

**FINAL STUDY REPORT  
OSPREY NESTING SURVEY  
RSP 3.30**

**CONOWINGO HYDROELECTRIC PROJECT**

**FERC PROJECT NUMBER 405**



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## EXECUTIVE SUMMARY

Exelon Generation Company, LLC (Exelon) has initiated with the Federal Energy Regulatory Commission (FERC) the process of relicensing the 573-megawatt Conowingo Hydroelectric Project (Conowingo Project). The current license for the Conowingo Project was issued on August 14, 1980 and expires on September 1, 2014. FERC issued the final study plan determination for the Conowingo Project on February 4, 2010, approving the revised study plan with certain modifications. The final study plan determination required Exelon to conduct nesting surveys for osprey.

An initial study report (ISR) was filed on February 22, 2011, containing Exelon's 2010 study findings. An initial study report meeting was held on March 9, 10 and 11, 2011 with resource agencies and interested members of the public. Formal comments on the ISR including requested study plan modifications were filed with FERC on April 27, 2011 by Commission Staff, several resource agencies and interested members of the public. Exelon filed responses to the ISR comments with FERC on May 27, 2011. On June 24, 2011, FERC issued a study plan modification determination order. The order specified what, if any, modifications to the ISRs should be made. For this study, FERC's June 24, 2011 order required no modifications to the original study plan. An updated study report (USR) was filed on January 23, 2012 describing the combined results of the 2010 and 2011 Conowingo osprey nesting surveys. This final study report is being filed with the Final License Application for the Project.

The osprey (*Pandion haliaetus*), a large, fish-eating raptor prefers open bodies of water and is found near lakes, rivers, and ponds where fish are easily obtainable. Ospreys tend to nest close to open water in conspicuous nesting locations such as high in the canopy of trees and in human-made structures. Ospreys have been documented to be present in and nesting in the Conowingo Hydroelectric Project area. Although the osprey is not listed as having federal status under the Endangered Species Act (ESA) or Maryland Wildlife Code, it is listed as State-threatened under the Game and Wildlife Code in Pennsylvania and is additionally protected under the Migratory Bird Treaty Act of 1918.

Surveys were conducted according to Pennsylvania Game Commission (PGC) protocol in the project area, in Pennsylvania and Maryland in spring and early summer of 2010 and 2011 and were augmented with nest monitoring activities. Methods included survey for ospreys and/or their nests from boat as well as from terrestrial point locations.

A total of eleven (11) osprey nests were found in the project area in 2010 and a twelfth (12) nesting location was identified on an unnamed island adjacent to Turkey Island in the project area in 2011. Of these nests, four are located in the Maryland portion of the project area and eight are located in the

Pennsylvania portion of the project area. During 2011 surveys, all of the nests identified during 2010 were active with the exception of two nests in the Pennsylvania portion of the project area. Nests in the project area ranged from sparse nests representative of newer nests to larger, well-developed nests representative of nest sites with longer nesting histories. Young were known to have fledged from at least four nests in the project area in 2010 and four nests in 2011.

Nest location and activity data were provided to PGC and Maryland Department of Natural Resources (MDNR) as instructed, to meet the survey protocol requirement for notification regarding the discovery of osprey nests in the project area.

**TABLE OF CONTENTS**

**1. INTRODUCTION..... 1**

**2. BACKGROUND ..... 3**

**3. METHODS ..... 5**

    3.1 Field Survey Schedule ..... 5

    3.2 Field Survey Techniques ..... 5

**4. RESULTS AND DISCUSSION ..... 12**

    4.1 Pennsylvania Results ..... 12

    4.2 Maryland Results ..... 14

    4.3 Discussion..... 15

**5. CONCLUSIONS ..... 22**

**REFERENCES..... 23**

**LIST OF TABLES**

**TABLE 3.1.1-1: 2010 SURVEY LOG..... 24**  
**TABLE 3.1.1-2: 2011 SURVEY LOG..... 25**  
**TABLE 4-1: 2010 OSPREY NEST SUMMARY ..... 26**  
**TABLE 4-2: 2011 OSPREY NEST SUMMARY ..... 28**  
**TABLE 4-3: AVIAN SPECIES HEARD OR SEEN DURING SURVEYS – 2010 & 2011..... 30**

**LIST OF FIGURES**

**FIGURE 1-1: LOCATION MAP..... 32**  
**FIGURE 3.1-1: SURVEY AREA MAP..... 33**  
**FIGURE 4.1-1: OSPREY NEST LOCATION MAP ..... 34**

## LIST OF ACRONYMS

DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
ESA	Endangered Species Act
Exelon	Exelon Generation Company, LLC
FERC	Federal Energy Regulatory Commission
ILP	Integrated Licensing Process
MDNR	Maryland Department of Natural Resources
mph	miles per hour
MW	Megawatt
NOI	Notice of Intent
PAD	Pre-Application Document
PBAPS	Peach Bottom Atomic Power Station
PGC	Pennsylvania Game Commission
PNDI	Pennsylvania Natural Diversity Database
PPL	Pennsylvania Power and Light
Project	Conowingo Hydroelectric Project
PSP	Proposed Study Plan
ROW	Right-of-Way
RSP	Revised Study Plan

## 1. INTRODUCTION

Exelon Generation Company, LLC (Exelon) has initiated with the Federal Energy Regulatory Commission (FERC) the process of relicensing the 573-megawatt (MW) Conowingo Hydroelectric Project (Project). Exelon is applying for license renewal using the FERC's Integrated Licensing Process (ILP). The current license for the Conowingo Project was issued on August 14, 1980 and expires on September 1, 2014.

Exelon filed its Pre-Application Document (PAD) and Notice of Intent (NOI) with FERC on March 12, 2009. On June 11 and 12, 2009, a site visit and two scoping meetings were held at the Project for resource agencies and interested members of the public. Following these meetings, formal study requests were filed with FERC by several resource agencies. Many of these study requests were included in Exelon's Proposed Study Plan (PSP), which was filed on August 24, 2009. On September 22 and 23, 2009, Exelon held a meeting with resource agencies and interested members of the public to discuss the PSP.

Formal comments on the PSP were filed with FERC on November 22, 2009 by Commission staff and several resource agencies. Exelon filed a Revised Study Plan (RSP) for the Project on December 22, 2009. FERC issued the final study plan determination for the Project on February 4, 2010, approving the RSP with certain modifications.

The final study plan determination required Exelon to conduct an Osprey Nesting Survey in the Project area ([Figure 1-1](#)), which is the subject of this report. The objective of this study is to identify by: 1) conducting a review of existing literature, studies, or other data regarding known locations of osprey nests and/or frequent activity in the project area; 2) determining the presence/absence of the species in the project area; 3) verifying existing and new nesting locations of the osprey in the project area; and 4) monitoring activity levels in the project area.

An initial study report (ISR) was filed on February 22, 2011, containing Exelon's 2010 study findings. An initial study report meeting was held on March 9, 10 and 11, 2011 with resource agencies and interested members of the public. Formal comments on the ISR including requested study plan modifications were filed with FERC on April 27, 2011 by Commission Staff, several resource agencies and interested members of the public. Exelon filed responses to the ISR comments with FERC on May 27, 2011. On June 24, 2011, FERC issued a study plan modification determination order. The order specified what, if any, modifications to the ISRs should be made. For this study, FERC's June 24, 2011 order required no modifications to the original study plan. An updated study report (USR) was filed on



January 23, 2012 describing the combined results of the 2010 and 2011 Conowingo osprey nesting surveys. This final study report is being filed with the Final License Application for the Project.

## 2. BACKGROUND

The osprey, a large bird of prey, specializes in catching fish with its talons by diving feet first into open bodies of water. Their wing span approaches six feet and they share a habitat preference with bald eagles (*Haliaeetus leucocephalus*) for open waters such as ponds, rivers, streams, and lakes. Adult characteristics include plumage that is a distinctive dark brown above and bright white below with a prominent dark eye stripe and yellow eyes (PGC 2009b). Juvenile appearance is very similar to adults although the eyes are red and there are numerous but minor variations in plumage (Poole et al. 2002). Ospreys are easy to identify due to their size, characteristic bent wing silhouette and behavior. They are often observed hovering over water when fishing, carrying fish (i.e., packing a lunch), and when engaging in aerial courtship displays (e.g., skydancing) (Poole et al. 2002). Vocalization consists of series of short chirping whistles and in type may include alarm, solicitation, guard, excited, and screaming calls (Poole et al. 2002).

Ospreys nest in close proximity to water in live trees and dead snags, but in recent years have been shown to have a preference for human-made structures such as artificial nesting platforms cell phone towers, and electric transmission towers (Brauning 1992; PGC 2009b). Nest materials can include large and small sticks, grass, algae, and human-made objects such as paper/plastic bags and other debris. The size of nests vary from small and flat in first season to extensively large, deep nests resulting from multiple years of nest building and use (Poole et al. 2002).

Migrating ospreys arrive in the Northeast from overwintering locations in the south every year typically from the last week of March through early May (McWilliams and Brauning 2000). Courtship begins upon arrival and courtship behavior may include aerial displays of fish and nest materials, mate feeding, bathing/preening, and mate guarding (Poole et al. 2002). Nest sites are built close to or over water and two or three reddish brown spotted eggs are incubated for approximately 37 days (McWilliams and Brauning 2000; Poole et al. 2002) to forty days (PGC 2009b). The female is fed by the male during this time as she performs most of the incubation and brooding tasks while the male obtains fish and provides protection of the nest area from predators.

First flight of fledglings is usually 50 to 55 days from hatching and is preceded by the young exercising their wings at the edge of the nest (Poole et al. 2002). Fledged young may stay near the nest and be supplemented with food from their parents for several weeks after first flight (Poole et al. 2002). Southward migration away from breeding grounds occurs in the fall from September through November (Brauning 1992) and as a result osprey occurrence in the Project Area is much reduced over winter.

Historically, threats to the species have included illegal hunting and the eggshell thinning effects of persistent organochlorine pesticides, such as dichlorodiphenyltrichloroethane/dichlorodiphenyldichloroethylene) (DDT/DDE) and other contaminants (PCG 2009b). Without the ability to successfully raise young, osprey numbers declined precipitously during the 1950s – 1970s when key populations crashed. For example, the Chesapeake Bay area alone lost approximately half of its breeding ospreys (Poole et al. 2002). Once DDT was banned, populations began to recover overall in the U.S. The ban on DDT, the bird's protected status in the state, and hacking or re-introduction programs implemented in 1980 – 1996 are credited with aiding the recovery of the species in Pennsylvania (Brauning 1992).

Accounts of the species in Pennsylvania indicate that ospreys have nested in proximity to the project area in recent years. In 2008, PGC identified six known osprey nests nearby (letter dated June 5, 2008). These were at Piney Island (2), on the western shore of the Susquehanna River across from Piney Island (2), and in the Conowingo Reservoir (2) about three miles north of the Maryland-Pennsylvania state line (PGC 2008). In Maryland, ospreys have historically built nests on Rowland Island just below the Conowingo Dam (McConaughy 1997). Cohen (2004), in the *Phase I Conservation Plan for Pennsylvania Important Bird Area #57*, states that ospreys are regularly observed from Hawk Point in Susquehannock State Park. Habitat characteristics in the project area suitable for this species to potentially forage and nest successfully include open, shallow waters for fishing and abundant trees and human-made structures available in Conowingo Pond and surrounds for fishing, perching and nesting.

Although the osprey is not listed as having federal status under the Endangered Species Act (ESA) or Maryland Wildlife Code, it is listed as state-threatened under Game and Wildlife Code in Pennsylvania.

### **3. METHODS**

To meet the overall goal of identifying osprey nesting locations within the project area ([Figure 1-1](#)) the following methods were used. The survey methods used for this study were based on the survey protocol outlined in PGC's November 20, 2009 study request (PGC 2009a).

Background information regarding osprey activity in the project area was initially collected by way of a literature review. This information has been provided within Section 2 of this report. The references used are documented within the bibliography section of this report.

Field studies were conducted in the project area within Pennsylvania, and portions of the project area within Maryland. The survey area for this study is identified on [Figure 3.1-1](#). Surveys were conducted by boat and on foot during the active nesting season for osprey. In addition, nests identified in the project area were periodically monitored from point locations for osprey and/or osprey nesting activity. The field survey methodology is described in further detail below.

#### **3.1 Field Survey Schedule**

As the study plan was developed in response to the PGC's letter request for survey (dated November 20, 2009) in connection to the threatened status of the species in Pennsylvania, the survey protocol provided by PGC was used for surveys in both the Pennsylvania and Maryland portions of the project area. Osprey survey protocol specific to Maryland was not provided during study plan development or during comment periods for the relicensing. Three surveys were conducted each year in spring and early summer of 2010 and 2011 and were conducted at least two weeks apart as outlined in the protocol. Although the protocol suggests conducting surveys April 5<sup>th</sup> - June 1<sup>st</sup>, surveys were conducted slightly later in the spring to capture a more complete profile of the entire range nesting activity including courtship, nest building, incubation, brooding, and fledging. In addition to established survey dates, other observations occurring incidental to surveys (e.g. osprey observations during the course of other biological studies conducted for the project in the project area) that confirm osprey nesting activity or relate to the status of nests in the project area were recorded and are included herein, as applicable. Surveys were conducted from late April through early July, 2010 and from early May to late June, 2011.

#### **3.2 Field Survey Techniques**

Boat-based and terrestrial surveys were conducted in the Survey Area from late April through late June, 2010 (see [Table 3.1.1-1](#)) and from early May through late June, 2011 (see [Table 3.1.1-2](#)). Nest monitoring of nests accessible from point locations on land was also conducted as needed from land-based locations, to check the status of nests. The method used for the boat-based nesting surveys was a visual scan with

binoculars and spotting scope of the shoreline of Conowingo Pond for ospreys and nests. The boat was operated at slow speeds (5 mph) parallel to the shoreline, as close as water depths would safely allow, while observers scanned the shoreline, visible levels of canopy and human-made structures (e.g. electric transmission line towers) for nests. The path of travel for these surveys was from Muddy Creek Boat Launch downstream on the western shoreline ([Photo 1](#)) to the Conowingo Dam ([Photo 2](#)) and return upstream on the eastern shoreline. Mount Johnson Island shoreline was surveyed in its entirety by a complete circuit of the island ([Photo 3](#)). Mount Johnson Island was included as a priority due to its significance as a raptor nesting site (Cohen 2004). Other islands surveyed included the lower half of Lower Bear, Turkey Island, Little Chestnut, Big Chestnut, Wolf, Hennery, and Sicily ([Photos 4 through 7](#)). Complete circuits were made around the bases of towers located in the middle of Conowingo Pond, across from PBAPS to more closely view towers ([Photo 8](#)). In addition to boat-based surveys, land-based or terrestrial surveys were conducted from point locations on McCalls Ferry Road to view the portion of the project area between Holtwood Dam and Norman Wood Bridge ([Photo 9](#)). If osprey nests were discovered, they were photographed and documented as to location (GPS coordinates), composition, condition of nest(s) and activity level of birds present. Presence/absence, vocalization and breeding behavior (e.g., sky dancing, copulation, mate feeding) of ospreys were also documented for future reference in searching for nests. Data on other avian species seen and heard during survey were collected, including data on bald eagles (PA Threatened) and black-crowned night-herons (PA Endangered).

**Photo 1: View downstream of the western shoreline of Conowingo Pond**



**Photo 2: Conowingo Dam and superstructure viewed from upstream**



**Photo 3: View upstream from the south end of Mount Johnson Island**



**Photo 4: Downstream view of Turkey Island (left) and numerous other islands (middle)**



**Photo 5: Upstream view in Survey Area of Norman Wood Bridge**



**Photo 6: Downstream view between Lower Bear Island (left) and Big Chestnut Island (right)**





**Photo 7: Downstream view between Hennery Island (left) and Big Chestnut Island (right)**



**Photo 8: Northeast view of towers located in Conowingo Pond across from PBAPS**



**Photo 9: View of Survey Area between Holtwood Dam and Norman Wood Bridge (as seen from McCalls Ferry Road)**



## 4. RESULTS AND DISCUSSION

A total of twelve (12) osprey nests were located in the project area, or immediate vicinity, in 2010 and 2011 ([Table 4-1](#) and [Table 4-2](#)). Eleven (11) of the nests were active during the 2010 survey season, and four (4) pairs of osprey successfully fledged one or more chicks. In 2011 an additional nest (PA-9) was observed late in the season on the unnamed island adjacent to Turkey Island although the nest did not remain active after initial nest building activity was observed on June 13, 2011. Two nests (Nest No. PA-4 and PA-6) present and active in 2010 were abandoned (PA-6) or absent (PA-4) in 2011. A total of four (4) pairs of osprey fledged one or more chicks in 2011 with two pairs (Nest No. PA-7 and MD-3) each fledging three chicks. One inactive nest, unconfirmed as to species, was found early in the season in 2010, but was not used in 2010 or in 2011 and therefore it is not addressed further in this report nor is it included in any reported nest totals or figures.

Other avian species were recorded in both Survey Areas including the Pennsylvania- Threatened bald eagle (*Haliaeetus leucocephalus*) ([Photo 20](#)) and an occurrence below Conowingo Dam in Maryland of one black-crowned night-heron (*Nycticorax nycticorax*), a Pennsylvania-Endangered species. A comprehensive list of other avian species heard or seen in the project area during surveys in 2010 and 2011 is included in [Table 4-3](#).

### 4.1 Pennsylvania Results

Seven (7) active osprey nests were located in the Pennsylvania portion of the project in 2010. In 2011, most of these same nests were present and/or active with the exception of two (2) nests (PA-4 and PA-6) and an additional nesting attempt (PA-9) on an unnamed island adjacent to Turkey Island. Nest PA-9 was newly constructed by a pair of osprey in June 2011, but did not remain active. It should be noted that nest PA-9 is located within lands in the Conowingo project area in a transmission line tower appurtenant to the Muddy Run Pumped Storage facility. As such, it is in the overlap zone for both the Conowingo Project and the Muddy Run Project for relicensing study purposes, and is discussed in study reports for both projects. In addition to nesting activity, other osprey activity was observed as early as late April to early May, and as late as July, in both years. Osprey nesting activity occurred in the project area in 2010 and 2011 in several areas of concentration. Nests were primarily concentrated in the vicinity of Holtwood Dam/Norman Wood Bridge, in proximity to PBAPS, and near Conowingo Dam. Further details regarding specific nests in the project area is provided below.

Three active nests were located in the Holtwood Dam/Norman Wood Bridge area (PA-1, PA-2 and PA-3) ([Figure 4.1-1](#)). Two of the nests in the Holtwood Dam/Norman Wood Bridge area were active in each

survey season (Nests No. PA-1, PA-3) ([Photos 10, 11, 12](#)). Nest PA-1 is a historically active nest on a transmission tower platform in the spillway/tailrace area just below Holtwood Dam. Nesting success was undetermined in 2010 but two fledglings were confirmed in 2011. One of the nests (PA-2) that was located east of McCalls Ferry Road was confirmed to have failed in 2010 due to repeated damage to the nest. Rebuilding attempts were observed throughout the survey period. In 2011, the nest was rebuilt ([Photo 13](#)), and remained active throughout the season although fledging success was undetermined. This particular nest site, high in a crosspiece of a transmission tower, has a history of repeated nesting activity and failure in past years. The third nest, located in a tower to the west of McCalls Ferry Road, was started late in the season in 2010. This nest was further developed and used actively in 2011. The referenced transmission towers are located in the area just below the Holtwood Dam and north of Norman Wood Bridge. As such they are within the project boundary for the Conowingo Project but are not part of either the Conowingo Project or the Muddy Run Project.

Of the four (4) nests in the vicinity of PBAPS, two (PA-6, PA-7) are known to have fledged young in 2010; two from a nest atop a meteorological tower within PBAPS (not shown) and two from a nest also atop a meteorological tower ([Photo 14](#)) near PBAPS (personal communication with Kimberly Long, Exelon Power Environmental Specialist on October 28, 2010). Ospreys in brooding position were observed in two other nests (Nests No. PA-4, PA-5) in a transmission tower in the middle of Conowingo Pond ([Photo 15](#)) and on the eastern shoreline of Conowingo Pond ([Photo 16](#)), but were unconfirmed as to fledging success due to their late start in the survey season in 2010. In 2011, only nests PA-5 and 7 were active in this area of concentration. Nest PA-5 was started late but was observed to be active on June 23, 2011. Nest PA-7 fledged three offspring which were closely observed during monitoring from the PBAPS facility on July 7, 2011. The other two nests (PA-4 and PA-6) were absent or inactive in 2011. Of the two inactive nests, nest PA-4 was absent and nest PA-6 was intact but inactive in 2011. [Table 4-1](#) and [Table 4-2](#) provide further details concerning nests in both survey years.

The only nest not within an area of nesting concentration co-located near other nests is nest PA-9, located on the unnamed island adjacent to Turkey Island (directly across from the Muddy Run Pumped Storage facility) ([Photo 19](#)). This nest was observed during nest building activity on June 13, 2011, as part of surveys for the Muddy Run project. By June 23, 2011, the nest was abandoned and likely represents either a late season re-nesting attempt or stockpiling of nest materials known from the literature to be commonly performed by ospreys (Poole et al, 2002). As mentioned, the nest is located within the overlap zone of the project areas for both the Conowingo project and the Muddy Run project and as such is included in the study reports for both projects.

## 4.2 Maryland Results

Four (4) active osprey nests were located in the Maryland portion of the Project. Three (3) active osprey nests were located in the Maryland portion of the project Survey Area in 2010 and were active in the same locations in 2011 (Nest Nos. MD-1, MD-2, MD-3) (see Table 4-1 and [Table 4-2](#)). A fourth nest, active in both survey years, was located in Maryland (Nest No. MD-4), which was close to but not within the project area or located on project lands. Nests in the Conowingo Dam area included one in the top of the electric superstructure directly on top of Conowingo Dam (Nest MD-1), one on a platform tower within Norfolk Southern Railroad property (Nest MD-2) and one on a platform over the Norfolk Southern railroad trestle at the confluence of Conowingo Creek (upstream of Conowingo Dam) (Nest MD-3). The fourth nest (Nest MD-4) located outside the project boundary is approximately 0.7 miles southwest of Conowingo Pond in a cell phone tower near the Castleton and Flintville Road intersection (see [Figure 4.1-1](#)). Information on this nest (Nest MD-4) is included for informational purposes since Conowingo Pond is the closest large open body of water and is the likely fishing area used by the adult ospreys.

The nest in the Conowingo Dam superstructure (Nest MD-1) is a well-developed stick nest visible from Fisherman's Park and from upstream on Conowingo Pond ([Photo 17](#)). The adults associated with the nest were observed catching fish below Conowingo Dam among the various predatory birds using the area (e.g., great blue herons). The heads of three nestlings were visible over the top of the nest and were also observed as fledglings later in the season in July 2010 (incidental observation, Sharon Farris, URS Corporation, Environmental Scientist). In 2011, the nest was observed to be active in May and early June as indicated by the presence of adult osprey. However, nestlings were not visible during surveys and by July 7, 2011, the nest was observed to be unoccupied.

The nest within Norfolk Southern Property on the eastern shore of Conowingo Pond (Nest MD-2) is close to the north side of the dam beyond the point where boating is prohibited. Since the platform tower is situated on private property and was obstructed from view by the tree canopy it could only be viewed briefly while passing north on Route 1 over the dam or from a distance by boat just above Conowingo Dam ([Figure 4.1-1](#)). In 2010, an adult bird was present and the nest recorded as active although nesting success related to fledged birds was undetermined. In 2011, the nest was active and two fledglings were observed exercising their wings in the nest.

The nest above the Norfolk Southern railroad trestle at the mouth of Conowingo Creek (Nest MD-3) sits atop a platform visible from the boat launch at Mount Zoar Road (Conowingo Creek Landing). In 2010, the nest fledged one offspring ([Photo 18](#)). In 2011, three nestlings were observed in the nest during the

survey season being actively guarded by a female and were last observed as fledglings exercising their wings at the edge of the nest.

The fourth nest (MD-4), located high in a cell phone tower, was active in both 2010 and 2011 as indicated by the presence of adult ospreys in the nest in both years. The nest was a late start nest each year and it is unknown whether offspring fledged from the nest either year.

### **4.3 Discussion**

Nest location and activity data were provided to PGC at the conclusion of each survey season (July 1, 2010 and August 10, 2011), as instructed, to meet the survey protocol requirement for notification regarding the discovery of osprey nests in the project area. Per a PGC request dated August 11, 2011, confirmation was provided (August 12, 2011) that survey coverage included historic nest locations identified in the Pennsylvania Natural Diversity Database (PNDI) system as present on Lower Bear Island (southern tip), Mt. Johnson Island (southern or downstream end), and a tower in Conowingo Pond (across from PBAPS). It should be noted that the specific nests referenced in the PNDI database were not present in 2010 and 2011 surveys and therefore it was concluded that these historic nests are no longer present or active.

**Photo 10: A historically active osprey nest (Nest No. PA-1) on a tower in the middle of the Holtwood Dam spillway was active in both 2010 and 2011**



**Photo 11: Nest No. PA-3, located at the top of a transmission tower adjacent to McCalls Ferry Road, was started late in the season in 2010 and was again active in 2011.**



**Photo 12: An osprey in incubating position in Nest No. PA-2 high in the crosspiece of a transmission tower on the east side of McCalls Ferry Road in 2010**



**Photo 13: Osprey Nest No. PA-2 after being rebuilt for use in 2011**





**Photo 14: Nest No. PA-6, located on a lightning arrester array on top of a meteorological tower near PBAPS was active in 2010 but was abandoned in 2011.**



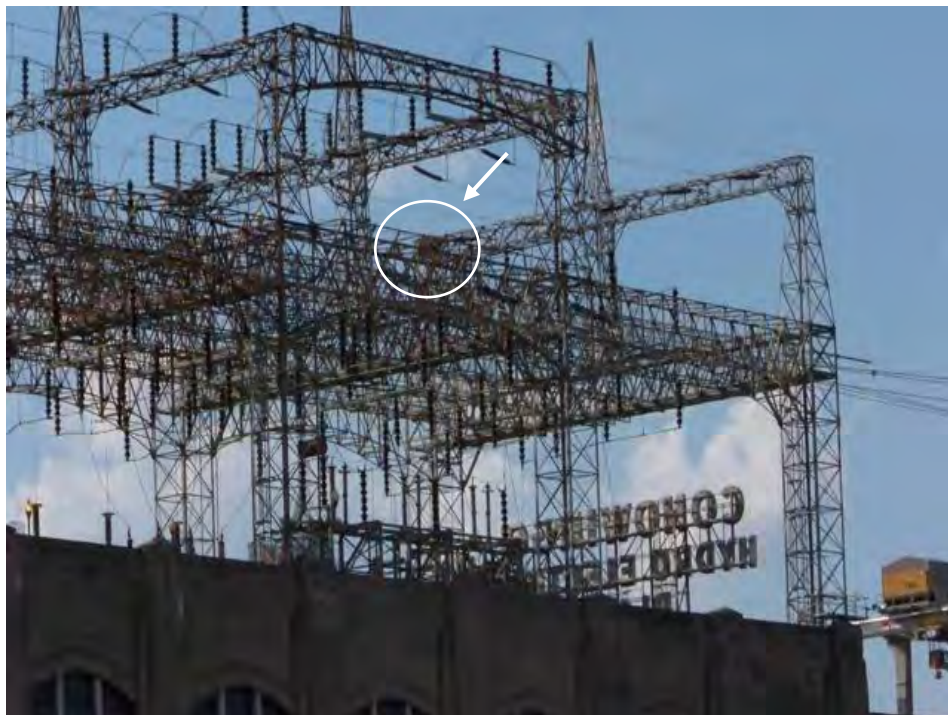
**Photo 15: Nest No. PA-4 was active in a tower in Conowingo Pond in 2010. The nest was not present in the 2011 survey period.**



**Photo 16: Nest No. PA-5 on top of a transmission tower on the east shoreline of Conowingo Pond was active in both 2010 and 2011.**



**Photo 17: Nest No. MD-1 located high in the superstructure on top of Conowingo Dam was active in 2010 and 2011.**



**Photo 18: An adult osprey shields a nestling in Nest No. MD-3 located on a platform over the railroad trestle at Conowingo Creek. The nest fledged one offspring in 2010 and three in 2011.**



**Photo 19: Tower (left) on unnamed island adjacent to Turkey Island (right).**



**Photo 20: A juvenile bald eagle perched in a tower in Conowingo Pond. A bald eagle pair nested in the area in both 2010 and 2011.**



## **5. CONCLUSIONS**

Ospreys have been confirmed to be nesting throughout the Conowingo project area in Pennsylvania and Maryland. Twelve nesting attempts were documented in or close to the project area during the course of surveys conducted for the project. Of the 11 nests first identified during the 2010 survey season, seven were located in Pennsylvania and four were located in Maryland. An additional nesting attempt was observed during the 2011 survey season in the Pennsylvania portion of the project area. Based on the survey results, areas of concentration for nesting osprey within in the project area are in the vicinity of Holtwood Dam and Norman Wood Bridge, PBAPS/Mount Johnson Island, and Conowingo Dam. In 2010, birds fledged from four nests (two nests in Pennsylvania and two nests in Maryland) totaling eight confirmed fledglings. In 2011, birds fledged from four nests (two nests in Pennsylvania and two in Maryland) totaling ten fledglings. Of nests first identified in 2010 all but two nests, located in the Pennsylvania portion of the project area, were active in 2011. As some of the nests identified represented newer nests and as most nests were located high in transmission or cell tower structures, there is potential for more birds to have fledged than could be visually confirmed. In addition to the identification of nest sites, osprey breeding behavior was observed frequently within the Conowingo project area throughout the survey period. The active breeding season within the project area was generally observed to be April through August.

Nest location and activity data were provided to PGC and Maryland Department of Natural Resources (MDNR) as instructed, to meet the survey protocol requirement for notification regarding the discovery of osprey nests in the project area.

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**TABLE 3.1.1-1: 2010 SURVEY LOG**

Date	Survey Area	Time <sup>1</sup>	Personnel	Weather Conditions	Equipment	Type of Survey <sup>2</sup>	Osprey Nests? (Y or N)	Osprey Activity? (Y or N)
04/19/10	A	7:30 am to 12:00 pm	Sharon Farris, Katherine Eberhart, Byran Strawn, Jason Rager	44 – 66°F; mostly sunny; wind NNW 8-14 mph	Binoculars; sea Ark flat-bottomed aluminum boat	Boat-based Nest Survey	N	Y
04/30/10	A	7:30 am to 1:58 pm	Sharon Farris, Katherine Eberhart, Bryan Strawn	73°F; sunny; wind SW 2-8 mph	Binoculars; sea Ark flat-bottomed aluminum boat	Boat-based Nest Survey	Y	Y
05/21/10	A	8:33 am to 1:54 pm	Sharon Farris, Cheryl Marks, Jason Rager	75°F; sunny; wind SE 1-5 mph	Binoculars; sea Ark flat-bottomed aluminum boat	Boat-based Nest Survey	N	Y
06/23/10	A and B	8:40 am to 2:58 pm	Sharon Farris, Cheryl Marks, Jason Rager	90°F; sunny; wind 3-10 mph	Binoculars; sea Ark flat-bottomed aluminum boat	Boat-based Nest Survey	Y	Y
06/10/10	A and B	4:11 pm to 5:11 pm	Sharon Farris	75°F; sunny to partly cloudy; wind WNW 3-13 mph	Binoculars; spotting scope	Terrestrial	Y	Y
06/18/10	B	5:00 pm to 3:00 pm	Sharon Farris	70°F; sunny; wind NE 2-6 mph	Binoculars; spotting scope	Terrestrial	Y	Y
07/03/10	B	-	Sharon Farris	NA	Binoculars	Terrestrial	Y	Y
07/09/10	B	7:08 am	Sharon Farris	NA	Binoculars	Incidental	Y	Y

<sup>1</sup> Time listed is the total survey time in the project area.

<sup>2</sup> Incidental refers to observation outside of established surveys.

**TABLE 3.1.1-2: 2011 SURVEY LOG**

<b>Date</b>	<b>Survey Area</b>	<b>Time<sup>1</sup></b>	<b>Personnel</b>	<b>Weather Conditions</b>	<b>Equipment</b>	<b>Type of Survey<sup>2</sup></b>	<b>Osprey Nests? (Y or N)</b>	<b>Osprey Activity? (Y or N)</b>
05/12/11	A and B	9:30 am to 4:00 pm	Sharon Farris, Jason Rager, Cheryl Marks	Average 64°F; mostly sunny; wind ENE 5-10 mph	Binoculars; sea Ark flat-bottomed aluminum boat	Boat-based & Terrestrial Nest Survey	Y	Y
06/02/11	A and B	8:00 am to 3:00 pm	Sharon Farris, Bryan Strawn	75°F; mostly sunny; wind NW 12-15 mph	Binoculars; sea Ark flat-bottomed aluminum boat	Boat-based & Terrestrial Nest Survey	Y	Y
06/23/11	A and B	8:30 am to 4:00 pm	Sharon Farris, Bryan Strawn, Cheryl Marks,	84°F; light fog & partly cloudy; wind WSW 1-5 mph	Binoculars; sea Ark flat-bottomed aluminum boat	Boat-based Nest Survey	Y	Y
06/23/11	A and B	8:40 am to 2:58 pm	Sharon Farris, Cheryl Marks, Jason Rager	90°F; sunny; wind 3-10 mph	Binoculars; sea Ark flat-bottomed aluminum boat	Boat-based Nest Survey	Y	Y
07/07/11	A and B	11:00 am to 3:00 pm	Sharon Farris	80°F; mostly sunny; wind W 2 mph	Binoculars	Terrestrial Nest Monitoring	Y	Y

<sup>1</sup> Time listed is the total survey time in the project area.

<sup>2</sup> Incidental refers to observations outside of established surveys.



**TABLE 4-1: 2010 OSPREY NEST SUMMARY**

Nest #	Species	State	Location	Structure	Type	Condition	Active (Y or N) <sup>1</sup>	Fledged Young
<b>Conowingo Dam Area</b>								
MD-1	Osprey	MD	Conowingo Dam – superstructure on top of dam	Electric Station	Stick	Good	Y	3
MD-2	Osprey	MD	Near Conowingo Dam/On Norfolk Southern Property	Platform	Stick	Undetermined	Y	Undetermined
MD-3	Osprey	MD	Norfolk Southern railroad Trestle at the confluence of Conowingo Creek and Conowingo Pond	Platform	Stick	Good	Y	1
MD-4	Osprey	MD	Intersection of Castleton and Flintville Roads	Cell phone tower	Stick	Good	Y	Undetermined
<b>Norman Wood Bridge (Rt 372) Area</b>								
PA-1	Osprey	PA	Tower in the middle of Susquehanna River between Holtwood Dam and Norman Wood Bridge	Tower	Stick	Good; well formed	Y	Undetermined
PA-2	Osprey	PA	Above Norman Wood Bridge/below Holtwood Dam (east side of McCalls Ferry Road)	Tower (top cross arm)	Stick	Fair (2 <sup>nd</sup> nest attempt this year)	Undetermined	0 (failed)
PA-3	Osprey	PA	Adjacent to tower in ROW where “relic” Bald eagle nest (above Norman Wood Bridge and below Holtwood; west side of McCalls Ferry Rd)	Tower	Stick	Very sparse; in progress	Undetermined	Undetermined
<b>PBAPS Vicinity</b>								
PA-4	Osprey	PA	Tower located in middle of Conowingo Pond across from PBAPS	Tower	Stick	Sparse but well formed	Y	Undetermined
PA-5	Osprey	PA	Tower located on the east shoreline of Conowingo Pond across from PBAPS	Tower	Stick	Sparse but well formed	Y	Undetermined

Nest #	Species	State	Location	Structure	Type	Condition	Active (Y or N) <sup>1</sup>	Fledged Young
PA-6	Osprey	PA	On top of lightning arrestor array on top of a meteorological tower adjacent to and northwest of PBAPS	Meteorological tower	Sticks on top of mesh screen	Nests sits in the nest screening and is hard to	Y	2
PA-7	Osprey	PA	On lightning arrestor array on top an old tower in PBAPS	Meteorological tower	Stick	Good; well formed; built up	Y	2

PBAPS: Peach Bottom Atomic Power Station

<sup>1</sup> Nests are judged to be active by the presence and behavior of birds using the nests. Because nests are observed at a distance from boat or land obtaining a view of nestlings has seldom been possible.

**TABLE 4-2: 2011 OSPREY NEST SUMMARY**

Nest #	Species	State	Location	Structure	Type	Condition	Active (Y or N) <sup>1</sup>	Fledged Young
<b>Conowingo Dam Area</b>								
MD-1	Osprey	MD	Conowingo Dam – superstructure on top of dam	Electric Station	Stick	Good	Y	Undetermined
MD-2	Osprey	MD	Near Conowingo Dam/On Norfolk Southern Property	Platform	Stick	Undetermined	Y	2
MD-3	Osprey	MD	Norfolk Southern railroad Trestle at the confluence of Conowingo Creek and Conowingo Pond	Platform	Stick	Good	Y	3
MD-4	Osprey	MD	Intersection of Castleton and Flintville Roads	Cell phone tower	Stick	Good	Y	Undetermined
<b>Norman Wood Bridge (Rt 372) Area</b>								
PA-1	Osprey	PA	Tower in the middle of Susquehanna River between Holtwood Dam and Norman Wood Bridge	Tower	Stick	Good; well formed	Y	2
PA-2	Osprey	PA	Above Norman Wood Bridge/below Holtwood Dam (east side of McCalls Ferry Road)	Tower (top cross arm)	Stick	Fair (2 <sup>nd</sup> nest attempt this year)	Undetermined	Undetermined
PA-3	Osprey	PA	Adjacent to tower in ROW where “relic” Bald eagle nest (above Norman Wood Bridge and below Holtwood; west side of McCalls Ferry Rd)	Tower	Stick	Very sparse; in progress	Undetermined	Undetermined
<b>PBAPS Vicinity</b>								
PA-4	Osprey	PA	Tower located in middle of Conowingo Pond across from PBAPS	Tower	Stick	Sparse but well formed	N; nest not present	N
PA-5	Osprey	PA	Tower located on the east shoreline of Conowingo Pond across from PBAPS	Tower	Stick	Sparse but well formed	Y	Undetermined
PA-6	Osprey	PA	On top of lightning arrester array on top of a meteorological tower adjacent to and northwest of PBAPS	Meteorological tower	Sticks on top of mesh screen	Nests sits in the nest screening and is hard to	N; nest intact but no ospreys present during 2011	0
PA-7	Osprey	PA	On lightning arrester array on top an old tower	Meteorological tower	Stick	Good; well formed; built up	Y	3

Nest #	Species	State	Location	Structure	Type	Condition	Active (Y or N) <sup>1</sup>	Fledged Young
			in PBAPS					
*PA-9	Osprey	PA	Tower located on unnamed island adjacent to Turkey Island	Tower	Stick	Sparse	N; nest building activity observed on 6/13/11; abandoned by 6/23/11	0

PBAPS: Peach Bottom Atomic Power Station

<sup>1</sup> Nests are judged to be active by the presence and behavior of birds using the nests. Because nests are observed at a distance from boat or land obtaining a view of nestlings has seldom been possible.

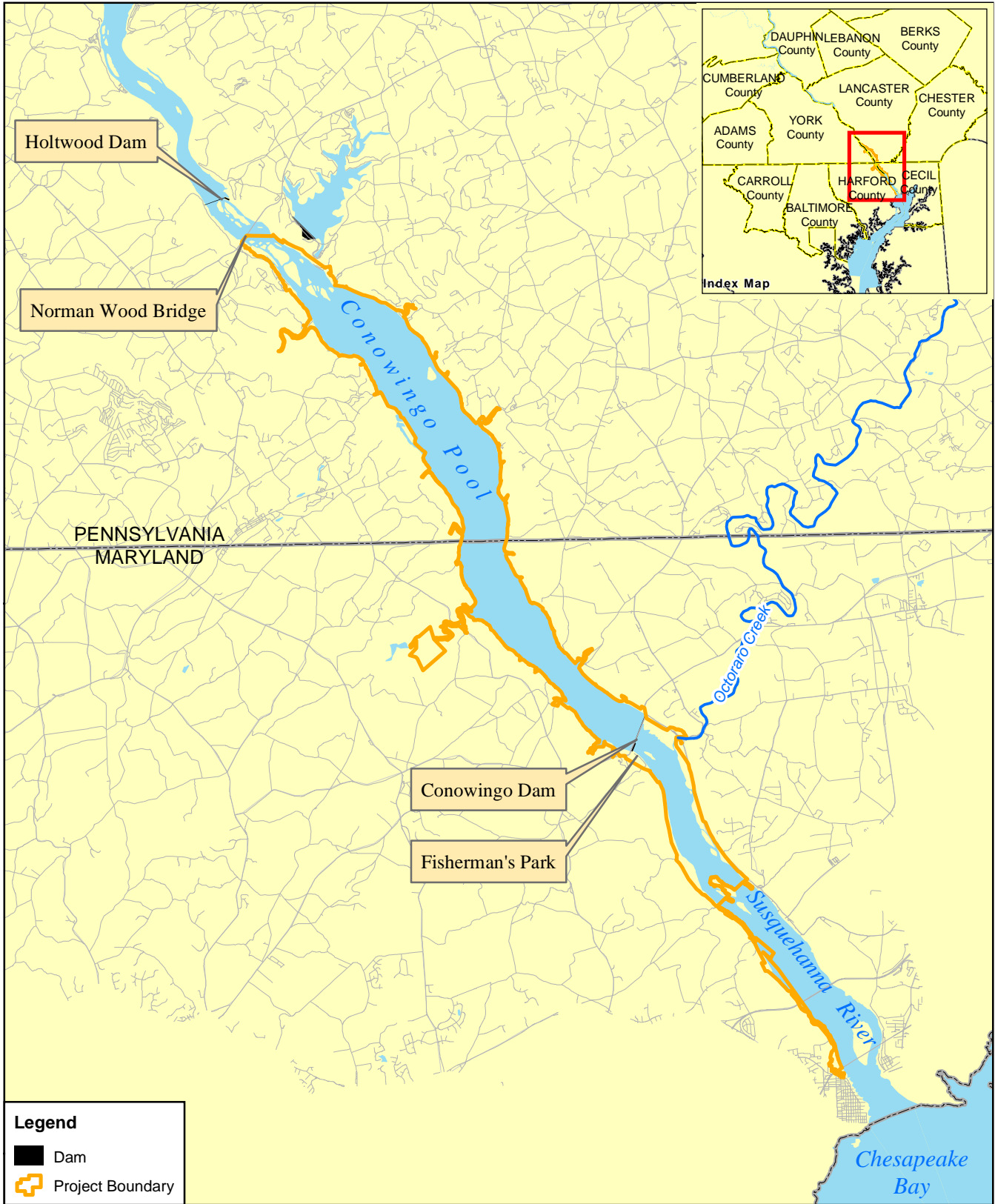
\*Nest numbering is continued from nest totals in each state from 2010 to 2011. Nest No. 8 is located in the Muddy Run project area and as such is not included in the study report for the Conowingo project.

**TABLE 4-3: AVIAN SPECIES HEARD OR SEEN DURING SURVEYS – 2010 & 2011**

<b>Common Name</b>	<b>Scientific Name</b>
American crow	<i>Corvus brachyrhynchos</i>
American goldfinch	<i>Carduelis tristis</i>
American kestrel	<i>Falco sparverius</i>
American robin	<i>Turdus migratorius</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Baltimore oriole	<i>Icterus galbula</i>
Barn swallow	<i>Hirundo rustica</i>
Belted kingfisher	<i>Megaceryle alcyon</i>
Black vulture	<i>Coragyps atratus</i>
Black-capped chickadee	<i>Poecile atricapillus</i>
Black-crowned night-heron	<i>Nycticorax nycticorax</i>
Blue jay	<i>Cyanocitta cristata</i>
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Brown thrasher	<i>Toxostoma rufum</i>
Canada goose	<i>Branta canadensis</i>
Carolina wren	<i>Thryothorus ludovicianus</i>
Caspian tern	<i>Sterna caspia</i>
Cedar waxwing	<i>Bombycilla cedrorum</i>
Common grackle	<i>Quiscalus quiscula</i>
Coopers hawk	<i>Accipiter cooperii</i>
Dark-eyed junco	<i>Junco hyemalis</i>
Double crested cormorant	<i>Phalacrocorax auritus</i>
Downy woodpecker	<i>Picoides pubescens</i>
Eastern bluebird	<i>Sialia sialis</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Eastern phoebe	<i>Sayornis phoebe</i>
Eastern towhee	<i>Pipilo erythrophthalmus</i>
Eastern wood pewee	<i>Contopus virens</i>
European starling	<i>Sturnus vulgaris</i>
Gray catbird	<i>Dumetella carolinensis</i>
Great blue heron	<i>Ardea herodias</i>
Great crested flycatcher	<i>Myiarchus crinitus</i>
Great egret	<i>Ardea alba</i>
Great horned owl	<i>Bubo virginianus</i>
Green heron	<i>Butorides virescens</i>
Herring gull	<i>Larus argentatus</i>
House finch	<i>Carpodacus mexicanus</i>
House sparrow	<i>Passer domesticus</i>
House wren	<i>Troglodytes aedon</i>
Indigo bunting	<i>Passerina cyanea</i>
Killdeer	<i>Charadrius vociferus</i>
Mallard	<i>Anas platyrhynchos</i>
Mourning dove	<i>Zenaida macroura</i>

-Table 2 Continued next page-

<b>Common Name</b>	<b>Scientific Name</b>
Northern cardinal	<i>Cardinalis cardinalis</i>
Northern flicker	<i>Colaptes auratus</i>
Northern harrier	<i>Circus cyaneus</i>
Northern mockingbird	<i>Mimus polyglottos</i>
Northern parula	<i>Parula americana</i>
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>
Orchard oriole	<i>Icterus spurius</i>
Pileated woodpecker	<i>Dryocopus pileatus</i>
Red-bellied woodpecker	<i>Melanerpes carolinus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Rock dove	<i>Columba livia</i>
Ring-billed gull	<i>Larus delawarensis</i>
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>
Ruby-crowned kinglet	<i>Regulus calendula</i>
Ruby-throated hummingbird	<i>Archilochus colubris</i>
Scarlet tanager	<i>Piranga olivacea</i>
Song sparrow	<i>Melospiza melodia</i>
Spotted sandpiper	<i>Actitis macularius</i>
Tree swallow	<i>Tachycineta bicolor</i>
Tufted titmouse	<i>Baeolophus bicolor</i>
Turkey vulture	<i>Cathartes aura</i>
Undetermined - duck species	NA
Undetermined - flycatcher species	NA
Undetermined - gull species	NA
Undetermined - sparrow species	NA
Undetermined - vulture species	NA
Undetermined - warbler species	NA
Undetermined - wren species	NA
White-breasted nuthatch	<i>Sitta carolinensis</i>
White-throated sparrow	<i>Zonotrichia albicollis</i>
Willow flycatcher	<i>Empidonax traillii</i>
Wood duck	<i>Aix sponsa</i>

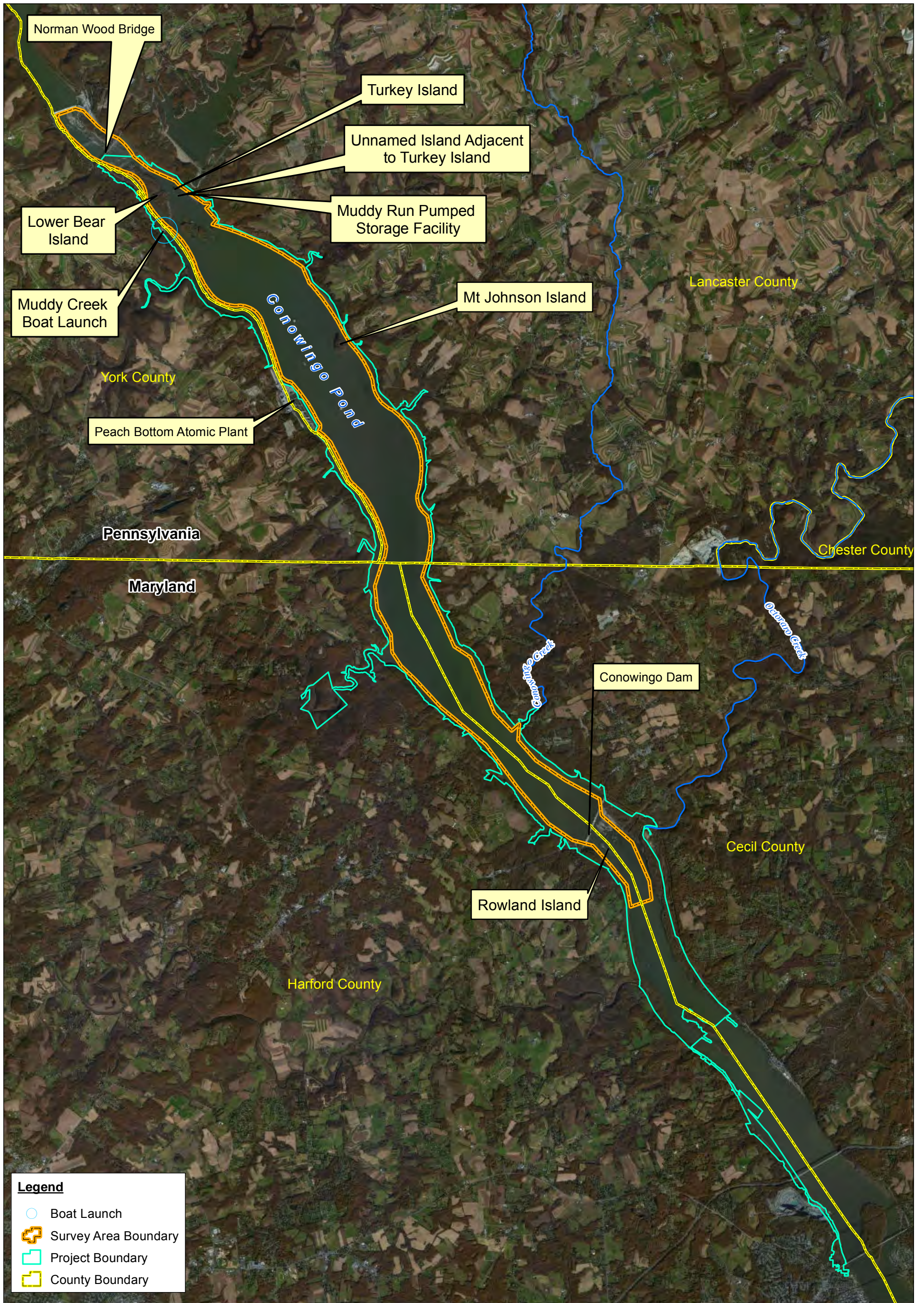


**EXELON GENERATION COMPANY, LLC**  
**CONOWINGO HYDROELECTRIC PROJECT**      **Figure 1-1:**  
**FERC PROJECT NO. 405**                              **Location Map**

0      1.5      3      6  
 Miles

1 inch = 3 miles

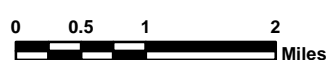
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**EXELON GENERATION COMPANY, LLC**

**OSPREY NESTING SURVEY  
CONOWINGO HYDROELECTRIC PROJECT  
PROJECT NO. 405**

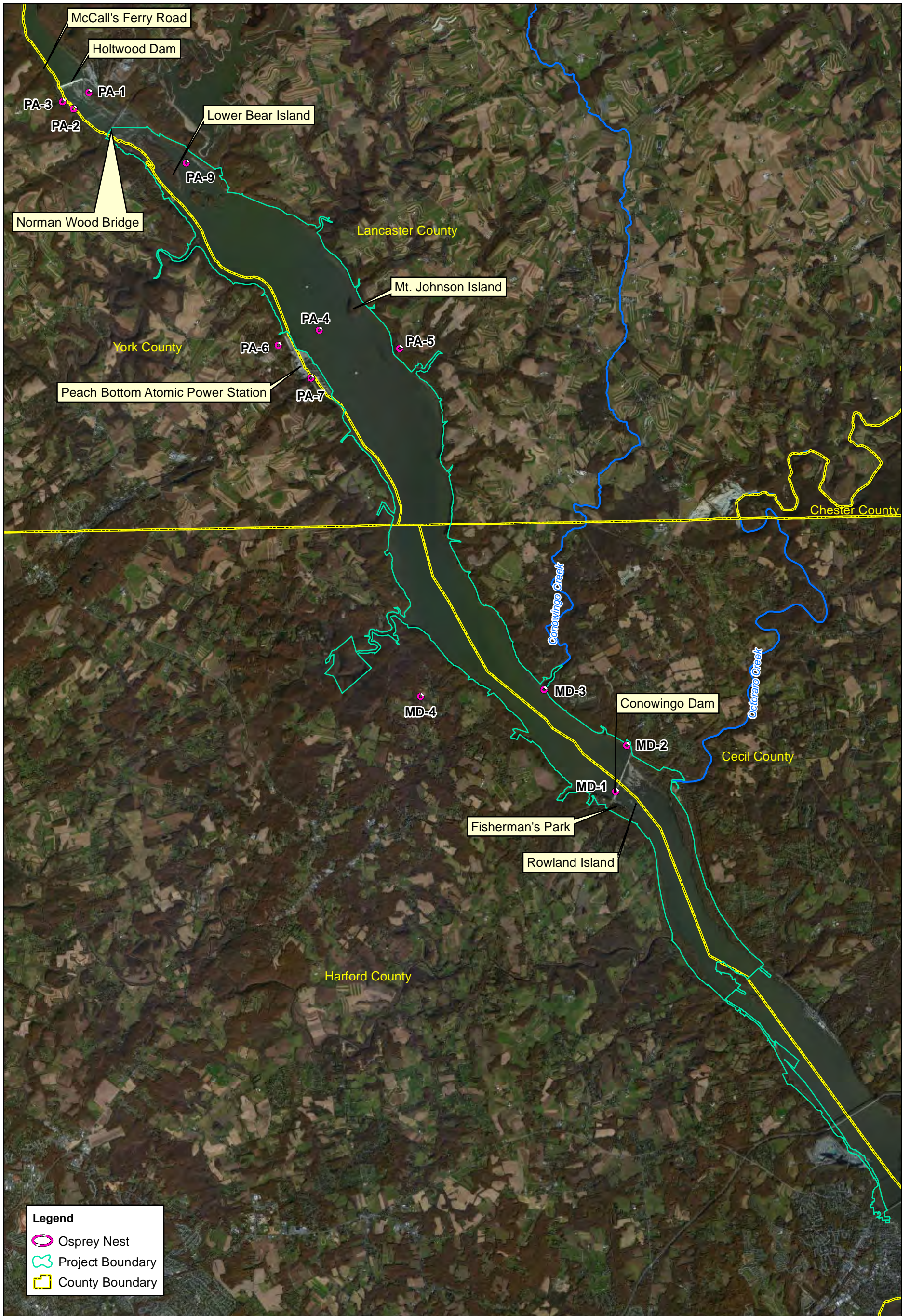
1 in = 1 miles



**Figure 3.1-1  
Survey Area Map**

Source: Imagery provided by Bing Maps™  
WDC Baltimore 2008  
URS Custom Data



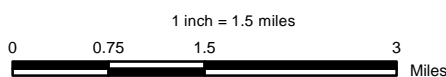


**Legend**

- Osprey Nest
- Project Boundary
- County Boundary



**EXELON GENERATION COMPANY, LLC**  
**CONOWINGO HYDROELECTRIC PROJECT**  
**PROJECT NO. 405**



**Figure 4.1-1**  
**Osprey Nest Location Map**

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