Conservation Plan

For the State Threatened Franklin's ground squirrel (*Spermophilus franklinii*)

University of Illinois at Urbana-Champaign Wind Turbine at the Juncture of Philo Road and Old Church Road, Champaign County, Illinois

Conservation Plan

1. Description of the impact

A. Introduction and legal description

The University of Illinois is seeking an Incidental Take for Franklin's ground squirrel that would expire December 31, 2012.

The University of Illinois is proposing to build one 1.5 megawatt wind turbine on the University's South Farms. Energy production from the wind turbine would provide about 1% of the University's present energy usage. The University would like to have zero net carbon emissions by 2050; the wind turbine is a part of the University's vision to not rely on coal and other nonrenewable energy resources.

The proposed wind turbine will be located northwest of the Philo Road and Old Church Road intersection in Champaign County, Illinois. The legal description of this area is T19N, R9E, Section 33; SE ½ of SW ¼, Champaign County, Illinois.

B. Biological data

The range of the Franklin's ground squirrel extends from northwestern Indiana, northern and central Illinois, and southern Wisconsin west to northern Kansas, Nebraska, North and South Dakota in the United States and Manitoba, Saskatchewan, and Alberta in Canada (Ostroff and Finck 2003). Within Illinois, the range of Franklin's ground squirrel includes the northern two-thirds of the state, north of Madison and Clark counties (Mohr 1943, Hoffmeister 1989, Lewis and Rongstad 1992).

Franklin's ground squirrels are often associated with mid- and tallgrass prairie (Jones et al. 1983, Hoffmeister 1989, Kurta 1995). However, they also use the juncture of woods and grassland, wetland and bog margins, forest openings, and brushy areas (Sowls 1948, Jones et al. 1983, Erlien and Tester 1984, Johnson and Choromanski-Norris 1992). Thus, their habitat includes dense grasses and forbs, shrubs, and small trees (Choromanski and Sargeant 1982, Jones et al. 1983, Martin 2003). They use sites in which the soil and vegetation have not been recently disturbed (Choromanski-Norris et al. 1989). Heavily grazed or frequently mowed areas with short grass, such as golf courses, typically are not used (Wood 1910, Haberman and Fleharty 1972, Hoffmeister 1989). Within Illinois, Franklin's ground squirrels occur in infrequently mowed roadsides and old fields, railroad rights-of-way, cemetery prairies,

brushy fields, fencerows, and ditch banks (Jackson 1961, Mumford and Whitaker 1982, Masulis and Wells 1988, Hoffmeister 1989, Kurta 1995, Martin et al. 2003, Pergams and Nyberg 2003). Yearlong inhabitants of burrows, Franklin's ground squirrels are limited by the availability of suitable burrowing sites (Hoffmeister 1989, Ostroff and Finck 2003). The burrows must be in well-drained soil and deep enough to remain cool in summer and not freeze in winter (Jones et al. 1983, Hoffmeister 1989, Martin 2003, Pergams and Nyberg 2003). Burrows were consistently 17 inches deep in Nebraska (Haberman and Fleharty 1971); nest chambers of burrows in Missouri were 12-20 inches below the surface (Ellis 1982). Burrows are often located in embankments to facilitate drainage (Haberman and Fleharty 1972, Hoffmeister 1989). In addition, burrow entrances are frequently located near brush or rocks to obscure them from view (Masulis and Wells 1988, Martin 2003).

Adult Franklin's ground squirrels hibernate for long periods of time and typically are only active aboveground from mid-April to August (Hoffmeister 1989, Ostroff and Finck 2003). Breeding occurs shortly after the females emerge from hibernation and they give birth to a single litter from late May to mid-June (Sowls 1948, Iverson and Turner 1972, Choromanski-Norris et al. 1986). Litters typically consist of 6 to 9 pups, but can include as many as 13 (Jones et al. 1983). In Illinois juveniles appear aboveground by mid-July (Martin and Heske 2005). Juveniles do not enter hibernation until September or October (Hoffmeister 1989, Ostroff and Finck 2003, Martin and Heske 2005). These diurnal squirrels vocalize with a sharp whistle (Whitaker and Hamilton 1998); however, they are not readily observed in the tall, dense vegetation.

C. Description of activities that will result in take

A 1.5 megawatt wind turbine will be constructed 695 feet west of Philo Road and 487 feet north of Old Church Road in Champaign County, Illinois. The wind turbine, underground power lines, construction equipment, and stockpile of excavated soil will be located in an area that is presently an agricultural field and has been farmed for at least the last 60 years (M. Skvarla, pers. comm.). An access road from Old Church Road to the wind turbine will be built. The construction and grading of the access road will affect Franklin's ground squirrel habitat along the roadside. The construction of the wind turbine, the trenches for the underground power lines and the construction and grading of the access road, will result in heavy construction traffic in the area.

There is also potential that the operation of the wind turbine will result in take (in the form of harassment) of Franklin's ground squirrels. The operation of the wind turbine will result in noise and ground vibrations that may affect the behavior, physiology, density, and distribution of the Franklin's ground squirrel.

D. Explanation of the anticipated adverse effects on the listed species

The anticipated adverse effects include:

1. Active Franklin's ground squirrels may be injured or killed by construction equipment or vehicles.
2. Franklin's ground squirrels in burrows may be injured or killed when the access road to the wind turbine is constructed. The access road will cross a roadside ditch which is potentially suitable Franklin's ground squirrel habitat.
3. The operation of the wind turbine may affect the Franklin's ground squirrel in the form of ground vibrations, shadow flicker, and ELF/UHF noise which may affect behavior and physiology.
4. The construction and operation of the wind turbine may impact the density and distribution of Franklin's ground squirrel.

2. **Measures to minimize and mitigate take (including funding commitments)**

A. Plans to minimize the area, estimated number of take and the amount of habitat affected

The only potential Franklin's ground squirrel habitat that will be directly affected by this project is the roadside where the access road is to be built. The wind turbine access road will be 36 feet wide (including the berm) and will cross about 50 feet of mowed roadside between Old Church Road and the present limits of the agricultural field. During the construction of the wind turbine, a corner turn with a 135 foot radius will be added to the access road at its juncture with Old Church Road. The corner turn will allow large twenty-six wheel semi-trailers to make the turn onto the access road to deliver the wind turbine components. After construction of the wind turbine and its associated components are complete, the corner turn will be returned to its present state as roadside.

There are trees that are planted along Philo Road and Old Church Road. These trees will not be impacted by construction. This is important because burrow entrances are frequently located near trees, brush or rocks to obscure them from view (Masulis and Wells 1988, Martin 2003).

All other construction activities will be limited to areas that are presently an agricultural field and are thus not considered potential Franklin's ground squirrel habitat. The soil stockpiles derived from construction activities will not be allowed to grow vegetation and thus become potential Franklin's ground squirrel habitat. After construction is completed the topsoil will be spread over the agricultural field. The clay from the digging of the wind turbine foundation will be deposited offsite.

Barrier fencing will be placed along both sides of the access road to minimize the access of Franklin's ground squirrels to the road and thus prevent them from being hit by vehicles.

The estimated number of potential take is presumed to be few, if any. It has not been established that Franklin's ground squirrels reside on the affected University property. If they do occur on the University property, the amount of affected potential habitat is minimal. There is a small chance that a Franklin's ground squirrel may be injured and/or killed by construction traffic. However, the access road is relatively short, so speed limits of vehicles should be regulated.

B. Plans for management of the area affected that will enable the continued use

The site is owned by the University of Illinois, a public institution, and the area will not be developed with houses. There are no current plans for more wind turbines to be built in the area. The area surrounding the wind turbine that is not needed for access and maintenance after construction is complete will be returned to agriculture. Franklin's ground squirrels can disperse through agricultural fields if the ground cover is not removed before September (Martin 2003).

C. Description of all measures to be implemented to minimize or mitigate the effects

An onsite survey of Franklin's ground squirrels will occur in the appropriate season and this will likely occur after construction has begun. Results of the survey will be reported to IDNR.

If Franklin's ground squirrels are *not captured* in an onsite survey conducted by trained biologists, construction and operation will be continued using standard practices.

*Due to the proximity of the Franklin's ground squirrel population at Barnhart Prairie Nature Preserve across Old Church Road from the construction area, all personnel working onsite will be educated about the biology of Franklin's ground squirrels and their state-threatened status.

If Franklin's ground squirrels *are captured* in an onsite survey conducted by trained biologists, the squirrels will be relocated to suitable and accessible habitat with permission of the landowner if the biologist determines it will not jeopardize the animal (e.g. a lactating female ground squirrel will not be moved).

*All personnel working onsite will be educated about Franklin's ground squirrel and their state-threatened status.

*A barrier fence will be erected along both sides of the entrance road during construction to exclude Franklin's ground squirrels.

If Franklin's ground squirrels are *observed* onsite during construction, trained biologists will be contacted immediately. The biologist will determine the appropriate course of action, taking into account the life history of the animal (e.g. lactation, dispersal).

*All personnel working onsite will be educated about Franklin's ground squirrel and their state-threatened status.

*A barrier fence will be erected along both sides of the entrance road during construction to exclude Franklin's ground squirrels.

There is potential for the operation of the wind turbine (e.g noise, vibrations) to influence the Franklin's ground squirrel population at Barnhart Prairie Nature Preserve. Due to the tall, dense prairie vegetation it would be difficult to conduct behavioral studies of the Franklin's ground squirrels. In lieu of a behavioral study, a population census of the Franklin's ground squirrel at Barnhart Prairie Nature Preserve will be conducted for 2 years. The first census will be conducted the year the wind turbine is

being constructed and will define the density of the resident population. The second census will occur the year after the wind turbine is constructed. The population census will be conducted by trained biologists over the course of a two week trapping period after juvenile squirrels have come aboveground in spring and before hibernation begins in the autumn. The results of the surveys will be forwarded to IDNR. This mitigation is dependent on the acquisition of the appropriate IDNR and Illinois Nature Preserve Commission permits and permission of the owners of Barnhart Prairie Nature Preserve.

D. Plans for monitoring the effects of measures implemented

The integrity of the barrier fencing will be checked daily by a designated individual. Any gaps or breaks in the fence will be repaired immediately upon detection.

E. Adaptive management practices that will be used to deal with the changed or unforseen circumstances that affect the effectiveness of measures instituted to minimize or mitigate the effects of the proposed action

If new information arises prior to or during construction activities that could compromise the effectiveness of the conservation plan, the University may need to alter the plans. Any changes will be sent to IDNR for their scrutiny and approval.

F. Verification that adequate funding exists to support and implement all mitigation activities described in the conservation plan

The University of Illinois will ensure adequate funding exists for the mitigation activities described in this conservation plan.

3. A description of alternative actions the applicant considered that would not result in take and the reasons that each of those alternatives was not selected. A "no-action" alternative shall be included in this description of alternatives

Option one. The wind turbine could have been constructed in a different portion of the same section of land farther away from Barnhart Prairie Nature Preserve. The positioning of the wind turbine has been determined by multiple factors. First, the wind turbine is to be built on a slight rise that will maximize the wind potential at the wind turbine. Second, the wind turbine must comply with FAA/FCC guidelines. Given the height of the rotor blades when erect (its highest point), the wind turbine must be located outside of a 20,000 foot radius from Willard Airport. Third, the wind turbine will be located on University property. Fourth, the location of the wind turbine is in an area of low population density.

No-action. The University of Illinois has developed a campus Climate Action Plan. The goal of this plan is to reach net zero carbon emissions by 2050. The University would like to reduce its dependency on non-renewable energy sources, such as coal. The wind turbine project is part of the Climate Action Plan. The wind turbine will produce about 1% of the University's total energy needs. Without the construction of the wind turbine, the University of Illinois would continue to use non-renewable energy resources.

4. Data and information to assure that the proposed taking will not reduce the likelihood of the survival of the species.

The construction of the wind turbine northwest of the Old Church Road and Philo Road intersection will have minimal impact on Franklin ground squirrel individuals and habitat. It has not been established that Franklin's ground squirrels occur on the property, though there is a known population across Old Church Road at the Barnhart Prairie Nature Preserve. The impact of the construction on the Franklin's ground squirrel population at Barnhart Prairie Nature Preserve is expected to be minimal; Martin (2005) indicated that roads may be barriers to some Franklin's ground squirrels, plus this site supports one of the largest known populations of Franklin's ground squirrels in the state.

The only potential Franklin's ground squirrel habitat that will be affected is the roadside where the access road to the wind turbine will be built. The corner turn for the access road will be removed and restored to its present condition. Therefore, only a 36 foot wide stretch of roadside will be left intact. This represents a minimal destruction of potential Franklin's ground squirrel habitat.

The operation of the wind turbine may affect the behavior, density, and distribution of the Franklin's ground squirrel on Barnhart Prairie Nature Preserve. The effect of wind turbine operation on both bats and birds has been extensively studied. However, there have been few studies of their effect on terrestrial mammals. Rabin et al. (2006) found that California ground squirrels (*Spermophilus beecheyi*) near wind turbines demonstrated increased vigilance and caution than squirrels farther from wind turbines. It was presumed that the noise of the wind turbines prevented the squirrels from hearing alarm calls from other squirrels, thus necessitating increased predator vigilance. There is no known research on the effects of wind turbines on Franklin's ground squirrels and it is unclear if one can extrapolate the results of the California ground squirrel study to Franklin's ground squirrels. For instance, we already know that Franklin's ground squirrels will live on highway rights-of-way and on the embankments of active railroad lines (Kurta 1995). In an effort to provide some baseline data on potential effects of wind turbines on Franklin's ground squirrels, the University will have two population censuses conducted as described above.

The range of the Franklin's ground squirrel extends from northwestern Indiana, northern and central Illinois, and southern Wisconsin west to northern Kansas, Nebraska, North and South Dakota in the United States and Manitoba, Saskatchewan, and Alberta in Canada (Ostroff and Finck 2003). Hofmann (2008) documented historic or recent Franklin's ground squirrels in 33 Illinois counties. According to the Natural Heritage Database (Illinois Department of Natural Resources), there are at least 4 records of Franklin's ground squirrels in Champaign County. One of the records in Champaign is a population of Franklin's ground squirrels at Barnhart Prairie Nature Preserve that has been present since at least 2001. Barnhart Prairie Nature Preserve has one of the largest known populations of Franklin's ground squirrels in Illinois.

5. An implementing agreement, which shall include, but not be limited to:

A. Names of all participants in the execution of the conservation plan, including public bodies, corporations, organizations, and private individuals.

The University of Illinois will ensure the execution of the conservation plan.

B. The obligations and responsibilities of each of the identified participants with the schedules and deadlines for completion of activities in the conservation plan and a schedule for preparation of progress report to be provided to the Department.

The University of Illinois will be responsible for the completion of activities in the conservation plan and reports to the Department as needed.

C. Assurances that each participant in the execution of the conservation plan has the legal authority to carry out their respective obligations and responsibilities under the conservation plan.

The University of Illinois has the authority to carry out the obligations and responsibilities described in this conservation plan.

D. Assurances of compliance with all other federal, state, and local regulations pertinent to the proposed action and to execution of the conservation plan.

The Franklin's ground squirrel is listed as threatened in Illinois and is covered by the Illinois Endangered Species Act of 1971. The Franklin's ground squirrel does not have any federal status as being threatened or endangered, therefore compliance with the Federal Endangered Species Act of 1973 is not required.

E. Copies of any federal authorizations for taking already issued to the applicant.

Not applicable. The Franklin's ground squirrel is not listed as threatened or endangered at the federal level, therefore a federal permit is not required.

F. For projects that will result in the taking of an endangered or threatened species of plant, copies of expressed written permission of the landowner.

Not applicable. The Franklin's ground squirrel is an animal.

The University of Illinois will ensure the execution of the conservation plan.

Signed By:

John G. Dempsey Date: 9/17/11

John G. Dempsey

Executive Director, Facilities and Services

Literature Cited

Choromanski, J. and A. B. Sargeant. 1982. Gray gophers and prairie ducks. North Dakota Outdoors 45(2):6-9.

Choromanski-Norris, J., E.K. Fritzell, and A.B. Sargeant. 1986. Seasonal activity cycle and weight changes of the Franklin's ground squirrel. American Midland Naturalist 116:101-107

Choromanski-Norris, J., E. K. Fritzell, and A. B. Sargeant. 1989. Movements and habitat use of Franklin's ground squirrels in duck-nesting habitat. Journal of Wildlife Management 53(2):324-331.

Ellis, L.S. 1982. Life history studies of Franklin's ground squirrel, *Spermophilus franklinii*, in Missouri. Missouri Department of Conservation Technical Report. 50 pp.

Erlien, D. A. and J. R. Tester. 1984. Population ecology of Sciurids in northwestern Minnesota. Canadian Field-Naturalist 98:1-6.

Haberman, C. G. and E. D. Fleharty. 1972. Natural history notes on Franklin's ground squirrel in Boone County, Nebraska. Transactions of the Kansas Academy of Sciences 74:76-80.

Hoffmeister, D. F. 1989. Mammals of Illinois. University of Illinois Press, Urbana. 348 pp.

Hofmann, J.E. 1998. A survey of Franklin's ground squirrel (*Spermophilus franklinii*) in east-central Illinois. Center for Biodiversity Technical Report 1998 (11). Submitted to Division of Natural Heritage, Illinois Department of Natural Resources, Springfield. 31 pp.

Hofmann, J.E. 2008. Field Manual of Illinois Mammals. Manual 12. Illinois Natural History Survey, Champaign. 358 pp.

Iverson, S.L. and B.N. Turner. 1972. Natural history of a Manitoba population of Franklin's ground squirrels. Canadian Field-Naturalist 86:145-149.

Jackson, H. H. T. 1961. Mammals of Wisconsin. University of Wisconsin Press, Madison. 518 pp.

Johnson, S. A. and J. Choromanski-Norris. 1992. Reduction in the eastern limit of the range of the Franklin's ground squirrel (*Spermophilus franklinii*). American Midland Naturalist 128:325-331.

Jones, J. K., Jr., D. M. Armstrong, R. S. Hoffmann, and C. Jones. 1983. Mammals of the Northern Great Plains. University of Nebraska Press, Lincoln. 379 pp.

Kurta, A. 1995. Mammals of the Great Lakes region. Revised ed. The University of Michigan Press, Ann Arbor. 376 pp.

Lewis, T. L. and O. J. Rongstad. 1992. The distribution of Franklin's ground squirrel in Wisconsin and Illinois. Transactions of the Wisconsin Academy of Sciences, Art, & Letters 80:57-62.

Martin, J. M. 2003. Status and ecology of Franklin's ground squirrel (*Spermophilus franklinii*) in Illinois. University of Illinois at Urbana-Champaign. M.S. Thesis. 88 pp.

Martin, J. M., E. J. Heske, J. E. Hofmann. 2003. Franklin's ground squirrel (*Spermophilus franklinii*) in Illinois: A declining prairie mammal? American Midland Naturalist 150:130-138.

Martin, J. M. and E. J. Heske. 2005. Juvenile dispersal of Franklin's ground squirrel (*Spermophilus franklinii*) from a prairie "island". American Midland Naturalist 153:444-449.

Masulis, M. C. and N. M. Wells. 1988. Franklin's ground squirrel: Denizen of the Illinois tall-grass prairie. The Living Museum 50(2):23-25.

Mohr, C. O. 1943. Distribution of ground squirrels in Illinois. Transactions of the Illinois State Academy of Science 36(2):177-178.

Mumford, R. E. and J. O. Whitaker, Jr. 1982. Mammals of Indiana. Indiana University Press, Bloomington. 537 pp.

Ostroff, A. C. and E. J. Finck. 2003. *Spermophilus franklinii*. Mammalian Species 724:1-5.

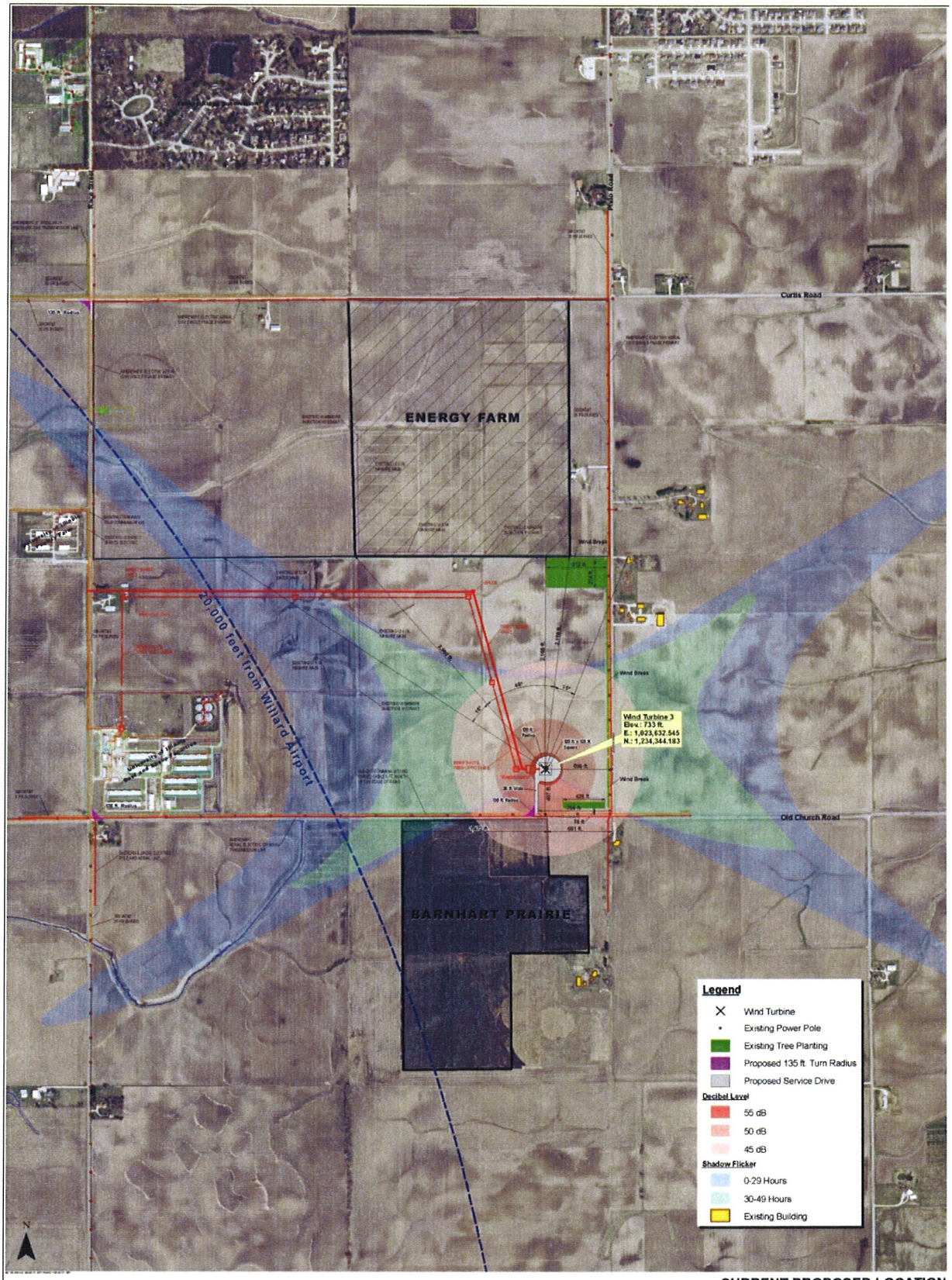
Pergams, O. and D. Nyberg. 2003. *Spermophilus franklinii*. In: IUCN Red List of Threatened Species. www.redlist.org. Downloaded on 30 August 2005.

Rabin, L.A., R.G. Coss, and D.H. Owings. 2006. The effects of wind turbines on antipredator behavior in California ground squirrels (*Spermophilus beecheyi*). Biological Conservation 131: 410-420.

Sowls, L. K. 1948. The Franklin ground squirrel, *Citellus franklinii* (Sabine), and its relationship to nesting ducks. Journal of Mammalogy 29(2):113-137.

Whitaker, J. O., Jr. and W. Hamilton. 1998. Mammals of the eastern United States. Third edition. Comstock Publishing Associates, Ithaca, NY. 583 pp.

Wood, F. E. 1910. A study of the mammals of Champaign County, Illinois. Bulletin of the Illinois State Laboratory of Natural History 8:500-617.



ILLINOIS

CURRENT PROPOSED LOCATION FOR WIND TURBINE

Wind Turbine Project