessary.

Typically, the methods employed would result in higher detection of both target and non-target herpetofauna species than was observed. Surveys incorporating use of dogs was shown to be effective when dogs were directly over forms or if a turtle had recently moved. Based on data from researchers at a nearby Ornate Box Turtle survey area, at the time of survey, this species had been relatively inactive for about two weeks. When dogs were used to survey areas where previously they had high success in detection, at the time of the survey, they were unable to locate scents of turtles to track. It is the opinion of HRM that the dogs are an effective means to sample for turtles, but weather conditions likely influenced their ability and efficacy to detect turtles. Regardless, areas with potential high quality habitat for target species (OBT/PHS 5, OBT/PHS 7, OBT/PHS 12) were identified during our surveys. Avoidance of these sites would likely negate the need for additional surveys, given that direct on-site construction impacts would be eliminated and would thus lessen the risk to target species.

END