Detroit Edison

Fermi 3 Operational Conservation and Monitoring Plan Eastern Fox Snake (*Elaphe gloydi*)

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The eastern fox snake (*Elaphe gloydi*) is a threatened species in Michigan with four known isolated populations remaining in Southeastern Michigan. Two of these populations occur in Monroe County along the shores of Lake Erie (Reference 5.1). Detroit Edison's Fermi property has a population of fox snakes. Fermi personnel have an elevated awareness of wildlife habitat and associated wildlife populations as a result of the site's Wildlife Habitat Certification (certified by the Wildlife Habitat Council), functional ISO 14001 certified Environmental Management System and a cooperative agreement with the US Fish and Wildlife Service to manage on-site habitats as part of the Detroit River International Wildlife Refuge. The Habitat and Species Conservation Plan-Eastern Fox Snake (Reference 5.6), discusses activities occurring on the Fermi power plant site related to the construction of the Fermi 3 Power Plant. It is the intent of the following document to describe measures to be implemented in order to create further employee awareness, implement monitoring, and decrease potential impacts on the population of eastern fox snakes and their habitat that may be caused by activities associated with Fermi 3 operation, i.e. post Fermi 3 construction.

1.1 Overview

The use of "fox snake" and "snake" refer to the eastern fox snake in this document. Communicating the behavior, appearance and preferred habitat of the fox snake will promote greater awareness among site employees. Activities performed throughout Fermi 3 operation, after Fermi 3 construction, are not expected to have major impacts on the population or habitat of eastern fox snakes on the Fermi site. After construction of Fermi 3, no other major construction projects are planned at this time, any potential future major construction activities on the site would be regulated by permit. The potential for lesser impacts may exist throughout plant operation, and it is the intent of this document to lessen those potential impacts even further, through establishment of monitoring programs, work processes, site employee awareness and training programs, and regular plan assessments and monitoring. Through this plan, site personnel will be made aware that some activities, and the locations in which they are performed, may have impacts on wildlife in general and the eastern fox snake in particular. For work which has the potential for this type of impact, awareness about wildlife and its habitat will be discussed during pre-job briefings to help assure that impacts are minimized. Mitigation structures and wildlife barriers which were implemented during the construction of Fermi 3 will be maintained throughout plant operation where appropriate. Plant site areas which were utilized for fox snake relocation during construction, and plant site areas which present prime opportunity for fox snake habitat, will be monitored and periodically assessed. The development of an environmental check-list or other work control documentation will also assist the minimization of impacts for any work with such potential.

1.2 Plan Area

This plan will cover activities occurring on the Fermi site related to the operation of the Fermi 3 Power Plant. Areas typically utilized by the eastern fox snake throughout its life cycle include shorelines, wetlands and adjacent uplands which are critical habitat for the fox snake (Reference 5.2), however, you may potentially find eastern fox snakes anywhere onsite, including in the protected area. For this plan, treat all undeveloped areas of the site as potential eastern fox snake habitat. The Michigan Department of Natural Resources (MDNR) maintains an *Endangered Species Assessment* website (Reference 5.3) for the purpose of project planning. This website is used to obtain a coarse overview for project planning and users can get an immediate idea if further review by the MDNR is required for projects. The Fermi Power Plant property is entirely contained within a high priority area for endangered and threatened species as displayed on the MDNR's map of areas with unique natural features (Reference 5.4).

Biological Goals

The biological goals of this document have been created utilizing available literature from different sources such as the MDNR, Michigan Natural Features Inventory, and supplemental field guides on reptiles. The over-arching goal will be to prevent the deaths of eastern fox snakes as a result of Fermi site activities through employee education and awareness. Where site activities may impact fox snakes or their habitat, work scope and planning will include measures to assess the area and relocate endangered snakes. Locations to be used for fox snake release will consider at a minimum habitat quality, potential threats in and to the areas, and the carrying

capacity of the release area. Assessment and monitoring efforts will manage habitat and snake populations on site in an effort to preclude any impact on the species.

2.0 Conservation Program/Measures to Minimize Impacts

2.1 Site Training

Training materials will be prepared (see Appendix A) which describes the eastern fox snake and its habitat and brings attention to its threatened status. Training documents will contain pictures and contact information for when sightings are made.

2.1.1 General Employee Training

Training material will be included in the sites general employee training, required for new site employees and annual requalification for the site workforce. General employee training is required for site employees and includes topics relevant to nuclear power plant site employees and their responsibilities. Each site employee is required to understand their responsibilities on site, and be able to pass a comprehensive general employee training exam, which is meant to verify that each employee understands their responsibilities while on site. The general employee training will be updated to include discussion of employee's responsibilities in regards to eastern fox snakes and their likely habitat.

2.1.2 Work Control

Work control processes establish detailed work plans for site work, well in advance of the proposed activities. This includes items such as scheduling, detailed work instructions, tool and equipment requirements, checklists, technical reference materials, organizational and work group roles and responsibilities, and others. For work that has the potential to impact fox snakes or their habitat, work control documents will include discussion of employee's responsibilities in regards to eastern fox snakes and their likely habitat. (Work control documents will also require scheduled activities as discussed in Section 2.3 below.)

2.1.3 Pre-Job Briefs

Standard work control practices include pre-job briefs which discuss relevant aspects of work to be performed, typically on a daily basis, to verify that each employee understands their roles and responsibilities concerning the job tasks to be performed. The briefs are structured to discuss important aspects of the jobs, what could go wrong, how to avoid negative outcomes, details concerning infrequently performed tasks, and any special characteristics associated with the work to be performed. For work that has the potential to impact fox snakes or their habitat, pre-job briefs will include discussion of employee's responsibilities in regards to eastern fox snakes and their likely habitat.

2.1.4 Typical Training materials

Appendix A contains typical material to be utilized for training site employees. The information in Appendix A will be used, to an appropriate extent and level of detail for the intended training audience, e.g. training materials available in work packages will typically be more detailed than training materials disseminated to all site employees. Training will be more effective if the level of detail presented is relevant to the employee. For example, a site office worker needs to know how to identify fox snakes if encountered on the roadway to and from work, potential active periods for the snakes, the types of areas snakes are typically seen, to stop if one is spotted on the roads, and who to contact if one is seen (e.g. typical level of detail in general employee training). On the other hand, a work lead who is assigned a job which has a potential to impact fox snakes needs to know more details about fox snake habitat and activities (e.g. level of detail in work packages and pre-job briefs).

2.2 Conservation During Routine Activities

As fox snakes are a mobile species, there may be a potential of snakes being killed by site vehicles. The mitigation measures described will provide a substantial degree of protection for snakes which migrate to active roadways. Periodic assessments and maintenance of mitigation structures implemented during the construction and restoration phases will help reduce risks to fox snakes (see assessment activities in section 3.0 below). Employees will be aware of the presence of fox snakes and reminded of their protected status via training and posted signs along roadways at potential habitat areas (See Appendix A, Figure 1). Site employees will be instructed to watch for snakes on the roadways while traveling on site roads. Where likely habitat is adjacent to site roads, signs will be posted to remind employees of their potential presence, and that they must yield to fox snakes. Vehicle drivers will be required to stop their vehicles in order to prevent fox snakes from being struck. Employees will be instructed to contact the site environmental engineer or a designated Detroit Edison employee if the snakes are sighted. Any fox snakes located in these areas will be removed and relocated to undeveloped areas of the site which is not likely to be impacted by site activities.

2.2.1 Grounds Crews

Grounds crews and landscape maintenance employees will be directed to watch for snakes while performing their tasks. Signs will be posted near likely habitat locations that abut lawn or landscaped areas which receive regular maintenance, to remind employees of their potential presence, and that they must yield to fox snakes. Employees will be aware of the presence of fox snakes and reminded of their protected status via training and posted signs. Employees will be instructed to contact the site environmental engineer or a designated Detroit Edison employee if the snakes are sighted. Any fox snakes located in these areas will be relocated to undeveloped areas of the site which is not likely to be impacted by site activities.

2.2.2 Security Personnel

Site security personnel will be directed to watch for fox snakes while on patrol. Employees will be aware of the presence of fox snakes and reminded of their protected status via training and posted signs. Employees will be instructed to contact the site environmental engineer or designated Detroit Edison employee if the snakes are sighted. Any fox snakes located during security patrols will be assessed and removed, if needed, then relocated to undeveloped areas of the site which is not likely to be impacted by site activities.

2.3 Conservation During Site Work Activities

Site work activities are not expected to impact fox snakes or their habitat to a great extent. In the rare case that site work has the potential to impact likely fox snake habitat, the work scope will be reviewed by the site environmental engineer or a designated Detroit Edison employee, to assess the potential impacts, and initiate appropriate actions as described in Appendix B, including; identification of alternate work scope to minimize impacts, further assessment by the site environmental engineer, walk downs, survey, relocation, etc.

2.3.1 Work Control Activities

At the beginning of each job that has the potential to impact the eastern fox snake or habitat, work leaders will review the possibility of discovering eastern fox snakes and the steps to be taken upon a discovery. All undeveloped areas of the site are considered potential fox snake habitat. A pre-job task will be noted on the pre-job brief checklist or other work control documents which are used for all site work. Leaders will receive adequate education in order to fully understand the fox snake mitigation goals. In the rare case that work is planned which may have the potential to disturb undeveloped areas, the work will be preceded by surveys of the area by trained personnel to help remove snakes (See Appendix B).

2.3.2 Assessment and Mitigation of Site Work Impacts

For site work that has the potential to impact fox snake habitat in undeveloped areas, appropriate actions similar to those described in Appendix B will be employed. The following paragraphs describe examples of typical mitigation efforts. Dependent on the initial assessment, the areas will be walked down by the site environmental engineer or a designated Detroit Edison employee familiar with eastern fox snakes and their habitat prior to commencement of work activities. Land clearing activities should be scheduled to be performed outside of the fox snakes hibernation periods so that they are active, easier to locate and safely remove from the area. During this walkthrough, any fox snakes observed will be captured and relocated to an undeveloped location on site which will not be impacted by site activities. The site environmental engineer or a designated Detroit Edison employee will ensure that the snakes are not harmed while being captured, transported or released. Potential hiding places for the snakes will be uncovered and searched. Site workers will continue to observe for snakes as work progresses. If an employee observes a fox snake during work activities, they are to stop work until the snake clears the area or until designated personnel can clear it from the area. A plan consistent with techniques identified in Appendix B will be employed for any site work activities that are expected to impact fox snakes or their habitat.

2.3.3 Planning of Site Work to Avoid Impacts

Scheduling of work with the potential to impact fox snakes or habitat should, when possible, be timed to coincide with eastern fox snake active periods (as opposed to hibernation) to allow snakes to withdraw from the areas as needed. If ground disturbing work involving potential hibernacula would occur during hibernation periods, the work area will be evaluated, including all ingress/egress routes, before any work begins to determine if eastern fox snake or other protected snakes are present. Suitable hibernacula for eastern fox snake generally consist of rock piles or similar structures, including railroad berms and trestle footings. Other features that retain heat from sunlight also could be used by this snake. A plan consistent with Appendix B will be employed for any site work activities that are expected to impact fox snakes or their habitat.

3.1 Monitoring Log

A log will be maintained, documenting when and where monitoring is performed, and all recorded sightings. Site activities which have the potential to impact fox snakes or habitat will be logged, along with any sightings reported during those activities. Reported sightings will be logged by the site environmental engineer or designated Detroit Edison employee. In cases where a fox snake is observed while performing a walkthrough, a report will be created noting the number of snakes located and removed and where they were relocated to. A yearly report will also be created summarizing the results of the monitoring program.

3.2 Conservation Assessments and Area Walk Throughs

Periodic assessment will be performed to determine the adequacy of the sites conservation and monitoring plan, as well as to ensure that the plan remains up-to-date and complete. A site environmental engineer or designated Detroit Edison employee will assess the monitoring log and monitoring report, reviewing all sightings reported and all site work performed since the last assessment which had the potential for impacts. Work control documentation will be assessed to verify fox snake impacts were addressed and avoided, corrective actions will be taken to address any deficiencies identified. Training materials will be assessed and updated as required as new information or relevant lessons learned become available.

As all site work is typically planned well in advance of performing those activities, the conservation assessment will include a review of site activities planned for the upcoming period. This assessment will identify planned work that has the potential to impact fox snakes or habitat, and verify that mitigation activities (as described above) are included in the work control documents. Corrective actions will be taken to address any deficiencies identified.

The assessment will include an evaluation of the mitigation structures and barriers which were implemented during the construction of Fermi 3 in accordance with Appendix B (e.g. barrier fences, culverts, curb, gutter conditions, etc). Maintenance will be initiated for any deficiencies noted. Plant site areas which were utilized for fox snake relocation will also be assessed.

The conservation assessment will determine if potential habitat area walk throughs are warranted for one or more site areas. A walk through may be warranted for areas for which: (1) the conservation monitoring log assessment identifies numerous sightings near regularly trafficked areas (e.g. site roadways, parking lots, lawns which receive regular maintenance), (2) the log assessment identifies a potential grouping in one area, (3) planned site activities are identified which may impact fox snakes or habitat, or (4) any other results of the assessment that indicate further information about an area would be helpful for future mitigation activities. During the area walk through, an assessment will be made whether snakes should be relocated. Walk throughs should be timed to coincide with eastern fox snake active periods to allow positive identification to the greatest extent. A walk through report will be generated and all sightings will be recorded.

The conservation assessment will include research and assessment of any new information regarding fox snake and its habitat which should be added to the conservation plan, training

materials, or work control documentation. An assessment will be made of the general effectiveness of the conservation and monitoring plan, corrective actions will be taken to address any deficiencies.

The assessment, including potential walk throughs, will determine if further surveys may be warranted due to upcoming activities, large number of reported sightings in populated or regularly trafficked areas, walk through results, etc.

3.3 Surveys

When surveys are warranted based on the results of the periodic assessments, surveys will be performed by a team familiar with eastern fox snakes and their habitat. Survey methodology will be similar to that described in Appendix B, and will be developed by the site environmental engineer or a designated Detroit Edison employee. The site environmental engineer or designated Detroit Edison employee will formulate the survey plan, and determine the appropriate timing and duration of the survey. Areas to be surveyed will be based on upcoming planned work activities, assessment results, or site environmental engineer determination. The surveys will be conducted on foot in selected locations to evaluate the presence of potential habitat and fox snakes.

4.0 Funding

Funding for fox snake conservation efforts will be provided as part of the Detroit Edison Fermi 3 site budget.

5.0 References

5.1 Weatherby, C. A.,Michigan Nature Conservancy Elaphe vulpina gloydi and Clonophis kirtlandii 1986 contracted survey. Michigan Nature Conservancy, Unpublished, rep. 25 pp.

5.2 Lee, Y., "Special animal abstract for *Elaphe vulpina gloydi* (eastern fox snake). Michigan Natural Features Inventory, Lansing, MI. 3 pp.

5.3 Michigan Department of Natural Resources, Endangered Species Assessment http://www.mcgi.state.mi.us/esa, accessed January 15, 2010

5.4 Michigan Department of Natural Resources, Endangered Species Assessment, Map http://www.mcgi.state.mi.us/esa/map.asp?action=map_south, accessed January 15, 2010

5.5 Bailey, R.G., Ecoregions of the United States, 1978

APPENDIX A

Employee Training Program

TRAINING MATERIALS FOR USE AT THE FERMI 3 SITE

The following training materials shall be incorporated into the Fermi 3 site general employee training, annual re-qualification training and pre-job briefs, as appropriate.

How to Identify the Eastern Fox Snake

Eastern fox snakes are large (adult length 3 - 5.5 feet/0.9-1.7 m), boldly patterned snakes with large dark brown or black blotches down the middle of the back and smaller, alternating blotches along the sides of a yellowish to light brown body. The underside is yellowish checkered with dark squarish spots. The head can be yellow, light brown to reddish brown and is generally unmarked except for a dark band between the eyes on the top of the head and a few dark bands extending from the eye to the mouth. Juvenile eastern fox snakes are paler in color than adults and have gray or brown blotches bordered in black on the back and more distinctive head markings.

Habitat

The eastern fox snake inhabits emergent wetlands along Great Lakes shorelines and associated large rivers and impoundments. They prefer habitats with herbaceous vegetation such as cattails (Typha spp.). Although primarily an open wetland species, eastern fox snakes also occupy drier habitats such as vegetated dunes and beaches, old fields, and open woodlands. They also are able to utilize disturbed areas such as farm fields, pastures, woodlots, vacant urban lots, rock riprap, ditches, dikes, and residential properties. Eastern fox snakes are usually found near water, and are capable of swimming long distances through open offshore waters and between islands. This species deposits its eggs under soil, woody debris, sawdust piles, decaying vegetation and mammal burrows, and hibernates in abandoned mammal burrows, muskrat lodges, or other

suitable shelters. Specific habitat needs include; downed woody debris in Emergent marsh, Great Lakes marsh, Lakeplain wet prairie, Lakeplain wet-mesic prairie, Mesic southern forest, Lakeplain oak openings, Mesic sand prairie, Open dunes, Sand/gravel beach.

Management

Protection and management of remaining populations and habitat are crucial for conservation of this species in Michigan. Maintaining or restoring large, suitable wetland complexes and minimizing habitat fragmentation (e.g., due to roads or development) greatly benefits this species. The site's, "Habit and Species Conservation Plan – Eastern Fox Snake," provides active and passive requirement that must be followed by all site personnel to minimize impacts to this Michigan threatened species. No work in undeveloped areas of the site can occur until all requirements of the eastern fox snake Conservation Plan and the site's active wetland permits have been carefully reviewed, discussed with environmental personnel and implemented.

Management of wetland habitats should include maintaining open conditions, providing adequate nesting sites and refugia for young snakes through adequate cover (e.g., downed woody debris), and maintaining suitable hibernacula.

When Are Fox Snakes Active?

Fox snakes are typically active from the third week of April to the fourth week of October. Typical breeding lasts from the first week of June to the second week of July. Fox snakes nest from the fourth week of June to the fourth week of July.

Employee's Responsibilities

Employees are required to be able to identify an eastern fox snake if sighted. If a snake is sighted and a positive identification cannot be made, assume it is a fox snake. When sighted, employees are to contact the site environmental engineer or a designated Detroit Edison employee at [PHONE], or at [Bld/Rm], to report any sighting, or potential sighting. When reporting a sighting, identify the place and time, and whether or not positive identification was possible (to the best of your abilities). When a fox snake is sighted, employees are to stop all activities that could endanger the snake, until it has cleared the area and is out of danger. If a snake of any kind is spotted on the road in front of you, you MUST STOP until the snake has cleared the road and immediately contact the appropriate site personnel. Roadways with high eastern fox snake traffic are posted with signs similar to Figure 1 below. Be particularly vigilant in these areas.

Figure 1. Sample snake crossing sign to be used on site.

APPENDIX B

Eastern Fox Snake Collection, Translocation, and Habitat Monitoring Techniques

Monitoring Protocols and Evaluation

Sampling protocols target and address key biological, ecological, and natural history requirements of eastern fox snakes. Monitoring may include the use of visual encounter surveys, cover objects (Figure 1), mark-recapture (including PIT tag and Radio Telemetry), and the use of barrier (Figures 2 & 3) and drift fences (Figure 4). All of the collection, identification, survey and monitoring techniques described below may be utilized, as needed, and as directed by the site environmental engineer or a designated Detroit Edison.

Collection and Identification Techniques:

- Surveys for species presence may use visual encounter surveys, cover objects, barrier fence, and opportunistic encounters.
- Record location of collected snakes using GPS units.
- Measurement, sexing, weighing, and photographing of specimens.
- Implantation of Passive Intermittent Transponders chips (PIT Tags) into collected snakes and serial numbers recorded for future use.
- Return snakes to collection site, if, and when, appropriate.
- Creation, maintenance and use of artificial snake hibernacula (See Appendix C).

Surveying and Monitoring Techniques:

- Placement of wood and metal cover boards in monitor areas that tend to attract snakes for easier collection.
- Use of 3ft silt fence perimeters as drift fences for surveying when appropriate.
- Collection of biological data and location during the active season for previously collected and identified specimens (i.e., sex, age, length, weight, and behavior). Snakes found without PIT tags may be collected, identified, and marked using the previously described protocol.

Radio Telemetry Techniques:

- Fit randomly chosen snakes (both males and females) of appropriate size with radio transmitters before release to their collection sites (surgery will be conducted by qualified snake specialists).
- Observe snakes throughout the year and record data.

Mapping:

- Record locations of observations of eastern fox snakes on a site map.

Figure 1. Artificial cover objects used to attract snakes for collection.

Figure 2. Long-term snake barrier fence .

Figure 3. Temporary snake barrier fence.

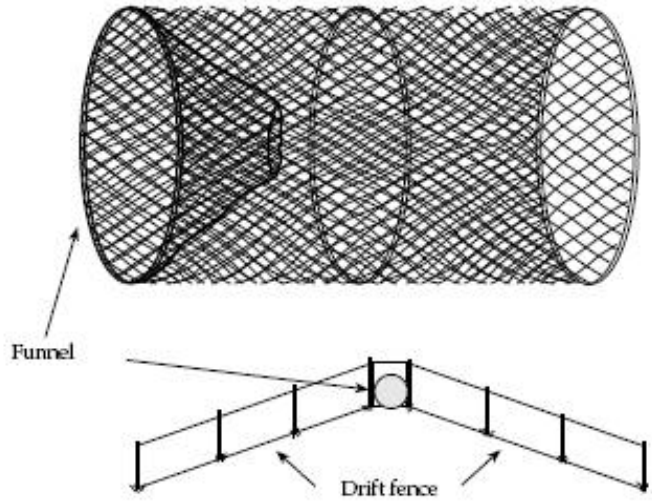

Figure 4. Drift fence system to trap snakes.

Appendix C

Artificial Snake Hibernacula

Artificial Snake Hibernacula

All of the hibernacula techniques described below may be utilized, as needed, as directed by the site environmental engineer, the project biologist/herpetologist or Environmental Management and Resources and in accordance with permit conditions. On-site and off-site creation of artificial hibernacula will provide greater available nesting and hibernation sites to enhance the available habitat for fox snake. The site environmental engineer or a designated Detroit Edison employee will guide design, location, construction oversight, and monitoring of snake hibernacula use. Potential hibernacula locations will be evaluated for appropriate slope, soil type, exposure to the sun, and current land uses. From the locations that meet the previous requirements, final locations will be selected to optimize the opportunity for snakes to find the hibernacula.

Snake hibernaculum will be constructed as a pit excavated to a minimum depth of 6' to assure snakes are able to move below frost line (Figure 1). Structural layers filling the pit may consist of natural materials (e.g., logs, stumps, rocks) or artificial materials (e.g., repurposed concrete, flexible PVC) (Figure 2). Parent soil will be placed on top of the fabric (Figure 3). The structure will then be covered with mulch and rocks placed at the entrances to the hibernacula (Figure 4).

Once complete, barrier fence (tall silt fence) will be installed around the hibernacula and adjacent habitat to help facilitate soft release and acclamation to the release site. Periodic maintenance, such as removal of excess vegetation and clearing of debris will be performed, as needed. Fence will be maintained for a minimum of three to five years in some capacity while acclimating eastern fox snakes to the new habitat.

Figure 1. Excavation of hibernacula pit.

Figure 2. Placement of structural layers.

Figure 3. Placement of fill material.

Figure 4. Completed hibernacula.