

# **ENVIRONMENTAL IMPACT STATEMENT**

## **REHABILITATION OF BEAVER DAM LAKE DAM**

Town of Blooming Grove  
Orange County, New York

*Prepared by:*  
Orange County Department of Public Works

*Lead Agency:*  
Orange County Legislature

June 8, 2012

**REHABILITATION OF BEAVER DAM LAKE DAM  
SEQR PART III ANALYSIS**

Project Description: The application proposes the rehabilitation of the dam at Beaver Dam Lake.

Location: The project site is located at the south end of Beaver Dam Lake approximately 500 feet north of the intersection of NY State Route 94 and Lake Road in the Town of Blooming Grove, Orange County, NY.

Lead Agency and Contact Person: Orange County Legislature  
Michael Pillmeier, Chairman  
15 Matthews Street  
Goshen, New York 10924  
(845) 291-2700

EIS Preparer: Charles W. Lee, P.E., Commissioner  
Orange County Department of Public Works  
Route 17M  
Goshen, New York 10924  
(845) 291-2760

Attorneys: David L. Darwin, County Attorney  
Orange County Attorney's Office  
15 Matthews Street  
Goshen, New York 10924  
(845) 291-3150

**REHABILITATION OF BEAVER DAM LAKE DAM  
SEQR PART III ANALYSIS**

**Table of Contents**

	Page
1.0 Executive Summary	1
2.0 Project Description	2
3.0 SEQR – Part II and III Evaluation of the Importance of Impacts	3
4.0 Alternatives	6

**APPENDICES**

## 1.0 Executive Summary

Beaver Dam Lake Dam is an earthfill embankment located on a tributary to the Moodna Creek in Salisbury Mills, Orange County, New York (Figure 1). The dam is owned by Orange County (County) on behalf of the Beaver Dam Lake-Protection and Rehabilitation District (Association). Beaver Dam Lake impounds a reservoir used for recreational activities by the Association and surrounding community. The dam is approximately 300 feet long and 35 feet high at its maximum section.

Based on available archival records, it is estimated that the dam was constructed in its' present configuration between 1900 and 1911 as an expansion of a pre-existing dam that was constructed during the mid to late 1800's. Both the original and expanded dams were constructed by Henry Powell Ramsdell to create a reservoir (Beaver Dam Lake formerly known as Ramsdell's Lake) to support manufacturing operations at the long defunct Arlington Paper Mill downstream at Salisbury Mills.

Beaver Dam Lake Dam was studied in 1980 as part of the US Army Corps of Engineers (ACOE) Phase I National Dam Safety Program. A "high hazard" classification was established for Beaver Dam Lake Dam in the Phase I Report; based on inspection of the potential downstream hazard areas. The Phase I report also recommended that the owner (the Association at that time), perform more detailed investigations and analyses of the dam and its appurtenant structures.

In 1985, the County retained the services of O'Brien & Gere Engineers, Inc. (O'Brien & Gere) to perform a Phase II investigation of the Dam. The investigation included: a subsurface investigation program a site survey visual inspection of the dam and its appurtenances; stability and hydrologic/hydraulic analyses; recommendations for modifications to the Dam to meet New York State Department of Environmental Conservation (NYSDEC) dam safety criteria; and cost estimates for the recommendations. The results of the investigations and analyses were used to develop construction plans and documents for improvements to Beaver Dam Lake Dam. Constructions of the improvements began in 1990 and were completed in 1991.

In 2005, the County entered into an agreement with O'Brien & Gere to provide professional engineering services related to construction of additional improvements to Beaver Dam Lake Dam. A design report was generated including studies and analyses performed to develop alternative approaches to remediating the observed deficiencies and meeting current New York State dam safety guidelines.

The project goal is to identify all elements that currently do not meet current NYSDEC Dam Safety Criteria and develop an economical and environmentally sensitive design for construction of these elements to bring the dam up to meet current New York State dam safety guidelines.

## **2.0 Project Description**

Beaver Dam Lake Dam has a maximum height of approximately 35 feet and an embankment length of approximately 300 feet. An 82-foot long spillway is located near the center of the earth embankment sections. The crest of the spillway is eight feet below the top of the dam. The spillway consists of a concrete gravity section, with an overlay of rockfill and shotcrete-covered gabion baskets. A nine-foot wide center pillar divides the spillway crest into a 34-foot wide west section and a 39-foot wide east section. The west section of the spillway is approximately one-tenth of a foot lower than the east portion. An earthen channel conveys the spillway discharge from the dam to the Moodna Creek, located approximately one-half mile downstream of the dam. The dam impounds Beaver Dam Lake, a reservoir with a normal surface area of approximately 160 acres and normal storage of about 1,400 acre-feet. Based on this storage capacity, the Beaver Dam Lake Dam is classified as a “large” dam in accordance with NYSDEC criteria.

Lake Road is located near the western shore of Beaver Dam Lake and crosses the outlet channel approximately 500 feet downstream of the Dam. Lake Road ends at County Route 94, a short distance from the crossing of the outlet channel. The Moodna Creek is located approximately 700 feet south of the intersection of Lake Road and Rt. 94, and the topography between the roads and the creek is generally flat (see Figure 1).

According to the Phase II Report prepared in 1985, there is limited historical information available for Beaver Dam Lake Dam. It appears that the dam was constructed in the mid to late 1800's. No references on construction methods, materials or dimensions were located during the investigation of the dam. However, based on field inspections, subsurface investigations and surveys performed as part of the Phase II investigation, it appears that the non-overflow sections of the dam consist of buttressed walls with footers founded upon a gravelly, silt and sand glacial till, supported by earthfill embankments on both the upstream and downstream faces of the walls. The spillway was constructed with cyclopean concrete and appears to also be founded on glacial till.

Two low-level outlet systems were installed for Beaver Dam Lake Dam. A twenty-four inch outlet is located at the west end of the spillway and an eighteen-inch outlet is located at the east

end of the spillway. Neither valve is currently operable with both lines daylight at the toe of the spillway section.

As stated previously, the results of the Phase II investigation (1985) were used to design a program of improvements to the Beaver Dam Lake Dam. These improvements consisted of placing stabilized rockfill on the earth embankments and installing rock-filled gabion baskets over the concrete spillway. The gabion baskets were covered with fiber-reinforced shotcrete several months after installation, which allowed for settlement of the rockfill before application of the cover. The gabion baskets do not extend to the spillway crest, but end approximately four feet below the crest.

In 2005 (the “current project”), the County contracted with O’Brien and Gere, Engineers, Inc. to perform various studies and analyses, including but not limited to a visual site inspection, underwater inspection, hydrology and hydraulics analysis and stability analysis, to develop alternative approaches and costs to remediating any observed deficiencies and meeting current New York State dam safety guidelines.

### **3.0 SEQR – Part II and III Evaluation of the Importance of Impacts**

#### **A. Impact on Land**

1. Will the proposed action result in a physical change to the project site?

- *Any construction on slopes of 15% or greater (15' rise per 100' of length), or where the general slopes in the project area exceed 10%.*

The proposed action will result in a physical change to the site. The project includes reconstruction of the spillway and the repair of the crest wall. The existing brick finish will be removed and cast in place concrete will be placed on the crest wall and precast concrete units will be installed in the spillway section.

The existing slope of the spillway and embankment areas is greater than 15%. Both areas will remain at approximately the same slope and geometric shape when complete. Appropriate erosion control methods will be employed to minimize sediment transport downstream including but not limited to silt fence, stone checkdams and turf reinforced matting. In conclusion, construction on slopes of

15% or greater will not have a significant impact.

- *Construction on land where the depth to the water table is less than 3'.*

As this project includes work immediately downstream adjacent to a lake, work will be conducted in areas where the water table is less than three feet from the surface. Reconstruction on the spillway crest (which is at normal water level) will impact the lake level for the duration of the construction. The proposed spillway crest will be reconstructed at approximately the same elevation as the existing crest elevation is now. Therefore, there will be no impact to the water table of the lake or downstream as a result of this project.

## **B. Impact on Water**

4. Will proposed action affect any non-protected existing or new body of water?

- *Other Impacts – Partial or complete draining of the lake during construction*

This project will cause only a temporary impact to the fish population in the lake caused by the draining of the existing lake to accommodate the necessary dam reconstruction. Alternative mitigation to this impact would require the installation of a substantial cofferdam system which was estimated to cost approximately \$1 million and therefore was not deemed practical for this project. Additionally, a letter dated August 5, 2011 from Mr. Larry Wilson of the NYSDEC indicates that the DEC will not mandate that measures be taken to prevent fish mortality during the drawdown of the water level. However, the recommended efforts provided in the letter will be implemented throughout the duration of the project. Those recommendations are as follows:

- a) Lowering the water level slowly at a constant rate to allow fish to migrate upstream
- b) Drawing down the lake level only as low as needed to implement repairs to the dam
- c) Maintaining pools of water in deeper areas of the lake if feasible.

- d) If the lower release at the base of the dam will be opened, crowding any remaining fish in the lake toward the outlet, prior to opening the release valve, to encourage their movement downstream of the dam.

Therefore, this impact is not significant as measures recommended by the NYSDEC will be employed throughout the project duration to minimize aquatic mortality and permanent impacts.

### **C. Impact on Plants and Animals**

9. Will proposed action substantially affect non-threatened or non-endangered species?
  - *Proposed action would substantially interfere with any resident or migratory fish, shellfish or wildlife species.*

This work will cause only a temporary impact to the fish population in the lake during the duration of the project. All appropriate measures as outlined in the letter dated August 5, 2011 from Mr. Larry Wilson of the NYSDEC will be employed to prevent fish mortality and/or any wildlife species. Additionally, this project involves a reconstruction of the existing dam and does not include any expansion of the existing structure. Therefore, this project will not have any apparent permanent impact to any resident or migratory fish, shellfish or wildlife species.

### **D. Impact on Open Space and Recreation**

13. Will proposed action affect the quantity or quality of existing or future open spaces or recreational opportunities?
  - *Other Impacts – For the duration of construction, 6-12 months, the recreational use of the lake will be limited or unavailable.*

This action will have a temporary effect on recreational opportunities as the lake will be drained for the project construction. Until the water level in the lake is restored, the recreational use of the lake will be limited or unavailable. The impact to the temporary restriction of recreational use can be mitigated by the use of substantial cofferdams. However, due to the cost of the cofferdams, which was estimated to cost approximately \$1 million, and potential for seepage into the work



area of the permanent repair deemed this option undesirable. Consequently, there is no significant permanent impact as a result of the project as the water level will be restored following the reconstruction of the dam.

## **4.0 Alternatives**

We evaluated a number of potential alternatives to the Proposed Action, including the following:

### **A. No Action Alternative**

The No Action Alternative considers a future condition in which the Proposed Project is not undertaken and may be subject to complete removal by NYSDEC which will cause significant environmental and recreational impacts to the area.

The No Action Alternative would not meet the purpose and need for the Proposed Project, which is to provide a dam that meets current NYSDEC dam safety guidelines.

### **B. Alternative A : Roller Compacted Concrete**

Overtopping protection can be achieved by placing an appropriate armoring material on the entire earth embankment. In the past 20 years, roller compacted concrete (RCC) has become the preferred overlay material to protect an earthfill embankment, primarily due to its ease of construction and its relative low cost. Articulated Concrete Block (ACB) overlays have recently proven to be a cost-effective alternative to RCC; however, these applications have typically been limited to overtopping depths of three (3) feet or less, and to sites with less complicated downstream topography. RCC installation requires an on-site or nearby mixing plant, and the mobilization of a sizeable amount of equipment. Additionally, armoring generally requires the entire crest, downstream slope and toe area to be completely cleared, grubbed and stripped. At Beaver Dam Lake Dam, this would only entail removing the minor vegetative growth observed on the crest and downstream face of the dam. The rockfill installed in the previous improvements program can remain in place. A sand filter/drainage layer is also generally installed beneath the RCC to intercept any seepage through the dam and to direct the seepage to a toe drain system, however, a sand drain was placed below the existing rockfill, and additional drainage will not be necessary as part of the proposed improvements. Figure 4 presents a cross-section sketch of the embankment with the proposed RCC overlay.

The remaining alternatives (B, C, D, & E) include measures that are required to meet the current goals of the proposed project. The following list includes elements that are the same or are very similar to these alternatives.

- Installation of piles in the spillway to aid in resistance due to the potential of sliding
- Concrete core wall repair
- West Abutment closure (infill section)
- Repair of the two low level outlet pipes including the installation of trash racks
- Repair of the two gates and operators for the low level outlet pipes
- Sedimentation and erosion control measures

There are two additional issues regarding the repair of the dam that can be corrected in one of several ways. These issues include the structural stability of the dam which may be compromised during the design flood event and, the erosion that may occur if the dam were overtopped.

#### C. Alternative B

The second alternative proposed to protect Beaver Dam Lake Dam from failure during the spillway design flood (SDF) is increase the discharge capacity of the spillway system. An emergency spillway could be constructed at the reservoir elevation resulting from the 100-year storm by lowering the crest walls and lining a portion of the earth embankment. Unfortunately, even if the entire dam was lowered to this elevation (336.9), over four feet of water will still overtop the dam, and so the dam must still be armored. Therefore this option was not investigated further.

#### D. Alternative C

Raising the top of dam elevation is also a method used to protect earth embankments from failure during the SDF. However, several issues limit the viability of this alternative for the Beaver Dam Lake Dam as follows: 1) the dam would need to be raised by over seven feet 2) houses located near the shoreline would be subject to additional flooding and 3) the raised section would need to be tied into the existing crest wall, which would have to be substantially strengthened. Therefore this alternative was not investigated further as this is not economically feasible.

## E. Alternative D

This alternative includes the removal of the top eleven feet of spillway and placement of a 2.5 foot cast in place concrete cap. Four precast concrete sections 8.5 feet high, called 'fuse gates', will be set on top of the concrete cap. These precast concrete sections will act as the top of the spillway under normal conditions. During very large storm events these fusegate sections are designed to 'topple over' at certain predetermined water elevations. Each fusegate is slightly different so it topples over at different water elevations. The goal of this system is to keep all flood waters within the confines of the spillway therefore not requiring additional and expensive erosion control measures on the embankment.

# **APPENDICES**



Andrew M. Cuomo  
Governor

Andy Beers  
Acting Commissioner

## New York State Office of Parks, Recreation and Historic Preservation

Historic Preservation Field Services • Peebles Island, PO Box 189, Waterford, New York 12188-0189  
518-237-8643

www.nysparks.com

2011 FEB 14 11:25

February 07, 2011

Ronald Meyer  
Orange County DPW  
P.O. Box 509  
2455-59 Route 17M  
Goshen, New York 10924-0509

Re: DEC  
Rehabilitation of Beaver Lake Dam  
Beaver Lake  
BLOOMING GROVE, Orange County  
11PR00862

Dear Mr. Meyer:

Thank you for requesting the comments of the Field Services Bureau of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the Field Services Bureau and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

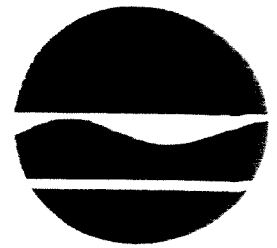
Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Register of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont  
Acting Deputy Commissioner for Historic Preservation

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**  
**Division of Fish, Wildlife & Marine Resources**  
**New York Natural Heritage Program**  
625 Broadway, 5<sup>th</sup> Floor, Albany, New York 12233-4757  
**Phone:** (518) 402-8935 • **Fax:** (518) 402-8925  
**Website:** [www.dec.ny.gov](http://www.dec.ny.gov)



Joe Martens  
Acting Commissioner

February 22, 2011

2011 FEB 23 AM 11:29  
DECISIONS

Ronald J. Meyer  
Orange County – Dept. Public Works  
PO Bx 509, 2455-2459 Route 17 M  
Goshen, NY 10924-0509

Dear Mr. Meyer:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to an Environmental Assessment for the proposed Rehabilitation of the Beaver Dam Lake Dam, site as indicated on the map you provided, located in the Town of Blooming Grove, Orange County.

Enclosed is a report of rare or state-listed animals and plants, significant natural Communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site. For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or natural communities. This information should not be substituted for on-site surveys that may be required.

The enclosed report may be included in documents that will be available to the public. However, any enclosed maps displaying locations of rare species are considered sensitive information, and are intended only for the internal use of the recipient; they should not be included in any document that will be made available to the public, without permission from the New York Natural Heritage Program.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, as listed at [www.dec.ny.gov/about/39381.html](http://www.dec.ny.gov/about/39381.html).

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,  
  
Tara Salerno, Information Services,  
New York Natural Heritage Program

Enc.  
cc: Region 3

# 154

## Natural Heritage Report on Rare Species

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor,  
Albany, NY 12233-4757  
(518) 402-8935



- The information in this report includes only records entered into the NY Natural Heritage databases as of the date of the report. This report is not a definitive statement on the presence or absence of all rare species or significant natural communities at or in the vicinity of this site.
- Refer to the User's Guide for explanations of codes, ranks and fields.
- We do not provide maps for species most vulnerable to disturbance.

---

### Natural Heritage Report on Rare Species and Ecological Communities



#### MAMMALS

<i>Myotis sodalis</i>			Office Use
Indiana Bat	NY Legal Status: Endangered	NYS Rank: S1 - Critically imperiled	11288
Maternity colony	Federal Listing: Endangered	Global Rank: G2 - Imperiled	ESU
	County: Orange		USFWS
	Town: Blooming Grove, Cornwall, Crawford, Deerpark, Hamptonburgh, Minisink, Montgomery, Ne		
	Location: Documented within 2 miles of project site. Animals can move 2 miles or more from documented locations. For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located.		

---

1 Records Processed

More detailed information about many of the rare and listed animals in New York, including biology, identification, habitat, conservation, and management, are available online in Natural Heritage's Conservation Guides at [www.acris.nynhp.org](http://www.acris.nynhp.org), from NatureServe Explorer at <http://www.natureserve.org/explorer>, and from NYSDEC at <http://www.dec.ny.gov/animals/7494.html>.

**ROBERT G. TORGERSEN, LA, CPESC**  
**LANDSCAPE ARCHITECTURE AND ENVIRONMENTAL SCIENCES**

THREE MAIN DRIVE, NANUET, NY 10954  
Tel 845 623 4835 Fax 845 627 6622 E mail – [rtorger@verizon.net](mailto:rtorger@verizon.net)

NYS LA LIC. # 451  
NJS LA LIC. # 148  
CPESC CERT # 899

**HABITAT SITE INVESTIGATION AND REPORT**  
**REHABILITATION OF BEAVERDAM LAKE DAM**  
**SALISBURY MILLS, ORANGE COUNTY, NY**  
**ORANGE COUNTY DEPT OF PUBLIC WORKS**

March 18, 2011

The Orange County Department of Public Work is proposing to rehabilitate the Beaver Dam Lake Dam, by restoring portions of the concrete spillway and surrounds. Access will be via an existing unpaved access drive off Lake Road.

The woodland immediately adjacent to the dam itself, the spillway and the project access route is a deciduous forest. There are no suitable trees in this area that would provide roosting habitat for the Indiana Bat, nor is there any habitat that would provide foraging opportunities for them in the vicinity. In the immediate area the majority of the trees are six inches in caliper or less, mainly Red Maple and Red Oak. There is one 36 inch caliper White Oak in the vicinity which will not be disturbed.

A letter from Tara Salerno, New York Natural Heritage Program, New York State Dept of Environmental Conservation, Division of Fish, Wildlife and marine Resources, New York Natural Heritage Program, dated February 22, 2011, stated that the Indiana Bat has been documented within 2 miles from the project site in the Towns of Blooming Grove, Cornwall, Crawford, Deerpark, Hamptonburgh, Minisink, Montgomery, and Newburgh. A site investigation was required to ascertain the possible presence of this species and of any possible impact on the species from the proposed site development. A site investigation was conducted on March 16, 2011 for the purpose of investigating the possible presence of Indiana Bat habitat, (*Myotis sodalists*) habitat within or near the subject site. The NYSDEC has identified this species as endangered in New York State.

**Indiana Bat**

The Indiana bat is one of nine bat species found in New York. With the coming of spring, Indiana bats disperse from their winter homes, known as hibernacula, some going hundreds of miles. Indiana bat hibernacula and hibernacula characteristics have been well documented by numerous observational studies reported in the literature. Indiana bats spend the winter months in secluded caves or mines. There are hibernacula currently known in Albany, Essex, Warren, Jefferson, Onondaga and Ulster Counties. To date there are three known hibernacula located in the immediate vicinity of Kingston, New York. The hibernacula are critical to the survival of this species because so few are known to exist.

The Indiana bat typically hibernates in caves/mines in the winter, during which the hibernation period can extend from September to June, and roosts under bark or in tree crevices



in the spring, summer and fall. Suitable potential summer roosting habitat is characterized by trees (dead, dying, or alive) or snags, greater than or equal to 5 inches diameter breast height (d.b.h.) with exfoliating or defoliating bark, or containing cracks or crevices that could potentially be used by Indiana bats as a roost. However, maternity colonies generally use trees greater than or equal to 9 inches d.b.h. Overall, structure appears to be more important than a particular tree species or habitat type. Females appear to be more habitat specific than males presumably because of the warmer temperature requirements associated with gestation and the rearing of young. As a result, they are generally found at lower elevations than males may be found. Roosts are warmed by direct exposure to solar radiation, thus trees exposed to extended periods of direct sunlight are preferred over those in shaded areas. As larger trees afford a Greater thermal mass for heat retention, they appear to be preferred over smaller trees.

Streams, associated floodplain forests, and impounded water bodies (ponds, wetlands, reservoirs, etc.) provide preferred foraging habitat for Indiana bats, some of which may fly up to 2-5 miles from upland roosts. Indiana bats also forage within the canopy of upland forests, over clearings with early successional vegetation (e.g., old fields), along the borders of croplands, along wooded fencerows, and over farm ponds in pastures (U.S. Fish and Wildlife Service 1999). While Indiana bats appear to forage in a wide variety of habitats, they seem to tend to stay fairly close to tree cover.

Outside the hibernation period, Indiana bats are very mobile and use both live trees greater than 5 inches dbh especially containing dead wood and snags and dead trees in a variety of habitats for roosts during the summer months. They feed solely on flying insects during the summer months, and presumably males spend the summer preparing for the breeding season and winter that follows. Females congregate in nursery colonies, only a handful of which have ever been discovered. These nursery colonies found in the lower Hudson Valley vicinity were located near sources of open water, along the banks of streams or lakes in forested habitat, or adjacent to freshwater wetland areas, under the loose bark of mature shagbark hickory trees, and in some cases, in dead trees, mainly black locusts, that have open or hanging bark to provide shelter for the bats, and which can contain from 50-100 females. Although roosts have been documented in a wide array of hardwood and pine species, trees and snags that have exfoliating bark or crevices, such as Shagbark Hickory and Black Locust, appear to be most important to this species because females and their young rest under the bark. Trees, equal to or greater than 6 inches dbh with exfoliating bark and/or crevices, southern or western exposure, and solar exposure (tree structure above canopy) appear to be the most important habitat for maternal colonies during the summer months. In summer, most reproductive females occupy roost sites under the exfoliating bark of dead trees that retain large, thick slabs of peeling bark. Primary roosts usually receive direct sunlight for more than half the day. Roost trees are typically within canopy gaps in a forest, in a fenceline, or along a wooded edge. Habitats in which maternity roosts occur include riparian zones, bottomland and floodplain habitats, wooded wetlands, and upland communities. Indiana bats typically forage in semi-open to closed (open understory) forested habitats, forest edges, and riparian areas.

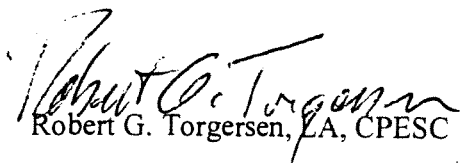
## HABITAT ASSESSMENT/CONCLUSION

### Indiana Bat

The property was surveyed for the presence of Indiana Bat summer roost and maternal colony habitat. This assessment included field observation of the existing habitat covers types on the property. The following criteria were evaluated to make the determination of possible habitat on this site:

1. Is the project within a County identified by the Service as known or likely to contain Indiana bats?
2. Is the project at an elevation of  $\leq 900$  feet above sea level (the maximum elevation we have observed Indiana bat maternity colonies-use in New York State)?
3. Are there forested (upland or wetland) habitats present within the proposed action area?
4. Does the proposed project involve any disturbance of forested (upland or wetland) habitat or any mine(s)/cave(s) that could serve as a hibernaculum?
5. Evaluate the property in areas that will be impacted by the proposed development that could provide the necessary environmental conditions for summer habitat, to cover all of the identified vegetation cover types.
6. Establish sampling routes throughout the site as appropriate to the extent of the site to be disturbed to be walked and trees greater than 6 inches dbh investigated. Trees meeting the above criteria were examined to determine their suitability to support Indiana Bats such as exfoliating bark, holes, cavities, and crevices.
7. General conditions of surrounding habitat are also reviewed to determine tree location, size, and position in habitat.

The various habitats in and in the vicinity of the dam were evaluated for suitable Indiana Bat habitat and foraging uses. The existing woodland along the project access route and the existing conditions in the vicinity of the proposed work on the dam does not provide any of the required habitat or foraging opportunities for the Indiana Bat. The property is therefore considered not to contain potential habitat for the Indiana Bat.

  
Robert G. Torgersen, LA, CPESC

**HABITAT SITE INVESTIGATION AND REPORT  
REHABILITATION OF BEAVERDAM LAKE DAM**



Photo # 1 – White oak along edge of access route – access route to left of stone wall in photo above. No significant trees in or along access route.



Photo # 2 – Existing woodland near stream at bottom of spillway – area not to be disturbed.

**New York State Department of Environmental Conservation**  
**Division of Fish, Wildlife and Marine Resources, Region 3**  
Bureau of Inland Fisheries  
21 South Putt Corners Rd., New Paltz, NY 12561  
Phone: (845) 256-3161 • Fax: (845) 255-3042  
Website: [www.dec.ny.gov](http://www.dec.ny.gov)



August 5, 2011

Ronald J. Meyer, P.E.  
Orange County Department of  
Public Works  
P.O. Box 509, 2455-2459 Route 17M  
Goshen, NY 10924

Dear Mr. Meyer:

Thank you for your letter of August 2, 2011, requesting documentation of this Department's recommendations regarding the drawn down of Beaver Dam Lake, in order to make repairs to the dam in accordance with NYS DEC Dam Safety requirements.

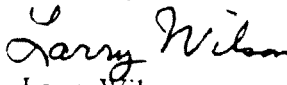
As I stated during the Beaver Dam Lake Association meeting on September 30, 2010, as Beaver Dam Lake is privately owned, DEC will not mandate that measures be taken to prevent fish mortality during the drawdown of the water level. However we do recommend that efforts be made to minimize loss of the fish community inhabiting the lake. Measures that may reduce fish mortality include:

- Lowering the water level slowly at a constant rate to allow fish to migrate upstream.
- Drawing down the lake level only as low as needed to implement repairs to the dam.
- Maintaining pools of water in deeper areas of the lake if feasible. If the lake will be drawn down for an extended period, mechanical aeration of the pool may be necessary.
- If the lower release at the base of the dam will be opened, crowding any remaining fish in the lake toward the outlet, prior to opening the release valve, to encourage their movement downstream of the dam.

Other measures may also be appropriate. In any case, there will likely be some level of fish mortality. The Beaver Dam Lake Association may want to consider a contingency plan for carcass removal and disposal, as needed.

Please be aware that removal and transport of any fish to another waterbody is prohibited. In addition, should the lake association wish to restock the lake after dam repairs are made and the lake is refilled, a fish stocking permit from DEC is required.

Please contact me at (845) 256-3070 or via email at [lrwilson@gw.dec.state.ny.us](mailto:lrwilson@gw.dec.state.ny.us) if you require additional information.

Sincerely,  
  
Larry Wilson

cc: S. Braymer, Dam Safety Unit