GENERAL GUIDELINES FOR CONDUCTING THREATENED AND ENDANGERED SPECIES SURVEYS IN THE PINELANDS AREA

March 25, 2006

INTRODUCTION

This document is intended to provide general guidance for use in conducting threatened and endangered (T&E) species surveys in the Pinelands Area.

Part One of this document describes the review of existing T&E records and information that should occur as background work for preparing a T&E survey. Part Two of this document describes the habitat assessment that should occur to identify potential T&E species of concern based upon habitat. Part Three of this document describes the general survey requirements.

Although general in nature, these guidelines provide a framework for designing surveys for any of the T&E species protected by the Pinelands Comprehensive Management Plan (CMP). The specific characteristics and habitat requirements for each species of concern may then be incorporated within this framework to design surveys for a specific development.

The CMP provides that no development may be carried out unless it is designed to "avoid irreversible adverse impacts upon the survival of any local populations" of plants that have been found to be threatened or endangered (N.J.A.C. 7:50-6.27). The CMP further provides that no development may be carried out unless it is designed to "avoid irreversible adverse impacts on habitats that are critical to the survival of any local populations of those threatened or endangered animal species designated by the Department of Environmental Protection" (N.J.A.C. 7:50-6.33).

To administer these standards, it must be known whether a population of T&E species is present in the area that will be affected by a proposed development. The most accurate way to determine the presence of such species includes researching known T&E sighting records and documentation, habitat assessments and, as appropriate, field surveys of the area.

A key factor in determining the appropriate level of effort for a survey is the likelihood that a local population of a T&E species may be in the area affected by a proposed development. In addressing this likelihood, these guidelines provide for the consideration of factors such as known records of T&E species in an area, the suitability of the habitat and the minimum information to be included in a T&E survey.

The objective of any T&E survey is to gather the information needed to make a fully informed decision regarding potential impact to these T&E species.

PART 1: REVIEW OF RECORDS AND DOCUMENTS

Existing records and documents provide information about recent and historical records of T&E species in an area. A review of the available documentation regarding the presence of any such species should be conducted for each development application that will disturb habitat. At a minimum, an applicant should contact the Commission staff in writing regarding the Commission's records of T&E species and the New Jersey Department of Environmental Protection, Natural Heritage Program for that agency's T&E records. An applicant should also consult with available local resources, as appropriate, such as neighbors, local naturalists or the municipal environmental commission.

By reviewing existing records, valuable preliminary information can be gained about the presence of previously observed species near a development site.

PART 2: HABITAT ASSESSMENT

The purpose of conducting a habitat assessment is to consider all T&E species identified in the CMP and to determine whether the proposed development site contains habitat for any such species. Information about the type of habitat preferred by the respective T&E species should be compared to the habitats on the site proposed for development. In most instances, this comparison will allow the investigator to narrow the list of potential T&E species of concern. In areas where sightings of T&E species have already been documented, a proposed development site with habitat similar to the areas of documented sightings should, in most instances, be considered to have a high potential to support a local population of those species.

A habitat assessment is a thorough characterization of the habitats within a defined study area. The habitat assessment should provide a characterization of the quality and quantity of habitat available to support T&E species. The habitat assessment may allow the investigator to focus any necessary field survey resources on the portions of a study area that are most likely to support targeted T&E species. In some situations, the habitat assessments may provide information demonstrating that a site or portions of a site contain such poor quality habitat that they are unlikely to support certain targeted T&E species.

The initial step in assessing habitat is the delineation of the study area that will be investigated. The study area should include the development parcel and adjacent lands. Consideration of the study area should include factors such as similarity of habitats on and off-site, activity ranges of the T&E species, dispersal methods and characteristics of the species and the potential of the proposed development to affect habitats beyond the limits of the site.

The habitat assessment should be based upon field inspections of the study area and should consider other available information such as soil surveys, aerial photographs and any habitat characterization mapping available from the New Jersey Department of Environmental Protection. To make informed decisions about the potential for development to impact T&E species, habitat assessments must consider all the different types of habitats that are necessary for the survival of the concerned T&E species. For example, critical habitat for a particular snake

species could include those areas necessary for feeding, nesting and denning. Such areas may encompass both uplands and wetlands.

Following are descriptions of some of the basic components of a habitat assessment:

- Vegetation Community Analysis: The vegetation communities and the individual species that form the community must be fully and accurately described. Species should be listed and relative abundance should be described. The structure of the vegetation community should be described, including the density of vegetation. The assessment should consider components of the vegetation community that may be important to individual T&E species such as the presence of nesting trees or woody shrubs that provide perches within grasslands.

- Water Quality and Hydrology: The quality and the hydrology of any surface waters in the study area should be fully characterized. The characterization should focus on the critical habitat requirements for the T&E species of concern. The water quality characterization should include an analysis of pH, nitrogen, turbidity, temperature and any other parameters for which the species of concern has specific requirements. This hydrologic characterization should include quantity, flow characteristics and any significant seasonal effects (such as duration of ephemeral ponds).

- Soils: A map of the soil types on the parcel and adjacent lands should be developed based upon the soil survey for the county and field verification of the soil survey mapping.

- Wetlands: The location of all wetlands on and within 300 feet of the parcel and adjacent lands should be delineated. The types of wetlands should be identified. The size of the wetland complex, the type and density of vegetation, the location and nature of surface water and groundwater seeps, the presence of canopy openings and other appropriate factors should be considered.

- Topography: The existing slopes and grades on the parcel should be mapped and characterized with a focus on topographic features that might affect the potential of the study area to provide habitats for T&E species.

- Structures and Human Activities: The habitat assessment should describe and consider the potential effect of any structures in the study area. These might include poles, fences, buildings, old foundations, cellar holes, roads and railroad beds. Human activities of concern might include mowing of fields, recreational use of an area or the use of water control structures to alter stream flow or water levels. The potential for such structures or activities to either provide habitat or detract from the quality of the habitat should be evaluated.

- A composite map of all relevant components of the habitat assessment should be developed.

The assessment should then identify any T&E species for which the study area may provide habitat. It is possible that habitats on a particular site that are less than ideal may still support a

local population of T&E species. It may be necessary to consider marginal habitat as having potential to support local populations of T&E species.

If it is determined that habitat exists within the study area that has the potential to support a population of T&E, it must be demonstrated that the proposed development is designed to "avoid irreversible adverse impacts upon the survival of any local populations" of T&E plants and to "avoid irreversible adverse impacts on habitats that are critical to the survival of any local populations" of T&E animal species.

> In most cases, a field survey for evidence of local populations of T&E species is necessary before any such demonstration can be considered. However, there may be some situations in which the habitat assessment may provide adequate information to consider such demonstrations. For example, if no habitat exists in the study area that is considered suitable to support a local population of T&E species, a field survey would not be necessary. Even if there is potentially suitable T&E species habitat, but the proposed development will not be located in that habitat or will be designed to include necessary measures to prevent irreversible significant adverse impacts on that habitat, including consideration of future unregulated development, a field survey would not be necessary.

If there is a possibility that the proposed development will cause adverse impacts upon habitat that has the potential to support a population of T&E, a field survey is necessary to demonstrate that the proposed development is designed to comply with the T&E species standards contained within the CMP.

PART THREE: THREATENED AND ENDANGERED SPECIES SURVEYS

If the habitat evaluation confirms the presence of suitable habitat for a particular T&E species and there is a reasonable possibility that a local population of those T&E species are present on a site, a field survey must be conducted to demonstrate consistency with the T&E standards. A field survey is an investigation of a defined study area to discover and document any evidence of the use of the site by a T&E species.

The study area for the field survey will be defined based upon the results of the habitat assessment and the characteristics of the T&E species of concern and their habitat. One of two types of field surveys may be utilized, either a targeted field survey or a full site field survey.

A targeted field survey is conducted on those portions of a site that have been determined to meet the criteria for potential habitat for a particular T&E species or group of species. Other portions of the site that do not contain potential habitat are not surveyed. The targeted survey may also be appropriate for situations where a relatively small portion of a very large site will be affected by development. The survey for evidence of any T&E species may be limited to the area of the site that will be affected by the proposed development, provided measures are taken to ensure that the remainder of the site is permanently protected. In such cases, all potential effects (including secondary impacts), should be considered in determining the area that will be

targeted. In situations where wetlands are present and wetland T&E species are of concern, a targeted field survey only considering upland species of concern may be utilized provided that the proposed development will maintain a 300 foot buffer to wetlands, as normally required by the CMP.

A full site field survey is a survey of all habitat on a development parcel for evidence of any T&E species. This type of survey is often appropriate for large-scale development that will disturb significant areas of habitat.

Requirements for T&E species surveys will be dependent upon the characteristics of the study area and the species of concern. Prior to beginning a survey, an applicant may wish to provide Commission staff with a proposed protocol describing the survey methodologies for the survey. This will enable the Commission staff to review and comment on the proposed protocols. It should be recognized that survey protocols may need to be changed as preliminary field findings become apparent.

The following general requirements apply to all T&E species surveys:

QUALIFIED PERSONNEL- To produce reliable results, the field survey must be conducted by personnel who have the experience and education to enable them to plan and implement a survey for the species of concern. They should be familiar with the life cycle of the T&E species in question and be capable of identifying the species at the significant phases in the life cycle. The person conducting the survey should have prior experience in conducting surveys for the species in question and in successfully locating and identifying the species. The survey personnel should be familiar with the preferred habitats of the species in question and have the experience to allow them to note and identify subtle evidence of the presence of the species. The individual(s) conducting the survey should be identified and their qualifications to undertake the survey for the species of concern must be provided.

LEVEL OF EFFORT- The time frame when a survey for a T&E species must be conducted will be affected by the species in question and the nature of the study area. Surveys must be designed to occur during the time periods during which the targeted species can be readily observed and identified. For plants, this may be the flowering period for some species or the period in which seeds have been set. Some plant species are persistent enough that they can be identified almost year round. A survey for a wildlife species that uses different habitat types to meet different needs must be designed so that the evaluators are investigating the study area during the different seasons or time periods that the species might be using the habitat.

As appropriate, drift fencing and trapping for certain species, targeted calling for other species and other proactive survey techniques may be required.

The number of work-days or work-hours needed to complete a survey will also vary. All areas of potential habitat identified in the habitat assessment should be surveyed. However, portions of the site that are of particular high quality should receive increased attention. A systematic sampling plan should be developed for a plant survey to ensure that an adequate number of sample plots, transects or sample points are investigated and

recorded. The survey plan for T&E wildlife species should make use of survey techniques appropriate for the species and may include techniques such as concentrated sampling of critical habitat areas (for example, breeding ponds, nesting trees, etc.), systematic sampling, road cruising, searches for physical evidence (tracks, shed skins, nests, eggs, scat or droppings, skeletons, etc.) tracks, placement of shelter boards and trapping and other evidence.

The duration of the survey will depend on the site and the targeted T&E species. Some wildlife surveys will require survey work during more than one season. The duration of the survey may also change based upon the results of the initial work. For example, if evidence of the presence of a T&E species is observed, further work to locate and quantify the local T&E population may be needed. The effectiveness of longer duration surveys should be monitored over the course of the survey to allow for modifications of the survey that may be necessary to improve the quality of the results.

REFERENCE POPULATIONS-Whenever possible, documented populations of the targeted T&E species should be observed to confirm that the survey is properly timed. For example, confirming that a nearby reference population of Pine Barrens tree frogs is vocalizing on a particular evening will help to validate that the timing and weather conditions are right for listening for the species at a survey site.

THE REPORT- Generally, the survey reports should include all of the information and documentation generated by the survey as well as the rationale for any variations from the survey plan submitted to the Commission. Some of the critical report components are described below.

- RECORDS AND DOCUMENTS: A review of the records and documents search should be included in any report. The applicant should provide documentation of the results of the data searches to the Commission staff. The applicant's documentation of the NJDEP Natural Heritage record search should include copies of the data request (including a copy of the site locator map) and the results provided by the NJDEP, Natural Heritage Program (including the cover letter). Documentation of the survey of local resources should include copies of any letters requesting information, copies of any responses and notes of conversations if applicable.

- DATA FORMS: Data forms should be used to report the data recorded in the field during the course of the survey. As appropriate, copies of these field data forms should be attached to the report. This should include all species of plants and wildlife observed.

- STUDY AREA: The survey should describe the rationale for the study area.

- SURVEY MAPS: A map or maps should identify the location of all areas investigated, the location of sampling points, trapping locations, observation points and other locations and features of significance to the survey. The maps should show these locations to scale and in relation to property lines and physical

features on the site. When and where appropriate, GPS coordinates should be provided.

- SURVEY DESCRIPTION: The survey should describe the survey techniques used and provide supporting documentation as to why such techniques are appropriate for the concerned species. The survey should also describe the number of work hours spent, number of personnel, the days on which the survey was performed, weather conditions on those days, any unusual events that might have affected the results, all evidence observed and areas that were sampled with negative results. If traps were used, the status of the traps should be reported. For example, were the traps removed, rendered non-functional, etc.

- PREY SPECIES AND COHORTS: When appropriate, the survey should note any species that may provide insight into the likelihood that the targeted species may be present. The presence and relative abundance of prey species should be observed. Any species that are potentially associated with the target species should be noted (for example, black racers that may den with pine snakes).

- ANALYSIS AND CONCLUSIONS: The report should include the site investigator's reasoned conclusions regarding the presence or absence of a local population of T&E species of plants or critical habitat for a local population of T&E wildlife species. If a local population or critical habitat exists, a discussion should be provided describing whether the proposed development has been designed to comply with the threatened or endangered species standards of the CMP. For any T&E animals identified, a discussion quantifying that animals home range must be included. Any recommended changes to the design of the proposed development project should be described.

  The analysis and conclusion section of the report should also consider, as appropriate, the following:

  Pinelands Management Area and Local Zoning: The Commission certified (approved) municipal zoning ordinances provide insight into the long term plans and expectations for the development of a parcel and adjoining lands. In the review of applications, consideration of the development potential of a given area based upon zoning provides a picture of the future habitat conditions if the area is developed at the permitted densities.

  Cumulative Impacts: Multiple smaller development projects may cause habitat disturbances that represent significant adverse impacts when considered in aggregate. Such cumulative effects of proposed development on a regional basis must be considered. It may be demonstrated that the proposed development is consistent with T&E standards when considered in a regional context. For example, if permanently protected lands are immediately adjacent to a proposed development, this information can be considered when determining potential impacts to a T&E species. This approach is particularly

appropriate for wide-ranging wildlife species that may have critical habitat needs extending over areas that can be measured in square miles.

Area of Disturbance: The area of habitat that will be disturbed as a result of development can be used as a measure of each project's relative potential to cause significant adverse impacts upon threatened or endangered species or their habitats. Any portions of the development site that will remain undisturbed should be permanently protected from all future development or disturbance. Land that is not permanently protected and could be subjected to future development or disturbance should be considered as subject to future disturbance.

Linear Development: Development such as utility lines may be installed over a great distance but often will result in a narrow width of disturbance. The overall area of disturbance may be small for this type of development. However, the large distance over which the linear development will be installed may result in the area of disturbance crossing multiple types of habitats. The involvement of different habitats increases the potential that the project may affect threatened or endangered species. The widths of disturbance associated with linear projects vary. Therefore, the type of investigation for linear projects should be based upon the length of the project and the area of disturbance.

Wetland Buffer Reductions: The Commission staff does not typically approve a reduction in the required buffer to wetlands for those wetlands that support a population of threatened or endangered species. Therefore, information generated by threatened or endangered species investigations is important if there is a potential for the presence of these species in wetlands for which a buffer reduction is proposed.

Duration and Timing of Disturbance: The season in which disturbance will occur should be considered for projects that will result in short term disturbance of habitat. For example, a utility line that will be installed in a grass field in the winter season is likely to have less impact upon nesting habitat for grassland birds than a project that would be installed in the spring. Information regarding the timing of construction and revegetation can be useful when a population of a particular species is suspected to be in the vicinity of a project.

Site Conditions: The unique conditions of each particular development parcel and nearby lands should be considered in assessing the likelihood that the area supports a population of threatened or endangered species. These conditions may include habitat fragmentation, existing structures, roads, clearings and other land uses. These conditions must be considered in relation to the habitat requirements of the particular species in question. A clearing that provides good foraging habitat for one species may represent an unacceptable fragmentation of a critical woodland habitat for another species. A small site containing high quality habitat may not be

capable of supporting certain threatened or endangered species if the habitat on the site is not contiguous to other high quality habitats.

- FILING: All reports, data and information submitted for an application will become part of the application file and may not be withdrawn after submission. The preparer should sign and date the report and state that the report is a true and accurate representation of the results of the study.