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UniStar
NUCLEAR ENERGY

10 CFR 50.4
10 CFR 52.79

October 17, 2008

UN#08-047

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Submittal of Response to Calvert Cliffs Nuclear Power Plant, Unit 3
COLA, Request for Additional Information Terrestrial Ecology

Reference: Thomas Fredrichs (NRC) to George Wrobel (UniStar), "Request for Additional Information Terrestrial Ecology," email dated September 10, 2008

The purpose of this letter is to respond to requests for additional information (RAIs) identified in the NRC e-mail correspondence to UniStar Nuclear, dated September 10, 2008 (Reference). These RAIs address terrestrial ecology issues as submitted in the environmental report contained in Part 3 of the CCNPP Unit 3 Combined License Application (COLA). The responses have been delayed as we continue to investigate the most effective manner to address site clearing activities and effects on migratory birds. In order to provide the most expeditious information to the NRC Staff, we are responding to those RAIs other than the cited RAI (RAI Number 3) that is still under investigation. Please note that the response to RAI Number 3 will be submitted by October 31, 2008.

The enclosure provides responses to the supplemental RAIs.

If there are any questions regarding this transmittal, please contact me or Mr. George Wrobel at (585) 771-3535.

D079
NRO

I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 17, 2008

Greg Gibson

Enclosure: Response to Terrestrial Ecology RAIs

cc: U.S. NRC Region I
U.S. NRC Resident Inspector, Calvert Cliffs Nuclear Power Plant, Units 1 and 2
NRC Environmental Project Manager, U.S. EPR Combined License Application
NRC Project Manager, U.S. EPR Combined License Application
NRC Project Manager, U.S. EPR Design Certification Application (w/o enclosure)

Enclosure

Response to Terrestrial Ecology RAIs

RAI Number 1

Provide a figure (e.g., a map) illustrating the 500' buffer of the Chesapeake Bay bluff habitat that is utilized by tiger beetles, and any encroachment within the buffer due to activities associated with proposed Unit 3.

UniStar Response:

Attachment 3 to this response provides a map illustrating the 500' buffer of the Chesapeake Bay bluff habitat that is utilized by tiger beetles, and any encroachment within the buffer due to activities associated with proposed Unit 3.

COLA Impact:

No changes to the Environmental Report are required.

RAI Number 2

Provide a report including methods/locations/results of any wildlife surveys that have been conducted since the Calvert Cliffs Site Audit conducted on March 19, 2008.

UniStar Response:

A wildlife survey was conducted from June 10 to July 30, 2008 to determine whether the Eastern Narrow-mouthed Toad was present at the Calvert Cliffs site. Attachment 1 provides the *Report on Results of 2008 Surveys for the Presence or Absence of Eastern Narrow-mouthed Toads (Gastrophryne carolinensis) at Calvert Cliffs Nuclear Power Plant, Lusby, Maryland,* by C. L. Rowe, Ph. D., Chesapeake Biological Laboratory, provides the requested information on this study.

In reference to the bog turtle, based on review of available information on the bog turtle habitat and Calvert Cliffs site characteristics we determined the site was not a suitable habitat and a field survey was not warranted. Attachment 2 provides the March 28, 2008 letter to J. Price, UniStar from J. Cutler, R. Harmon, and H. Fogell, MACTEC: "Bog Turtle Not Expected within Project Impact Areas Calvert Cliffs Nuclear Power Plant-Unit 3 Project Site, Calvert County, Maryland".

No other wildlife survey has been conducted since the March 19, 2008 Site Audit.

COLA Impact:

No changes to the Environmental Report are required.

RAI Number 3

Describe how the applicant will address direct mortality and nest destruction of bird species covered under the Migratory Bird Treaty Act for ground clearing activities that occur during the spring and summer period.

UniStar Response:

Investigation is currently being conducted to effectively address this issue such that preservation of bird species can be maintained with minimal impact on construction activities. A final response is expected by October 31, 2008.

RAI Number 4

Describe any proposed changes in the wetland mitigation plan since it was first submitted in the *Draft Report: Conceptual Wetland/Stream Compensatory Mitigation Plan*, by MACTEC, dated June 16, 2008.

UniStar Response:

The Conceptual Wetland/Stream Compensatory Mitigation Plan dated June 16, 2008, has not been modified or changed. The plan is currently being reviewed by the State of Maryland's Department of the Environment (MDE). In Maryland, MDE is the lead agency for wetland and stream mitigation. MDE's process is for a conceptual or phase-1 mitigation plan to be submitted for approval followed by a detailed or phase-2 mitigation plan. As of the date of this response no comments have been received from MDE on the Conceptual Wetland/Stream Compensatory Mitigation Plan. Once comments are received from MDE, the conceptual plan will be modified as necessary. If modifications are required, an updated Conceptual Wetland/Stream Compensatory Mitigation Plan will be forwarded to the NRC.

COLA Impact:

No changes to the Environmental Report are necessary.

Attachment 1

Report on Results of 2008 Surveys for Presence or Absence of Eastern Narrow-mouthed Toads *(Gastrophryne carolinensis)* at Calvert Cliffs Nuclear Power Plant, Lusby, Maryland

Report on Results of 2008 Surveys for Presence or Absence of Eastern Narrow-mouthed Toads (*Gastrophryne carolinensis*) at Calvert Cliffs Nuclear Power Plant, Lusby, Maryland

Prepared by

Christopher L. Rowe, Ph. D.

Chesapeake Biological Laboratory

Prepared for

MACTEC Engineering and Consulting, Inc.

and

UniStar Nuclear Development, LLC

August 15, 2008

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1. Overview

From 10 June 2008 to 30 July 2008, nighttime audio surveys and evening/daytime visual searches and sweep netting were conducted on sites within the area of potential effect (APE) that were identified as potential breeding sites for Eastern narrow-mouth toads. Surveys were conducted weekly or more frequently based upon storm events. The area outside of the APE was also surveyed to locate additional habitats potentially supporting breeding by the target species; however these sites were not surveyed for presence of the toads.

Two areas within the APE were identified as possessing characteristics that may support narrow-mouthed toad populations. One of these sites (Camp Canoy pond), a permanent water body which contained an area of emergent grasses in a shallow area of the pond edge represented a habitat type that is typically used infrequently by the study species, however breeding in such sites has been observed. The other site, a lowland grassy swale south of the Lake Davies Dredge Disposal Area (hereafter "Davies Swale"), appeared to be of suitable habitat type for breeding by the toads, however due to the largely dry weather during the survey period, there was no standing water in this site, precluding breeding by amphibians. One wetland area approximately 30 meters(m) north of the APE in the vicinity of the Lake Davies Disposal Area was identified as possessing characteristics that could support breeding, sharing many characteristics with Davies Swale, but also was dry when visited in July, 2008.

In neither area considered suitable habitat was there audio or visual evidence of presence of adult or larval Eastern narrow-mouthed toads.

2. Methodology and Results

2.1 Site Selection:

The project entailed site assessments for identification of potential breeding habitats by the Eastern narrow-mouthed toad (*Gastrophryne carolinensis*) within the area of potential effect (APE) associated with the proposed construction by UniStar of an additional power generating unit at the UniStar Calvert Cliffs nuclear power plant, as well as areas outside of the APE footprint. Areas surveyed are shown in Attachment 1. Sites surveyed to determine habitat suitability for Eastern narrow-mouthed toads are shown in Attachment 1. Attachment 2 shows the sites within and outside of the APE which were identified as possessing characteristics that could potentially support breeding by Eastern narrow-mouthed toads. Site assessments were conducted by C. Rowe of the Chesapeake Biological Laboratory in conjunction with M. Hunter of UniStar. Sites targeted for surveys for habitat suitability were selected based upon the Final Wetland Delineation Report (Doub and Miley, 2007) and The Final Faunal Report (Doub, 2007) prepared for UniStar Nuclear Development, LLC. The former report provided information based on wetland presence and type allowing for preliminary assessment of presence of habitats typically utilized by *G. carolinensis* for breeding (typically palustrine emergent wetlands). This information, combined with prior observations of other amphibian species (northern cricket frogs, American toads, and

spring peepers) as reported in the Faunal Report, that use similar breeding habitats as *G. carolinensis,* guided choice of survey sites. This approach was necessary as the Eastern narrow-mouth toad has not documented as occurring on the Calvert Cliffs project area.

Field surveys to assess site characteristics in areas identified in the Wetland Delineation and Faunal Reports began on 22 May 2008 and resumed on 10 June 2008 (locations shown in Attachment 1). Within the APE, two sites having characteristics potentially supporting breeding by *G. carolinensis* (locations shown in Attachment 2) were identified as the Camp Canoy pond (38.25.566 N, 76.26.099 W) and a lowland grassy swale in the vicinity of the Lake Davies Dredge Disposal Area (38.25.534 N, 76.26.095 W; hereafter "Davies Swale"). While presence of amphibians in the latter site was not reported in the Faunal Report, hydrological and botanical characteristics appeared suitable for breeding by narrow-mouthed toads during a field survey conducted in conjunction with Dr. Joe Mitchell (Mitchell Ecological Research Serv., LLC) on 16 June 2008. Characteristics of the Camp Canoy pond suggesting suitable habitat in a shallow region of the pond edge dominated by emergent grasses, attributes sometimes found to coincide with breeding narrow-mouthed toads (Attachment 3). The Davies Swale site was dominated by grasses and wetland plants (sedges, rushes, reed grass) typical of seasonal wetlands often used by narrow-mouthed toads, and displayed evidence of standing water at some time prior to the beginning of the survey period (Attachment 4).

From 10 June 2008 to 30 July 2008, nighttime audio surveys and evening/daytime visual searches and sweep netting were conducted at the Camp Canoy area and

Davies Swale. Sweep netting could not be conducted in Davies Swale because, despite general characteristics suggesting potential use by narrow-mouthed toads, at no time during the study period did standing water occur due to predominately dry weather. Survey dates were selected to coincide with or follow within 36 hours of predicted or actual storm events as prescribed by the sampling protocol developed by the Maryland Department of Natural Resources (MDNR) (Attachment 5). The area outside of the area of disturbance was also surveyed to locate additional habitats potentially supporting breeding by the toad. One site, approximately 30 m north of the APE in the Lake Davies Dredge Disposal Area (38.25.914 N, 76.27.266 W; Attachment 2) displayed vegetation and topography typical of some sites in which narrow-mouthed toads may breed (Attachment 6). However per the approved protocol, this site was not intensively surveyed for presence of the toads.

2.2 Survey Protocol:

The survey protocol largely followed the original protocol for surveying narrow-mouthed toads developed by MDNR and a clarification supplied subsequently (Attachment 5). Weekly or more frequent audio and visual surveys were conducted in the study areas. Frequency of surveys was dependent upon rain events. Surveys coincided with evening rain events (or within 36 hr after the event; Attachment 5), however if no rain occurred in a given week, a survey was conducted regardless. Visual surveys were conducted during daylight hours, frequently taking place in the early evening prior to subsequent audio surveys. These surveys consisted of walking an area within approximately 100 m of the potential breeding site, turning logs, rocks, and debris under

which adult narrow-mouthed toads are often found. Due to presence of little suitable cover for adults in the vicinity of the Davies Swale site, being dominated by dry, open grassland and little debris, visual surveys were terminated there in mid June although audio surveys (below) continued throughout the study period in the event that rain would induce calling despite lack of standing water.

Audio surveys occurred during late evening to early night time (typically ~ 1930 to 2300 hrs). Surveys consisted of listening for calling adults combined with broadcasting recorded calls. In addition, a sound activated, analog recorder was placed at each site to collect records of calling individuals when surveys were occurring elsewhere. Recorders were replaced on each subsequent survey and the recorded content was reviewed for evidence of calling amphibians. Audio surveys focused primarily on the Camp Canoy area since the Davies Swale remained dry throughout the study period. However, the Davies Swale site was visited briefly during each survey night nonetheless and a recorder was placed there.

Sweep net surveys of shallow vegetated areas in Camp Canoy pond to survey for narrow-mouthed toad larvae coincided with visual surveys of surrounding habitats. Net surveys could not be conducted in the Davies Swale due to lack of standing water.

2.3 Results and Discussion:

At neither site was any visual or audio evidence of presence of adult Eastern narrow-mouthed toads obtained. In the Camp Canoy site there was frequent audio evidence of

several other species of amphibians being present, including cricket frogs, green frogs, gray treefrogs, and green treefrogs. At this site, adult and juvenile American toads, spring peepers, southern leopard frogs, and cricket frogs were also visually observed. On one occasion, a single green treefrog was heard to be calling in the vicinity of the Davies Swale site, but otherwise there was no audio or visual evidence of amphibians present in this area. Net surveys at Camp Canoy revealed no larvae of Eastern narrow-mouthed toads.

Assessment of on-site areas that potentially could support breeding by Eastern narrow-mouthed toads outside of the APE identified only one area fitting criteria typical of breeding habitats (Attachment 2). This site, north of the firing range in the Lake Davies Dredge Disposal Area lies approximately 30 m outside of the APE. This site, dominated by reed grass, rushes, sedges, and grasses (Attachment 6), was dry when located on 30 July 2008.

While the site within the APE identified as possessing habitat characteristics most suitable for use by Eastern narrow-mouthed toads (Davies Swale) remained dry throughout the study period, possibly precluding breeding activities and thus detection of the toads.

General habitat characteristics of the Calvert Cliffs site suggest that presence of Eastern narrow-mouthed toads is unlikely. The majority of wetland areas are

characterized by flowing water, habitats in which Eastern narrow-mouthed toads are not known to breed, rather preferring static, semi-permanent pools and, sometimes vegetated edges of shallow permanent ponds (Mitchell and Lannoo, 2008 http://amphibiaweb.org/). The Camp Canoy site is representative of the latter, however visual, audio, and aquatic surveys revealed no evidence of Eastern narrow-mouthed toads. While the dry conditions during the study period resulted in substantial reduction in the volume of water in the Camp Canoy pond (Attachment 3), this area retained water throughout the study period.

It appears that narrow-mouthed toads are unlikely to occur in sites in the APE that possess characteristics required to sustain breeding populations. The surface hydrology of the Calvert Cliffs property, being largely characterized by flowing water rather than possessing areas of standing, semi-permanent wetlands or small pools, likely excludes populations of Eastern narrow-mouthed toads from inhabiting the site. Furthermore, Eastern narrow-mouthed toads have been reported to disperse approximately 40 to 900 m from breeding ponds and occupy a home range in terrestrial habitats of less than 5 m^2 (Mitchell and Lannoo, 2008 http://amphibiaweb.org/). As populations of Eastern narrow-mouthed toads have not been reported in the vicinity of the Calvert Cliffs property since 1960 (in the Cove Point area, presumably the only nearby area surveyed; Norden, 2005), it appears unlikely that nearby source populations occur from which migrants may enter the site.

2.4 References:

Doub, J.P. 2007. Final Faunal Survey Report for Proposed Unistar Nuclear Project Area, Calvert Cliffs Nuclear Power Plant Site, Calvert County, Maryland. Prepared by Tetra Tech NUS, Germantown, Maryland.

Doub, J.P., Miley, R. 2007. Final Wetland Delineation Report for Proposed Unistar Nuclear Project Area, Calvert Cliffs Nuclear Power Plant Site, Calvert County Maryland. Prepared by Tetra Tech NUS, Germantown, Maryland.

Mitchell, J.C., Lannoo, M.J. 2008. *Gastrophryne carolinensis*, Eastern narrow-mouthed toad. http://amphibiaweb.org/.

Norden, A. 2005. The reptiles and amphibians of Cove Point, Calvert County, Maryland. Bulletin of the Maryland Herpetological Society 41(1):1-30.

Attachment 2

March 28, 2008 letter to J. Price, UniStar from J. Cutler, R. Harmon, and H. Fogell

MACTEC

engineering and constructing a better tomorrow

March 28, 2008

Mr. John Price
UniStar Nuclear
750 East Pratt Street
14th Floor
Baltimore, Maryland 21102

Subject: **Bog Turtle Not Expected within Project Impact Areas**
Calvert Cliffs Nuclear Power Plant - Unit 3 Project Site
Calvert County, Maryland

Dear Mr. Price:

The bog turtle (*Clemmys muhlenbergii)* is known to occur throughout the Atlantic seaboard from southwest Massachusetts to southwest North Carolina. The species is listed as threatened on the Federal Endangered Species List and endangered in the State of Maryland. Bog turtles inhabit calcareous (limestone) fens, sphagnum bogs, wet meadows, and wet grassy pastures that are characterized by soft muddy substrates and perennial groundwater seepage. These types of wetlands have very few trees and shrubs. Suitable habitat exhibits periodic flooding and includes grassy vegetation. Tussocks and dry islands are typically used for basking and the laying of eggs, while water channels and runways under tussock mats are used for moving and hiding from predators. Suitable habitat must also include open areas for basking and nesting.

Historically, the aforementioned wetlands were naturally maintained through periodic flooding, fire, beaver activities, and the grazing of large animals such as elk and bison. Bog turtle habitat has dramatically degraded over the years, however, due to manmade alteration from activities such as pond creation, construction of drainage ditches, and the filling of wetlands for agricultural or urban/suburban development. The removal of cattle grazing from agricultural lands has affected the "maintenance" of these wetlands; i.e., these wetlands were commonly maintained by cows grazing in the wet pastures. Bog turtles prefer areas of open canopy; therefore, by removing cows and other elements that maintain suitable habitat (open, sunny, wet pastures and imbedded grassy or herbaceous wetlands), trees and shrubs will invade these sites and reduce the suitability of the habitat for bog turtles. Multiflora rose (*Rosa multiflora*) and red maple (*Acer rubrum*) are two invasive species that commonly invade bog turtle habitat, shading grasses and sedges and absorbing water, thereby altering the natural vegetation community. Invasive plants readily out-compete native plants because they absorb and transpire more water than the existing emergent vegetation.

Within the proposed impact areas of the Calvert Cliffs Nuclear Power Plant (CCNPP) - Unit 3 project, the surface waters include Camp Conoy Fishing Pond and numerous un-named tributaries that are relatively narrow and somewhat incised and typically lack floodplain wetlands. The wetland areas include two manmade depressions, which lack herbaceous cover; a small area of shaded, poorly-drained bottomland hardwood forest; two isolated seep wetlands which occupy less than 0.1 acre; and narrow wetland zones or drainage-ways, typically less than twenty feet wide, which encompass some of the aforementioned stream channels within the proposed impact

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areas. Suitable bog turtle habitat, which includes open (unshaded), grassy areas, is essentially not present within the proposed impact areas. The bottomland hardwood forests and wetland drainage-ways on-site are either shaded or overgrown with invasive species such as phragmites (*Phragmites australis*), or a combination of both. During numerous site visits conducted in 2006 and 2007 by Tetra Tech NUS and Mactec Engineering and Consulting, Inc. (2007), including reconnaissance for listed (protected) species of fauna, no bog turtles were observed within the proposed impact areas of the CCNPP - Unit 3 project site or other areas of the project site that will not be impacted.

Finally, there are no recent or historical records (i.e., elements of occurrence) of the bog turtle, in the state and federal listed species databases, for Calvert County, Maryland. The closest record of bog turtle occurrence is for northern Baltimore County. The bog turtle is generally only known to occur in Baltimore, Cecil, Carroll, or Harford Counties, Maryland. With the above considerations, it is our biological opinion that suitable habitat for the bog turtle is not present within the proposed impact areas of the CCNPP - Unit 3 project site; therefore, the potential for this species to occur within the proposed impact areas is unlikely. Our opinion is that the project will have "**no effect**" on the species, or populations or meta-populations of the species, in the State of Maryland or throughout its overall range.

Should you have any questions in regard to our determination, please do not hesitate to contact any of us.

Sincerely,

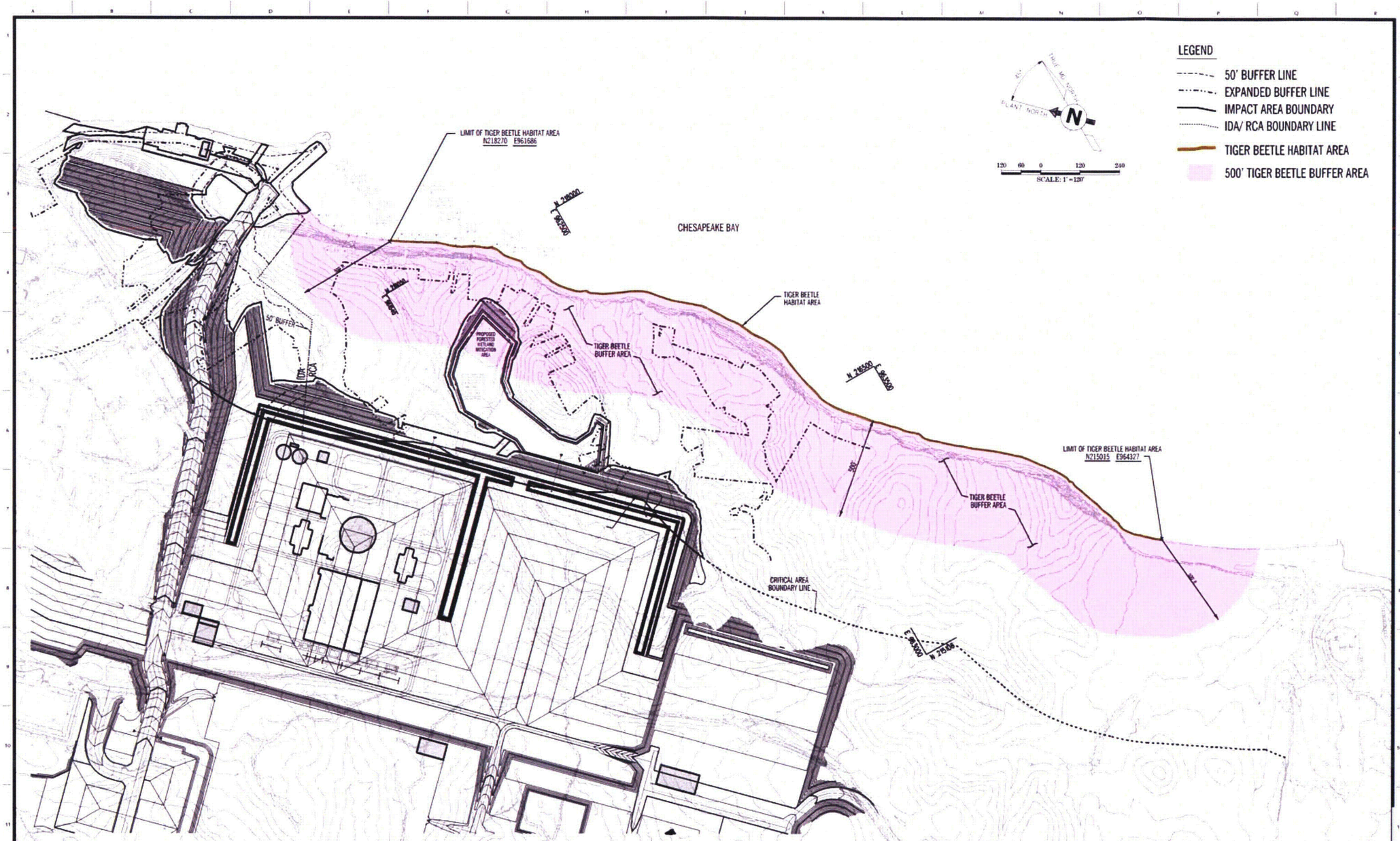
James D. Cutler, PWS
Senior Scientist

Richard G. Harmon, PWS
Principal Natural Resources Scientist

C. Bric Smith with permission
Heidi E. Fogell, FP-C
Senior Scientist

Attachment 3

500' Buffer of the Chesapeake Bay Bluff Habitat That Is Utilized By Tiger Beetles



OWNER/DEVELOPER:
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No.	REVISION	DATE	BY

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TIGER BEETLE HABITAT AREA EXHIBIT
for
CALVERT CLIFFS

DESIGN	KFT
DRAWN	CRK
CHECKED	
DATE	07/14/2008
SCALE	1" = 200'
SHEET	1 of 1
PROJ No.	3017
FILE No.	