

DRAFT
SUMMARY REPORT

FOR THE

**2010 RARE SPECIES MONITORING
SERVICES**

For

SEA GIRT NATIONAL GUARD TRAINING CENTER

SEA GIRT, MONMOUTH COUNTY, NEW JERSEY

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PREPARED FOR:

NJ Army National Guard
CFMO-EMB
101 Eggerts Crossing Road
Lawrenceville, NJ 08648
Attn: William McBride

PREPARED BY:

Amy S. Greene Environmental Consultants, Inc
4 Walter E. Foran Boulevard, Suite 209
Flemington, NJ 08828
Attn: Harry Strano
ASGECI project # 3305

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1.0 INTRODUCTION:

1.1 Background

The Summary Report is an overview of activities conducted during the 2010 season performed by both the NJ Department of Military and Veterans Affairs (March to September, 2010) and Amy S. Greene Environmental Consultants, Inc. (ASGECI) (October to December, 2010) for the work performed under Delivery Order No. W912KN-F-0190 of Contract No. GS10F0002T. The monitoring conducted this season by ASGECI were performed starting in October of 2010 after the issuance of a new contract with NJDMAVA. Species monitoring conducted earlier in 2010 had been completed in-house by NJDMAVA, Environmental Management Bureau (EMB). ASGECI had previously provided monitoring and other environmental services for calendar years 2007, 2008, and 2009. The supports the approved Sea Girt National Guard Training Center (NGTC) Integrated Natural Resources Management Plan (INRMP), which was reissued in 2010. The NGTC is located in Sea Girt, Monmouth County, New Jersey (Appendix A, Figure 1). Photographs of the monitoring activities are presented in Appendix B.

The Sea Girt NGTC contains two Federally-listed and multiple State-listed Threatened or Endangered species that utilize the facility during part of the season. The services performed by ASGECI help the NJ Army National Guard (NJARNG) protect and maintain the Sea Girt NGTC's rare species and natural resources. By sustaining the biodiversity of the training facility, NJARNG may achieve and sustain its military mission at the facility. The NGTC facility is subject to environmental regulation under Army Environmental Regulation AR 200-1, the Federal Endangered Species Act (16 U.S.C. §§ 1531-1544), the Sikes Act (16 USC 670a-670o, 74 Stat. 1052), Section 404 of the Clean Water Act (33 U.S.C. § 1251 et seq.; 40 C.F.R. §§ 104.1 et seq.). The facility is subject to regulation regarding wetland protection from the NJ Freshwater Wetland Protection Act, the NJ Wetlands Act of 1970 (N.J.S.A 13:9) and the NJ Coastal Areas Facilities Review Act (N.J.S.A. 13:19-1 et seq.).

Protection activities conducted during 2010 included a combination of site monitoring an onsite protection enforcement for the Federally-listed threatened target species piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*); and surveying/monitoring of State-listed endangered species including least tern (*Sterna antillarum*); seabeach knotweed (*Polygonum glaucum*); and osprey (*Pandlion haliaetus*); maintenance and enforcement of species protection areas and endangered and threatened species policies; and education and awareness briefings for stakeholders utilizing the NGTC.

In 2010, ASGECI conducted its third seasonal study of the topography, and vegetation cover, density and other metrics for the NGTC beach (including both the Northern and Southern Protection Areas - NPA and SPA respectively). ASGECI followed the same protocols and procedures established in 2008. The report includes a comparative analysis of vegetation cover between 2008 and 2010 collection periods as well as a comparison of

topography and a discussion of potential onsite trends of the dune community. The data collected will be potentially used to support future management activities onsite to enhance habitat for both piping plover and seabeach amaranth. Section 5.1 of this report summarizes the survey effort and results. The 2010 Vegetation Cover Survey is included in Appendix F of this report.

Sea Girt National Guard Training Center implements protection measures for endangered and threatened species onsite as specified in the INRMP. This includes the establishment and regular monitoring of the Northern and Southern Protection Areas (NPA and SPA respectively), in which public entry is not permitted. Additional protections include vehicle restrictions and limitations on the beach including a “No Rake Zone” in front of the NPA; limitation of vehicles within the 100M buffer during the monitoring season; a vehicle ban within the 100M buffer zone (of the NPA) when nesting birds are present; and the installation of a “no pet” policy onsite. Each season, the NJDMAVA staff consults with USFWS and other relevant parties to review and improve protections at NGTC.

Additional species protections proposed by NGTC in 2008 and reviewed by USFWS (via letter response dated August 5, 2008) have been continued through the 2010 season. Protections include increased trash containment and starting the full vehicle restriction in the NPA buffer at the first sign of piping plover nesting (i.e. once an egg is laid). Additional protections are discussed in the relevant sections of this report. Each season, appropriate signage regarding policies and restrictions is installed onsite. Endangered and threatened species briefings are prepared to assure that regulations are understood by all parties utilizing or involved with operation of the NGTC including the National Guard, State Police, Coast Guard, and others. Endangered species protection is promoted onsite through the Youth Camp presentation and regular informal interaction with the visiting public. Additional habitat studies and direct management of endangered species habitat are planned for future seasons at NGTC pending funding.

In 2010, NJDMAVA initiated the process of the INRMP revision in accordance with policy, which states that the INRMP must be updated every five years. During the 2010 season, the 2006 INRMP was utilized as guidance for monitoring at NGTC.

1.2 Protocols and Methodology

Although they are annually reviewed, the basic monitoring and survey protocols have remained similar each season. Small changes or issues from the previous season are typically discussed in a pre-survey season conference call involving stakeholders and agencies. ASGECI did participate in the conference call on February 16, 2010 in anticipation of potentially conducting some work at NGTC during the 2010 season. USFWS, NJDEP and NJDMAVA also participated in the phone conference. Because ASGECI did not conduct environmental monitoring services at Sea Girt during the spring or summer of 2010, previously approved (2009) methodologies were utilized by Amy S. Greene Environmental Consultants, Inc. (ASGECI) staff scientists for the Targeted Species Surveys, as well as the methodologies and protocols for the vegetation cover

survey. The protocols used for the 2010 Season were established in 2009. As with the previous seasons, the study area for ASGECI for 2010 primarily focused on the beach and dune communities. Included in the primary dune community are the NPA and the SPA, which were similar to the standard protection areas established at the beginning of previous seasons. Intertidal and waterfront areas were also surveyed for wildlife. The secondary dune community was evaluated for vegetation species variety; however, it was not regularly included as part of the endangered and threatened species surveys. A map showing the study area and protection areas is included in Appendix H of this report.

During the 2010 season, fencing was set by NJDEP on April 12. The final NPA/SPA fencing and sign removal was conducted by ASGECI on December 3, 2010. During the course of the season two interagency Seabeach amaranth surveys were conducted on June 23 and July 27, 2010. USFWS, NJDMAVA and NJDEP participated in the interagency surveys. A final interagency amaranth survey due to limited scheduling and the determination by USFWS, NJDEP, NJDMAVA, and ASGECI that the extensive site coverage resulting from the vegetation survey would be sufficient to wholly determine onsite presence or absence of rare plants throughout the late summer and fall. ASGECI conducted a total of three species monitoring surveys and multiple vegetation survey visits (approximately eight) between October and December, 2010. Total site visit time for general surveys typically lasted 4 to 6 hours per visit. Species and vegetation cover surveys were conducted by two ASGECI surveyors.

Seabeach amaranth/vegetation surveys were performed by walking in a uniform grid pattern throughout the beach including intertidal areas, the Northern Protection Area (NPA), the Southern Protection Area (SPA), and other primary dune areas. These surveys were conducted during all species monitoring visits and periodically during the vegetation cover surveys.

Access is restricted in the NPA while practice shooting occurs at the range west of the NGTC beach. As with 2009, the 2010 season had fairly continuous use of the range. ASGECI continued to work around the shooting range schedule to minimize scheduling conflicts. Due to the late start of ASGECI involvement in the 2010 season, range conflicts primarily occurred during the vegetation cover survey in October. The vegetation cover survey, which requires extensive amounts of surveying time in the NPA, started slightly later than usual, requiring a more temporally concentrated data collection effort. Close coordination was needed to complete the vegetation cover surveys in October and some minor data collection delays occurred as a result of range conflicts.

If surveys could not be conducted on inactive days, surveys were conducted in the NPA early in the morning (before 8:30 AM) before shooting range activity began or later in the day (typically around 3:00 PM) after shooting was completed. ASGECI also attempted to time work so survey efforts could be conducted in areas outside of the NPA when the range was active.

During early season visits, individuals from NJDEP and/or Wreck Pond Watershed Association regularly swept the beach watching and listening for plover activity.

Because ASGECI only conducted several late season surveys after the potential nesting period, survey effort was primarily directed toward observations of migrating birds (over water and on the beach) than on nesting birds in dune areas. Upon each visit, surveyors scanned the beach and open water noting birds and other wildlife. Binoculars and/or a spotting scope were used during each survey. Survey sheets were administered to the Endangered and Nongame Species Program (ENSP), USFWS, Wreck Pond Watershed Association (WPWA), NGTC, and NJDMAVA and AECOM. After an initial plover observations at NGTC/

2.0 RARE SPECIES / WILDLIFE SURVEY RESULTS:

2.1 Plant Communities/General Vegetation

Each season, ASGECI surveyors have primarily concentrated on survey/plant identification in the designated protection areas and immediate adjacent habitats that comprise NGTC's coastal beachgrass community. These areas have the focus of the vegetation cover survey since 2008. The dunes extend from the intertidal area westward to near the cement bulkhead in the NPA and from the foot of the dune, west to the western end of the SPA (see Appendix G). Secondary dune areas west of the protection areas include dune shrubland and successional dune. These areas are occasionally monitored, but not included in the regular Threatened and Endangered species or vegetation cover surveys.

Plants observed in and immediately adjacent to the primary dune areas are identified and are included in Appendix C. This list includes species identified between 2007 and 2010.

The primary dunes remain dominated by American beachgrass (*Ammophila breviligulata*). Several forbs are found in small pockets or generally interspersed among the beach grass. These species include sea rocket (*Cakile edentula*), seaside goldenrod (*Solidago sempervirens*) and seaside spurge (*Chamaesyce poygonifolia*) in the foredune.

Plant diversity increases in more open areas west of the fore dune on the back end of the dunes. Forbs and grasses identified in the protection area dunes include purple sandgrass (*Triplasis purpurea*), salt-meadow cordgrass (*Spartina patens*), cocklebur (*Xanthium strumarium*), yucca (*Yucca filamentosa*), horseweed (*Conyza Canadensis*), and poor joe (*Diodia teres*), beach pinweed (*Lechea maritime*), beach pea (*Lathyrus maritimus*), Oake's evening primrose (*Oenothera oakesiana*), and *Digitaria* crabgrass.

Dominant vegetation within these secondary dunes included extensive patches of Southern bayberry (*Myrica (Morella) cerifera*), poison ivy (*Toxicodendron radicans*), and rugose rose (*Rosa rugosa*). These species, particularly Southern bayberry, may also be found in the west portion of the NPA primary dune area. Other common secondary

dune species include goldenrods (*Solidago* spp.), knapweeds (*Centuria* spp.), winged sumac (*Rhus copallinum*) and common reed (*Phragmites australis*). See Appendix C, Plant and Wildlife lists for the full list of plants observed in the Study Area between 2007 and 2010.

Between 2008 and 2010, in the American beachgrass vegetation has remained the dominant cover with a net coverage (by Daubenmire estimation) at approximately 40-45% throughout the study area. The NPA did have a net decrease of cover of approximately 12% primarily due to storm impacts along the easternmost (A and B) lines. Large amounts of sand accretion in the NPA buried vegetation along portions of the B Line, and heavy frontal erosion removed the majority vegetation along the A Line, leaving a sharp shelf-like effect at the dune toe. In other portions, including much of the SPA, SBA and back portions of the NPA; cover and/or density of beachgrass increased in 2010 from previous seasons. The net result of these sectional increases and decreases is a general increase in coefficient of variation of 77% in 2010, which indicates a high patchiness of habitat, in spite of a generally stable overall study area cover level.

While American beachgrass remains dominant in the primary dune community at around 80% of plant species composition, seaside goldenrod is a component of the community at around 7% of the vegetation community in 2010. Several other dune or waste habitat species including sea rocket, purple sandgrass, southern bayberry, horsetweed, and saltmeadow cordgrass comprise small amounts of the community and generally vary between 0.5 and 2.5% by the various measurements from season to season.

For three consecutive seasons between 2007 and 2009, clusters of approximately 20 fruitless Asiatic sand sedge (*Carex kobomugi*) plants were identified at a single location in the back side of the primary dunes within the NPA.

In 2009, the plants and all visible root material were carefully removed and disposed of offsite. ASGECI diligently inspected the sand around the observation point in 2009 and removed all observable root fragments to depths of about three feet. The area from which the plants were removed was heavily surveyed by ASGECI in October and November of 2010. No Asiatic sedge populations were identified onsite during 2010. This location and the entire site will be carefully monitored for this species in upcoming seasons.

Another exotic species observed in small amounts in previous seasons, Russian thistle (*Salisola kali*), was not observed in 2009 or 2010.

Secondary dune areas appeared to be impacted more by exotic and/or invasive species than the NGTC primary dune habitat. Rugose rose (*Rosa rugosa*), a Japanese rose well established in Northeastern coastal areas, is common in the secondary dune area and occasionally occurs in the primary dune; however, does not appear to be altering the primary dune habitat at this time. Oriental bittersweet, a highly invasive vine that smothers native woody vegetation, occurs on poison ivy “shrubs” along the walls and jetty bulkheads that border the western end of the secondary dune. Common reed (*Phragmites australis*), is a highly invasive reed found in the central portion of the

secondary dune and throughout the marsh border of Stockton lake. Japanese knotweed (*Polygonum cuspidatum*), a large herbaceous forb that grows in a shrub-like form, occurs in a monoculture along the northern end of the secondary dune. As some of these species have the potential to reduce wildlife habitat quality, these species should be closely monitored.

2.2 Seabeach Amaranth

Background

Seabeach amaranth surveys conducted by the NJDEP revealed the presence of Seabeach Amaranth between 2001 through 2006. During 2005, 12 plants were identified and during 2006, four plants were identified. The greatest number of plants at NGTC occurred in 2002 with 18 plants identified. After two consecutive years without an observation, three plants were identified during the 2009 season. No sea beach amaranth plants were identified in 2010.

Populations of seabeach amaranth are declining regionally since an initial explosion in population from around 2000 to 2004. New Jersey plant numbers dropped from 6,522 in 2006 to 2,185 in 2007 (Stephanie Egger, USFWS, Personal Communication, 2008). The Sandy Hook population decreased from 1822 in 2007 to 1,078 plants in 2008 (Kerri Bickel, formerly of the National Park Service, Personal Communication, 2009). Diseases may be responsible for some population loss; however, habitat loss and lack of beach nourishment projects that may have deposited old seed from off shore onto the beaches is suspected as the primary reason for major population decline. Webworm has also been identified as a major source of population decline on Sandy Hook. Seabeach Amaranth was expatriated from NJ from around 1913 until it was rediscovered in 2000. Its return roughly corresponds with the onset of beach nourishment projects conducted by the US Army Corps of Engineers and several large storms that have occurred locally.

Seabeach Amaranth surveys were conducted throughout the beach and dune area from the high tide line to the landward limit of the beach (dune line or seawall) during interagency site visits in on June 23 and July 27, 2010. Additional surveys for seabeach Amaranth were conducted during vegetation cover surveys. ASGECI generally followed a grid pattern to ensure full coverage of the beach. During the seabeach amaranth surveys, ASGECI surveyors looked for other potential rare species including seabeach purslane (*Sesuvium maritimum*) and seabeach knotweed (*Polygonum glaucum*).

2.3 Seabeach Knotweed

Seabeach knotweed was also surveyed in conjunction with seabeach amaranth surveys. Seabeach knotweed was documented at Sea Girt NGTC by USFWS in 2004 (2 plants), 2005 (1 plant) and 2006 (5 plants). Seabeach knotweed has not been identified from the 2007 through 2010 seasons.

2.4 Piping Plover

Background

Each season, piping plovers are typically identified in some capacity at NGTC by early April. Typically, first sightings are related foraging activities in and around the NPA. Scraping and clear nest attempts have also been recorded onsite with some regularity and the NPA has also been recently utilized for resting and foraging by a fledgling plover and its parents.

In 2002, a pair of piping plovers unsuccessfully nested at NGTC, followed by minimally observed nesting activity onsite for several years. The 2007 season was the first season in which nesting piping plovers were observed successfully hatching a chick at NGTC. During 2007, one chick hatched out of the four eggs that were laid onsite. The remaining eggs were impacted by super high tides during an early season storm. After a short period of observed normal behavior with no apparent stress, the hatchling chick rapidly began showing signs of illness and expired on July 7, 2007. A necropsy coordinated by USFWS revealed that the chick died from pneumonia and its stomach was empty. Based on the occurrences of the 2007 season, there was a high expectation of a piping plover nesting attempt in 2008. After some initial onsite plover nesting activity, a large Nor'easter occurred along the NJ shore on May 12, 2008. This storm drastically impacted the profile of the NGTC beach, particularly the nesting habitat around the NPA, which was severely eroded and its' plover nesting suitability was temporarily reduced. Piping plovers were not observed after that date onsite.

ASGECI conducted the first 2009 piping plover presence /absence investigation on April 8, 2009 and also met with Endangered and Nongame Species Program representatives to install NPA and SPA fencing onsite. No evidence of plovers was observed onsite. ASGECI again visited the site on April 21, 2009, however, storm conditions did not allow for a beach survey. On April 24, May 21 and June 16, 2009, ASGECI observed plover tracks around the middle portion of the NPA as is typically seen at NGTC in the early season; however, no scrapes or hard evidence of plover nesting was observed.

On June 25, 2009, a pair piping plovers and a single chick had migrated from the Wreck Pond beach (approximately one mile north), where it had hatched, to the southern portion of the NPA at the NGTC. The chick moved several times between Wreck Pond and NGTC before fledging around July 16, 2009.

In 2010, spring surveys for piping plover were conducted by NJDEP and Wreck Pond Watershed Association. The first piping plover of the season identified at NGTC was spotted by Nancy Hayduk of the Wreck Pond Watershed Association on April 7, 2010. The bird was foraging in the wrack line. No additional spring foraging or breeding activity including scrapes were identified after that date. ASGECI was rehired in October to finalize endangered species monitoring and vegetation surveys for the season. ASGECI spotted three piping plovers briefly resting on jetties in front of the NPA during

migration in October X, 2010 during the vegetation cover surveys. No other piping plovers were observed during 2010.

2.5 Osprey

Ospreys were identified at NGTC by Wreck Pond Watershed and others in April of 2010 at the existing cell tower in the westernmost portion of the project area adjacent to the backwaters of Stockton Lake (see Appendix A, Figure 2). This nest location has been used in multiple seasons in the past. Ospreys were regularly observed foraging over the Atlantic Ocean Stockton Lake through October during the 2010 season.

Ospreys are typically observed at the cell tower from late March /early April to September. During the 2010 season, three osprey chicks were observed and appeared to have successfully fledged from the tower nest (Nancy Hayduk, personal communication 2011).

Additional actions have been considered by the cell tower company (Cingular) in the future to encourage ospreys to move from the cell tower site to the platform erected in 2008. Potential actions include removing the nest and relocating portions of it to the platform. In addition the company is considering screens or nets over the top of the cell tower to discourage the ospreys from utilizing it. These actions have not been implemented to date and therefore are not anticipated for the 2011 season.

2.6 Additional Wildlife Observations

Though limited in size, the unique interconnected patchwork of natural communities within and adjacent to NGTC, including freshwater wetland, open field and early succession habitats, salt marsh, mudflat, sheltered open water, primary and secondary dunes, and beach and ocean habitats, make the site extremely important for a variety of resident and migratory bird species. NGTC provides shelter and foraging habitat for a variety of rare, endangered and threatened bird species as well as nesting foraging and migratory habitat for a number of non-listed passerines, shorebirds and waterbirds that rely on this patch of habitat in an otherwise highly developed urban landscape. In addition to bird species, a variety of mammals and great variety of insects including butterflies, dragonflies and beetles utilize NGTCs dunes and adjacent vegetated habitats. Beaches and the nearshore aquatic habitats support a variety of resident and migratory marine life ranging from a plethora of invertebrates to marine mammals. A complete list of species observed onsite during rare species monitoring and vegetation surveys between 2007 and 2010 is included in Appendix C. Table 1 reflects rare, threatened and endangered species identified by ASGECI and Wreck Pond Watershed Association during 2010 rare species monitoring and/or vegetation cover surveys.

Wreck Pond Watershed association and ASGECI conducted general wildlife observations at NGTC during the 2010 season, with ASGECI starting in October. Observations were primarily conducted within the beach and primary dune areas with some observations within the secondary dune communities. Wildlife observed during the 2010 monitoring

season included a number of landbird, waterbird, waterfowl and shorebird species, of which ten were endangered, threatened or special concern bird species, including the Federally-threatened piping plover. The osprey was the only State-listed bird species observed nesting onsite during 2010.

The Endangered, Threatened, and Special Concern Wildlife Species observations made during general surveys and vegetation surveys are included in Table 1 below. All confirmed occurrences of threatened, endangered species and special concern species identified onsite in 2010 made by ASGECI were reported to the NJDEP Natural Heritage Program (See Appendix E). Species only listed as NJ special concern-breeding species that were not observed showing evidence of nearby nesting or breeding were not reported to NHP. Additional observations of onsite rare, threatened or endangered species were observed during studies in 2010 unrelated to the vegetation survey and rare species monitoring services. These findings were submitted to NHP under separate cover.

**Table 1: Rare, Threatened and Endangered Species NGTC – 2010
Observed by ASGECI and/or Wreck Pond During Endangered Species Monitoring**

Species	State/Federal Status	2010 Date(s)	Location	Activity/Notes
Piping Plover	L-T	4-7 10-x	NPA beach	Single observed foraging at wrack line by Wreck Pond Watershed Assoc in spring. No nesting behavior. Three observed resting on jetty in front of NPA while on migration during vegetation survey.
Bald Eagle	Prev. L-T, SE	Multiple		Juvenile observed by Wreck Pond Watershed Assoc.
Peregrine Falcon	Prev. L-T, SE	Multiple	NPA	Observed by wreck pond.
Least Tern	SE	May- August	Stockton Lake/NGTC Beach	Observed by Wreck Pond Watershed Association multiple occasions foraging over Stockton Lake. No nesting and flying over beach.
Osprey	ST	Most obs. Apr -Oct	NPA, SPA, Beach Stockton Lake	Nested successfully on cell tower, often observed foraging on Stockton Lake and beach areas. Wreck Pond Watershed Assoc.
Cooper's Hawk	ST	10-22, 12-3	SBA Fields	Observed by ASGECI passing over site.
Northern Harrier	SE- breeding	10-8	SBA	Soaring low over dune.
American Oystercatcher	SC	May - September	NGTC Beach, Stockton Lake	Observed by Wreck Pond Watershed.
Horned Lark	SC	12-3	Fields	Observed foraging and resting just north of the beach parking lot by ASGECI.
American Kestrel	SC	12-3	Fields and Dunes	ASGECI observed female perched on guywire of annometer tower and diving repeatedly onto the ground.
Short-eared Owl	Asio flammeus	10-22	NPA	Observed resting in dunes and flying south by ASGECI and VS land during Topo Survey.
Common Tern	SC-breeding	April- August	Beach and Stockton Lake	Does not breed onsite
Hooded Merganser	SC	12-3	Stockton Lake	Observed on water.
Sanderling	SC	10-22	All along NGTC beach	Most common peep observed at NGTC – typically foraging at water's edge.

L-T – Federally-Listed Threatened; SE – State Endangered; ST - State Threatened; SC - State Special Concern

Bird Species

As previously mentioned, NGTC hosts a very wide variety of resident and migratory birds each season.

Although they do not nest at NGTC, small groups of American oystercatchers are regularly observed flying over the NGTC grounds during the breeding and migratory seasons; and occasionally observed on the beach at NGTC and on adjacent Stockton Lake mudflats. American oystercatchers were seen foraging at NGTC beach in 2010 by Wreck Pond Watershed Association during monitoring.

The small freshwater wetland complex onsite consists of a mixture of mid and early successional plant species including switchgrass (*Panicum vergatum*) and other grasses, high tide bush (*Baccharis halimifolia*), phragmites (*Phragmites australis*), and *Aster* spp. This wetland typically floods in the spring and regularly provides foraging habitat for waterfowl including mallard, blue-winged teal and other species, and shorebirds including greater and lesser yellowlegs, least sandpiper, black-bellied plover and solitary sandpiper. Other species, including a variety of passerines, snipe and sora (rail) have been identified utilizing this wetland habitat.

Least terns are commonly observed passing over NGTC from May to July and were observed resting on the beach and at Stockton Lake. The least terns and other tern species often utilize Stockton Lake for foraging. No least tern nesting activity was observed at the NGTC during the 2010 season. Least tern along with Forster's and common tern, are regular observed foraging at NGTC. During the breeding season, these species utilize Stockton Lake, and the NGTC beach and nearshore habitats.

Mudflat and marsh habitats (dominated by stands of *Spartina alterniflora* and *Phragmites australis*) within Stockton Lake are particularly important for shorebird waterfowl, and waterbird species. Mudflats are typically exposed at each low tide on both the easternmost and westernmost ends of Stockton Lake. The easternmost mudflat typically supports the greatest variety of foraging shorebirds at certain times of the year including spotted sandpiper, solitary sandpiper, semipalmated plover, black-bellied plover, least sandpiper, American oystercatcher, greater and lesser yellowlegs, and dowitchers. At the request of NJDEP and USFWS, ASGECI has frequently scanned the mudflats of Stockton Lake for red knot. To date, this species has not been observed at NGTC. Waterbirds including great blue heron, great egret, snowy egret, and green heron commonly use these mudflats. Both night heron species and rails have also been identified using both marsh fringes and mudflat areas for foraging.

Stockton Lake also supports a variety of wintering duck species including bufflehead, hooded merganser, black duck, mallard, Canada goose, Atlantic Brant, gadwall, canvasback, ruddy duck, and American widgeon.

Northern harrier and peregrine falcon are often observed flying within the NGTC fields, wetlands and beaches, particularly in the fall. Both of these species were spotted during monitoring or vegetation surveys during 2010. The Northern harrier is typically observed passing over the secondary dunes or marsh habitats onsite. Peregrine falcons are seen regularly at NGTC migrating and foraging over Stockton Lake and the eastern end of the field areas. American kestrel and merlin are occasionally seen foraging over the field areas. One American kestrel (special Concern –proposed listing for State-threatened) was observed foraging near the anemometer tower on December 3, 2010, the last day of the field monitoring season. A flock of approximately 15 horned lark were observed foraging on this end of the field on the same day. The horned lark is listed as a Special Concern species in New Jersey with its breeding populations proposed to be upgraded to State-threatened.

Black skimmers were a key species not observed during endangered species monitoring in 2009 or 2010. This species is not commonly observed at NGTC and is only occasionally seen passing through the nearshore habitat.

The beach and nearshore habitat typically contains a variety of shorebirds throughout the year. Sanderling is the most common wading shorebird, particularly in the late summer, fall and winter. Semipalmated sandpiper, semipalmated plover, black-bellied and ruddy turnstone are also typically seen on the beaches in the spring and fall and occasionally winter.

The secondary dune is host to the greatest variety migratory and resident passerines and similar landbirds onsite. The patchwork of shrub and vine communities, including poison ivy, Southern bayberry, rugosa rose, blackberry and Virginia creeper create a densely vegetated habitat with well protected nesting and foraging opportunities for songbirds. Common early season residents include song sparrow, mourning doves, catbird, mocking bird, American robin, cardinal, brown thrasher, rough-winged swallow and barn swallow, common yellowthroat and yellow warbler. Large numbers of red-wing blackbirds typically dominate the reproductive activity in the secondary dune and freshwater wetlands. Coopers's hawks, which were again identified by ASGECI in October of 2010, are the most common avian predator observed foraging in the secondary dune.

Herptiles

Herptiles appear to be uncommon at NGTC as a result of the marine conditions and the relative urban isolation. Certain disturbance tolerant reptile and amphibian species such as box turtle, garter snake, spring peeper, and green frog are likely to occur within the general vicinity of the NGTC, but have not been identified onsite by ASGECI to date. Fowler toads, a relatively common NJ State-listed special concern resident in the sandy soils of southern New Jersey and NJ coastal habitats, were first identified by ASGECI in 2007. Due to the October start of services, Fowler's toads were not observed by ASGECI during 2010. During the late winter and spring, the onsite freshwater wetland adjacent to the parking lot typically retains up to one foot or more of standing water. The toads have been confirmed breeding in the freshwater wetland area onsite. It is likely they will be observed onsite in the primary or secondary dune areas in 2011.

Red Fox and other Carnivore Mammals

Red fox remains the most commonly observed non-domesticated predatory mammal at NGTC. Red fox, by evidence of direct observation, tracks, foraging signs and scat, have been quite reproductively successful at NGTC in recent years and appear to have a major influence in trophic interactions within the dune areas. Red fox tracks, scat, and direct observations typically occur anywhere between the waterline west to the grass field areas by the freshwater wetland. Most evidence of their activity was observed by ASGECI in the western portion of the primary dune areas and around the secondary dune areas. Dens have been identified in the secondary dune areas west of both the NPA and SPA onsite. Well established travel corridors within this community are typically covered with adult and juvenile tracks, and frequent forage remains and scat.

Both adult and juvenile tracks were regularly observed at NGTC throughout the season. As with previous season observations, fox tracks tended to be most dominant in the back portions of the NPA and the SPA, and in the secondary dune areas where the dens are located. Although they are most common in the back dune and secondary areas, fox tracks may be observed anywhere within the NGTC beach area including the intertidal zone. Fox scat was common in both protection areas. The scat typically contains a variety of plant and animal material including rabbit and rodent fur, plant matter (often Virginia creeper seeds), beetle elytra and other insect parts, and bird and mouse skull and bone fragments, and small amounts of anthropogenic material such as tinfoil. NGTC foxes appear to be primarily nocturnal and/or crepuscular. Most observations onsite occur shortly after dawn and in the early morning hours. To date, minimal trapping efforts have been conducted by NJDMAVA/NJDEP in the late winter to control fox populations. Additional observation and trapping efforts are expected to occur in the near future.

In recent years, domestic cats and their tracks have been observed in the primary and secondary dune areas and the adjacent beach parking lot. Unleashed dogs remain common after October on NGTC beaches. Most activity appears to occur along the beach line with evidence of occasional entry into protection areas.

Other predatory mammal tracks including raccoon, opossum and possibly skunk have been identified around the NPA during 2009 and 2010; however, they remain significantly less common than cat, dog and fox tracks. This season, there was also a single report of an American river otter during one summer evening at Stockton Lake (West Environmental, Personal Communication). ASGECI has not observed this species to onsite date; however, scat observed on the NGTC Stockton Lake dock in 2010 may be attributed to this species.

Rodents and Lagomorphs

Eastern cottontail rabbit scat is observed throughout the dune areas each season and evidence of beachgrass herbivory is most commonly identified in some sections within the NPA, particularly during the Vegetation Cover Surveys. Clippings of American

beach grass throughout sections of the NPA and SBA appear to be partially for the establishment of travel corridors through dune areas.

Although not observed to date, fox scat samples identified in 2009 contained remnants of voles or mice bones. In addition, a number of small rodent tracks have been observed in the NPA. These tracks may have been Norway rat which are somewhat secretive but are commonly found around jetties and bulkheads within the region. Muskrats have also been observed by ASGECI in recent seasons near Stockton Lake and the onsite freshwater wetland.

Groundhogs and gray squirrels remain the most commonly observed animals in the urban areas and fields of NGTC.

Fish

Each season ASGECI observes evidence of a variety of resident and migratory fish within nearshore marine habitats of NGTC. Occasional fish migrations or movements are typically observed within several hundred meters of NGTC the beach each season. The species likely associated with these movements include Atlantic menhaden, sand lance, and bay anchovy. Often these movements are identified by the associated feeding predators including terns and gulls, northern gannets, double crested-cormorant, loons, or bluefish. ASGECI has occasionally observed cetaceans, presumably bottlenose dolphin, feeding on schooling fish. These observations most often occur during in October, but were not observed during the 2010 season.

The NGTC beach is also utilized by a variety of ecologically and recreationally significant nearshore fisheries including summer flounder, bluefish and striped bass. These species are regularly pursued by anglers at NGTC throughout the monitoring season. The small near shore jetties at NGTC would be expected to provide habitat for small blackfish and cunner. In addition to summer flounder, bottom-dwelling species such as windowpane, clearnose skate, Northern sea robin and kingfish would be expected at varying times of the year in the NGTC inshore waters. Other species such as juvenile bluefish (snapper) appear to forage on killifish and spearing in Stockton Lake, particularly at high tide. These species appear to be the main forage fish for the various heron and shorebird species utilizing the tidal lake.

Invertebrates

Common invertebrates observed each season within the dune area include sand wasps (*Bembix* sp.), *Sphecidae* wasps and seaside grasshoppers (*Trimerotropis maritima*). Other observed dune insects include caterpillar hunter, (*Calosoma* sp.), Chinese mantis (*Tenodera sinensis*), and cow killer (*Dasymutilla occidentalis*), lady beetles (Coccinellidae) and ctenuchid moth (*Ctenucha virginica*). Monarch butterfly (*Danaus plexippus*) are regularly observed onsite; however, no evidence of successful reproduction has occurred; possibly due to the very limited population of milkweed host plants. Large numbers of common buckeye butterflies (*Junonia coenia*) were observed feeding on goldenrod flower nectar during the 2010 vegetation survey. Burrowing wolf

spiders (*Geolycosa* sp.) have been observed each season during the vegetation survey in the NPA and SPA.

The marine invertebrate community at NGTC is typical of coastal New Jersey. Various shrimp-like Amphipods (scuds and sand fleas) have been observed throughout NGTC's marine and aquatic environments and appear to be important forage species for shorebirds in Stockton Lake, the freshwater wetland, and the NGTC beach. Commonly observed crab species include blue crabs, which are often fished for by NGTC visitors at Stockton Lake. In addition, mole crabs, lady crabs, green crabs, invasive Asiatic shore crabs, and ghost crabs have also been observed. Ghost crab burrows are common in the American beach grass areas of the NPA and individuals may be regularly observed in evenings or on cooler days during the season. Implications of ghost crabs piping plover site selection are discussed in the recommendations section of the Vegetation Survey Report (2010).

Common mollusks observed at the NGTC beach include blue mussel, surf clam, coquina clam, sea clam, moon shell and sea scallop. Most often these species are identified by their empty shells in the intertidal zone. Ribbed mussels and remains of razor clam (*Ensis directus*) and stout tagelus clam (*Tagelus plebeius*) are most commonly identified near Stockton Lake. Sea stars (*Asterias forbesi*) are the most common and Echinoderm (sea stars, sand dollar, and urchins) were observed along the NGTC nearshore marine habitat.

3.0 PROTECTION AREA MAINTENANCE AND ENFORCEMENT

3.1 Observed Threats to Wildlife - Public

Threats to wildlife related to both human and wildlife activity were observed during the 2009 monitoring season.

Pets

Each season, the most common public threat to wildlife onsite is violation of pet policies. ASGECI did not participate in the 2010 spring and summer rare species monitoring. ASGECI did however observe individuals walking dogs within the NGTC season during the vegetation surveys in October and November of 2010. ASGECI ordered and installed larger signs in June, 2009 to attempt to reduce the incidents of dog walking on NGTC beach property. In addition, NGTC provided standard letters to the Sea Girt and Manasquan Police and provided an open letter to pet owners to be posted on the municipal websites (see Appendix E).

Entrance of Protection Areas

ASGECI has in past seasons observed people and/or evidence of unauthorized entrance into the SPA and NPA. ASGECI has not witnessed an unauthorized entry that directly jeopardized endangered or threatened species. When observed, ASGECI asked individuals to refrain from entering the area. To date, all individuals have been cooperative when asked by ASGECI to not enter protection areas. ASGECI will continue to vigilantly enforce onside rules regarding entry to protected areas.

Vehicle Usage

During the 2010 season, vehicle usage on the beach was subject to the typical restrictions: lifeguard vehicles and emergency vehicles as needed. No additional vehicle limitations or restrictions were put into place (such the full vehicle restriction in 2009) as there was no nesting or fledgling piping plover presence at NGTC. The “No Rake Zone” in front of the NPA remained throughout 2010.

Lifeguard Activity

According to the Borough of Sea Girt 2010 Lifeguard Report, there were 62 rescues and 83 assists on the NGTC beach during the 2010 season. Waverunners, boats and/or jetskis were used for three of these rescues and vehicles were utilized as backup in all cases. Approximately XXX preventative actions were taken by lifeguards at NGTC during the season. Due to the lack of presence of plovers at NGTC or Wreck Pond, no additional special limitations on vehicle use were in place at any point in 2010. No incidents were reported by lifeguards any no vehicle or other protocol violations by Borough lifeguards we observed or reported at NGTC during the 2010 season.

Beach Visitor Activity

NGTC beaches typically appear to get the greatest number visitors around the July 4th weekend. Most beachgoers utilize the beach in front of the SPA and SBA, where lifeguards are present. In autumn, fishing and walking appear to be the most common beach visitor activities. Generally these activities have not appeared to impact endangered species or wildlife.

Vandalism

Minor vandalism to signage or fencing has occurred in previous seasons, including sign disappearance cutting of protection area fence. Evidence of vandalism was not apparent by ASGECI in the fall of 2010. Signs this past season had been buried extremely deep within the sand, which makes quick removal difficult and likely deters vandals from stealing signs.

3.2 Observed Threats to Wildlife – Non-human

Invasive species

A cluster of approximately 24 plants (above ground) of Asiatic sand sedge (*Carex Kobomugi* - an aggressive invasive species of *Carex* sedge which colonizes dune communities) was last identified onsite on August 11, 2009 in the back side of the primary dunes within the NPA. The approximate 5 x 5 foot location was in the same location as the sedge plants identified during the previous seasons (October 10, 2007 & September 18, 2008), when similar numbers (20 - 30) of plants were discovered onsite. ASGECI extensively searched the dunes during monitoring and vegetation surveys in the fall of 2010 and did not find evidence of this invasive anywhere onsite including in its previous location. Careful combing of the sand to over 24" to remove all root fragments in 2009 may have resulted in the extermination of the plant onsite. ASGECI will continue to monitor for this species in 2011.

No other exotic or invasive species occurring at NGTC appear to be impacting the primary dune area; however, several exotic and/or invasive species are dominant in the secondary dune area. Large portions of the secondary dune are dominated by non-native rugosa rose. Additional dominant exotic species of the secondary dune include Asiatic bittersweet, common reed, and Japanese knotweed.

In 2011, ASGECI will be conducting an inventory of invasive plant species onsite including creating mapping polygons of invasive communities. This will allow for a better understanding of where these species occur onsite and the best potential management practices to control them.

Predator Activity

NJDMAVA, in conjunction with ENSP, removed several foxes and one cat the predator population onsite for the 2009 season by undergoing active predator removal during the

winter months. No predator removal occurred in 2010; however, predator control efforts are planned for upcoming seasons including increased monitoring of predator activity and subsequent trapping. Evidence of predator activity within both protection areas was still regularly observed during ASGECI's fall site visits in 2010. This included observations of fox scat and adult and young tracks, scat, digging activities and prey remains.

Foxes appear to be the primary mammal predator present at NGTC. Some domestic cats may also be present. As with previous seasons, fox activity is widespread throughout the NGTC beach area; however the back portions of the NPA beach and adjacent secondary dune appear to be an area of high activity.

Avian predation from raptors is a regularly observed occurrence at NGTC. Species most often observed foraging include merlin, peregrine falcon and Cooper's hawk. Avian remains of raptor predation are found at multiple locations in and around the NGTC beach each season. Other species observed onsite which are known to harass or predate plover chicks include fish and carrion crows (*Corvus* sp.) and *Larus* gulls including herring gull (*Larus argentatus*).

Beach Erosion, Habitat Succession and Habitat Loss

Each season, particularly in the spring and fall, storms impact the NGTC beach by flooding portions of the primary dune with storm surge and changing the dune profile. At times, particularly during the winter months, sand is deposited in the back dune area and eroded at the dune toe; resulting in a dramatic shelf effect. This condition tends to level off over the course of the summer and or during durations without heavy eroding storms. A series of storms during the 2009 fall season resulted in the most dramatic erosion and change to the dune profile at NGTC in recent history (Gary Schmitz, personal communication).

Storms, particularly fall and winter Nor'easters combined with high winds and wave action have resulted in substantial sand erosion and displacement at NGTC between 2008 and 2010 (see Appendix G, Topographic Plan). With the exception of the frontal portion of the NPA, frontal portions of the NGTC primary dune areas have received sand accumulation or accretion of up to two feet since 2008, which has been shown in studies to stimulate growth of American beachgrass in subsequent seasons (see Appendix F). Simultaneously the most of the frontal portion of the NPA and intertidal areas throughout much of the NGTC have lost sand at levels of 2-6 feet as sand is eroded and/or displaced into the back portion of the primary dune through saltation.

ASGECI has typically observed that these erosive and displacement impacts of fall and winter storms begin to mitigate themselves as weather and currents generally stabilize toward the spring as sand is evenly redeposited by wave and wind action. This typically results in a less dramatic topographic gradient as plovers begin to arrive. In spite of this seasonal cycle, preliminary evaluation indicates that the key species habitat may ultimately be reduced in subsequent seasons without intervention as the topographic slope towards the intertidal zone becomes more pronounced or shelf-like coupled with stable or increasingly dense beachgrass throughout mid and back portions of the dunes.

Analysis of erosion factors are discussed in greater detail in the accompanying vegetation report (see Appendix G).

3.3 Signage and Fencing

Each season sets of 8.5 X 11 signs are ordered and are designed to notify the public of the protection area rules and regulations. Sign sets included “raise your rake,” “lower your rake,” “no pets,” and “no vehicles allowed” to detour vehicles around potential nesting areas. Each season, surpluses of fencing rope and signs are ordered to replace missing or vandalized materials. Signs for endangered shorebirds and seabeach amaranth are typically provided by the NJDEP and the USFWS respectively. Although signs were not ordered in 2010, signs from previous seasons were in surplus and utilized. ASGECI will be obtaining more signs for 2011. NPA and SPA fencing, rake signage and “no pet” signage was put up on April 12, 2010 by ENSP and NJDMAVA.

ASGECI did not witness any large storms in the fall that resulted in lost signage or fencing. Signs had been buried deeper in sand than in previous seasons which caused more weathering from sand and tides, but did keep them from being easily uprooted during storms. Fencing and signage remained in place until at NGTC until December 3, 2010.

3.4 Trash Collection

ASGECI collected approximately one 20-gallon bag of trash from the beach and protection areas during the fall visit and when practicable during vegetation surveys. The most common trash items collected in the dune areas remain plastic containers (water bottles, juice jugs, etc.) and a variety of rubber or plastic items ranging from toys, lighters, hoses, and hygiene products. Mylar and rubber balloons attached to strings are common within the protection areas and present a hazard to birds and other wildlife. ASGECI removed all flagging and transect markers following the vegetation cover surveys.

ASGECI began monitoring and vegetation surveys on the beach in October after the heavy visitor season and therefore observations of food remains were not common. Additional trash cans and covers for all trash cans installed in 2008 and continued to be used. Trash around the lot area was generally contained within the cans and was not observed by ASGECI. Other anthropogenically produced waste such as domestic animal waste or discarded fishing bait was not observed on the beach or dune areas by ASGECI in late 2010.

Predator tracks remain common near the trash cans and appear part of travel corridors leading from the secondary dune area to the SPA. As previously mentioned, monitoring efforts planned in 2011 will help determine predator activity.

4.0 EDUCATION AND AWARENESS BRIEFS

4.1 Annual Youth Camp

The Youth camp presentation was not held in 2010, due to staffing limitations. Between 2007 and 2009, ASGECI conducted the annual Youth Camp presentation at NGTC. Initially the program was conducted on the beach for small groups of 10-20 children during the course of a single day. At the request of the camp, the program was changed in 2008 to a longer (approximate 2 hour) evening program indoors for all 150 children. The program included a PowerPoint presentation and a beach “biofact” activity game.

NJDMAVA specifically indicates the various subjects to be covered at the youth presentation these include:

- The habitats of the NGTC.
- Endangered and threatened species and other plant and animal wildlife occurring at NGTC beach.
- Threats to wildlife occurring at NGTC.
- NJDMAVA role in helping help endangered species survive at NGTC and elsewhere and the role of a biologist in protecting natural resources.

Species discussed included the piping plover, seabeach amaranth, ospreys, associate bird species (terns, gulls, American oystercatcher) and various marine invertebrates (mollusks, crabs, horseshoe crab, sea stars, sea jellies) and predatory or game fish (bluefish, flounders, sea robin, striped bass, skates, rays and sharks). ASGECI plans to coordinate a similar youth camp program in 2011.

4.2 Annual Awareness Brief

The Annual Awareness Brief is designed to educate Sea Girt NGTC staff and key military and police personnel, and other stakeholders about the installation's rare species management program. The program is important to establish lines of communication and rules to prevent impacts to threatened and endangered species or their habitat. The Annual Awareness Brief was held by NJDMAVA on March 18, 2010 for NGTC Staff, Military and State Police Personnel, and the Borough of Sea Girt Staff. Topics discussed during the 40 minute program included:

- Species habitats occurring at NGTC.
- Rare, Threatened and Endangered Species potentially occurring at NGTC.
- Rare species protection measures taken by NGTC.
- Regulations when beach nesting birds are not present.
- Regulations when beach nesting birds are present and actively nesting.

4.3 Military Training Briefings

The military training briefings are designed to inform units conducting military exercises on the beach of the endangered and threatened species policies. The brief is required as part of preparation for any formal planned beach training exercises. The briefs are not held for units jogging on the beach, etc. but rather units conducting full training exercises. The brief lasts for approximately 1/2 hour, included a PowerPoint Presentation and is structured similarly to the Annual Awareness Brief. In 2009 and in 2010, formal military training exercises were not conducted onsite; therefore, military training briefings were not conducted by ASGECI or NJDMAVA.

5.0 ADDITIONAL TASKS

5.1 Vegetation Cover Survey

In order to improve the onsite habitat for endangered and threatened species, the NJDMAVA has considered the potential for various active management practices including American beach grass control. To help determine long term ecological trends in vegetation community structure in relation to habitat suitability for rare species the NGTC, ASGECI has conducted a detailed vegetation analysis of the beach communities during the late summer/early fall between 2008 and 2010. Since 2008, ASGECI has utilized the same survey protocol with minor adjustments each season.

The study uses multiple (qualitative and quantitative) sampling methodologies to assess the condition of the American beach grass (*Ammophila breviligulata*) community (Study Area) at NGTC. ASGECI analyzed dominant plant densities, cover percentages, frequency, species composition, biomass, species diversity, and population health and vigor within the NPA, SPA, and the adjacent non-protected area. Protocols remained nearly identical to the 2008 study to allow for direct comparison of data. One additional method of cover analysis (point intercept canopy cover) was incorporated this season.

Preliminary recommendations and considerations for habitat improvement based on the vegetation study data, topographic conditions and supporting sources are included in the Study Report (See Appendix F). In 2010 these recommendations include beachgrass cover goals on a multiple management unit level within the NPA. Cover goals are very similar to 2008 and 2009, with some adjustments based on the most recent topographic and vegetation conditions. Two habitat improvement strategies are proposed for consideration in 2010. The first follows previous season recommendations of exclusive hand pulling of beachgrass and minor topographic adjustments conducted by hand. The second, proposed this season, involves a more aggressive approach that incorporates major topographic changes through the use of mechanized equipment.

The American beach grass community at NGTC is typically found to be of extremely low diversity with the beach grass generally comprising approximately 80%-90% of the community under all evaluated study metrics. While the overall net cover contribution of beach grass within the study areas has remained at around 40-50%, the coefficient of variation or “patchiness of cover” for beachgrass within the study area has increased as some frontal areas in the NPA were eroded away or buried by over one foot of sand and other, more stable areas became denser. Several other species including sea rocket and seaside goldenrod were each generally found to comprise less than 5% of the onsite cover within the Study Area community..

In 2010, the overall mean beachgrass cover percentage for the Study Area was determined to be 42.98 ± 6.24 (95% confidence interval) with a 33.19% standard deviation from the mean. These results do not differ significantly from the 2009 results of 48.64 ± 5.79 and the 2008 results of 42.69 ± 5.67 .

Other metrics correlate strongly with the cover class data for American beachgrass. The 2010 Study Area leaf cover point intercept methodology revealed a nearly identical 42.57% cover estimate for the entire Study Area.

The Study Area's overall *A. breviligulata* mean density equaled approximately 67.82 ± 11.73 s/m² (95% confidence level). These results appear to show relative stability or possible increase of beachgrass density from 2008. In 2009, the Study Area's overall beachgrass mean density equaled approximately 59.17 ± 8.61 s/m² (95% confidence level) and did not differ significantly from the 2008 results of 52.06 ± 8.85 s/m² (95% confidence level).

The full Vegetation Study is included in Appendix F of this report.

5.2 Topographic Survey

Abiotic site conditions including topography, erosion potential, substrate condition, storms, tides, trash and other disturbances may impact the vegetation community and the site potential for rare species. As a result, ASGECI contracted the land surveyors VS Land Data to prepare a Topographic Survey of the NGTC beach area during the fall between 2008 and 2010.

The 2010 topographic survey was conducted on November 30, 2010 (See Appendix G). The topographic map was prepared at 1-foot contours and includes all onsite features including vegetation limits, Protection Area boundaries, bulkheads, seawalls, jetties, structures, and benchmarks. ASGECI utilized the data from the past three seasons to identify and map topographic changes between them (See Appendix F, Vegetation Survey Figures).

The 2010 topographic survey shows a general elevation increase of one foot along frontal sections of the SPA and SBA and heavy sand erosion or displacement in front of the NPA of 3 to 6 feet along intertidal areas. The narrowing of the contour lines at the front of the NPA (Appendix G, Topographic Survey) gradient occurring along the NPA beach a continual step gradient that remains most pronounced in the fall and winter. Most elevations in key portions of the protection areas remain between 11 and 14 feet AMSL; with some portions of the Protection area reaching 15 to 18 feet AMSL. The topography portion of the Vegetation Survey (See Appendix F) discusses the 2010 topographic changes and their potential implication in greater detail.

5.3 Anemometer Tower Observations

As part of the targeted species survey visits, ASGECI regularly checked the maintained fields surrounding the anemometer tower approximately 1,000 feet west of the NGTC beach area. The anemometer tower is a 30 meter (approximately 90 feet) metal pole structure with a small wind collecting turbine at its tip. As the tower is guy wire supported, the NJARNG consulted with the USFWS to determine the proper rare species protection measures. In a letter dated April 29, 2008, the USFWS agreed with the

NJARNG's proposed protection measures of hanging high visibility tape to the wires and monitoring the area around the tower for injured or dead birds. As of December 2010, ASGECI did not find evidence of birds or any other animals injured or killed by the structure. ASGECI has observed birds utilizing the structure for resting or foraging, including an American kestrel on December 3, 2010.

6.0 GIS DATA

6.1 Introduction

ASGECI has provided NJARNG GIS electronic deliverables as a downloadable file. ASGECI developed all GIS data following the United States Army CADD and GIS Center's Spatial Data Standards for Facilities, Infrastructure and the Environment (SDSFIE) standards, V2.6, the NGB CIP QAP, and the contract Scope of Work (SOW). GIS data developed by ASGECI during the 2010 Season is compatible with the most recent NJARNG GIS and ESRI's ARCGIS v9.1.

6.2 Data Collected and Quality Control

GIS data points were taken with a Trimble Pathfinder Pro XT GPS unit and made at the specifications designated in the SOW including acceptable number of satellites, PDOP level and sampling intervals.

GPS data points were taken to define spring high and low tides. GPS coordinate data was utilized to identify previous season transects and transect markers for the vegetation cover survey. GPS points were taken good weather conditions with little PDOP interference or difficulty achieving satellite numbers.

The locations of bird species were estimated using aerial photo interpretation (i.e. heads-up digitizing) and notes regarding their location taken in the field. The general plant communities identified as primary and secondary dune in the GIS data were identified using a combination of aerial photo interpretation and field observations. The osprey nest location was taken using aerial photo interpretation in which the base of the cell tower was easily identifiable.

The locations of certain species of interest including least terns and flying or hovering ospreys were not included in the GIS mapping because they were regularly observed throughout the beach area.

ASGECI carefully reviewed GIS data to assure it is spatially accurate and representative data. Data was collected with appropriate quality assurance/quality control (QA/QC). Topology errors were not identified during the data analysis. The data collected during the 2010 season was not subject to topology error.

6.3 GIS Data and Metadata

A list of data tables utilized for the 2010 season and a sample of the metadata are included in Appendix D of this report. Included are all datasets outlined in Section 3.3.4 of the SOW.

All required attribute data was entered into the appropriate GIS Data tables following the same process that was used for the 2007, 2008, and 2009 monitoring reports. ASGECI

created ARCGIS layer files for both the existing and new graphic tables. In 2008, ASGECI created data tables for the vegetation cover survey and for the topographic survey. Spatial data pertaining to location of plot areas used in conducting the vegetation cover survey were recorded in existing flora and habitat sample site geodatabase tables and populated with required attribute data. Additional attribute data regarding the vegetative cover survey was entered into a new non-graphic table. As required in the SOW, multiple fields were created in the Vegetation Assessment Survey data table and populated using field specific coding as needed. For a more detailed description of the coding parameters, see the table metadata in Appendix D. Spatial and attribute data, following the guidelines in the SOW, was also created from the Topographic Survey of the NGTC beach area conducted by the land surveyors VS Land Data (See Appendix G).

Metadata has been created for all of the feature class data sets. Metadata complies with the Federal Geographic Data Committee (FGDC) Standard Geospatial Positioning Accuracy Standards, Part 3: National Standards for Spatial Data Accuracy, FGDC-STD-007.3-1998, and the NGB Metadata Checklist Guidance, and the NGB metadata template. The metadata is available in the ARCatalog and a sample is also included in Appendix D of this report.

The GIS map illustrating all GIS data collected during the 2010 Monitoring has been submitted with the report (See Appendix I). This map includes all of the GIS data taken through GPS, and through a combination air photo interpretation and field observations. Mapping was created in World Geodetic System of 1984 (WGS84) datum and the North American Vertical Datum of 1988 (NAVD88). The GIS data collected for the NGTC is projected in Universal Transverse Mercatum (UTM) Zone 18.

APPENDIX A

FIGURES

Figure 1 NGTC Site Figure
Figure 2 Osprey Nest Location

(attached separately)

APPENDIX B

SITE PHOTOGRAPHS/PHOTOGRAPH LOG

(attached separately)

APPENDIX C

SPECIES OBSERVED AT NGTC 2007-2010

WILDLIFE OBSERVED AT NGTC 2007-2010

Birds:	
Least tern (State endangered)	<i>Sterna antillarum</i>
Osprey (State threatened)	<i>Pandion haliaetus</i>
Northern harrier (State endangered)	<i>Circus cyaneus</i>
Piping Plover (Federally threatened, State endangered)	<i>Charadrius melodus</i>
Peregrine falcon (State endangered)	<i>Falco peregrinus</i>
Yellow- crowned night heron (State threatened)	<i>Nyctanassa violacea</i>
Bald eagle (State endangered)	<i>Haliaeetus leucocephalus</i>
Sharp-shinned hawk	<i>Accipiter striatus</i>
Great black-backed gull	<i>Larus marinus</i>
Laughing gull	<i>Larus atricilla</i>
Herring gull	<i>Larus argentatus</i>
Ring-billed gull	<i>Larus delawarensis</i>
Glaucous gull	<i>Larus hyperboreus</i>
Forster's tern	<i>Sterna forsteri</i>
Common tern	<i>Sterna hirundo</i>
Great egret	<i>Egretta alba</i>
Great blue heron	<i>Ardea herodias</i>
Snowy egret	<i>Egretta thula</i>
Green heron	<i>Butorides virescens</i>
American oystercatcher	<i>Haematopus palliatus</i>
Sanderling	<i>Calidris alba</i>
Semipalmated plover	<i>Charadrius semipalmatus</i>
Solitary sandpiper	<i>Tringa solitaria</i>
Greater yellowlegs	<i>Tringa melanoleuca</i>
Semipalmated sandpiper	<i>Calidris pusilla</i>
Ruddy turnstone	<i>Arenaria interpres</i>
Killdeer	<i>Charadrius vociferus</i>
Spotted sandpiper	<i>Actitis macularia</i>
Least sandpiper	<i>Erolia minutilla</i>
Double-crested cormorant	<i>Phalacrocorax auritus</i>
Northern gannet	<i>Morus bassanus</i>
Red-throated loon	<i>Gavia stellata</i>
Common loon	<i>Gavia immer</i>
Snow goose	<i>Chen caerulescens</i>
Canada goose	<i>Branta canadensis</i>

Atlantic brant	<i>Branta bernicla hrota</i>
Bufflehead	<i>Bucephala albeola</i>
Mallard	<i>Anas platyrhynchos</i>
American widgeon	<i>Anas americana</i>
Hooded merganser	<i>Lophodytes cucullatus</i>
Black scoter	<i>Melanitta americana</i>
Surf scoter	<i>Melanitta perspicillata</i>
Fish crow	<i>Corvus ossifragus</i>
American crow	<i>Corvus brachyrhynchos</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Tree swallow	<i>Tachycineta bicolor</i>
Barn swallow	<i>Hirundo rustica</i>
Yellow-rumped warbler	<i>Dendroica coronata</i>
Palm warbler	<i>Dendroica palmarum</i>
Mockingbird	<i>Mimus polyglottos</i>
Ruby-throated hummingbird	<i>Archilochus colubris</i>
American goldfinch	<i>Carduelis tristis</i>
Rock dove	<i>Columba livia</i>
Mourning dove	<i>Zenaida macroura</i>
Starling	<i>Sturnus vulgaris</i>
House-sparrow	<i>Passer domesticus</i>
Horned lark	<i>Eremophila alpestris</i>
Mammals:	
Bottlenose dolphin**	<i>Tursiops truncatus</i>
Red fox	<i>Vulpes vulpes</i>
Eastern cottontail	<i>Sylvilagus floridanus</i>
Feral cat	<i>Felis silvestris</i>
Groundhog	<i>Marmotta monax</i>
Muskrat	<i>Ondatra zibethicus</i>
Amphibians:	
Fowler's toad	<i>Bufo fowleri</i>
Common Invertebrates:	
Cow killer	<i>Dasymutilla occidentalis</i>
Chinese mantis	<i>Tenodera aridifolia</i>
Scuds	<i>Amphipoda spp.</i>
Sand wasp	<i>Bembix sp.</i>
Mud dauber wasps	<i>Sphecidae</i>
European caterpillar hunter	<i>Calosoma scrutator</i>
9 spotted ladybeetle	<i>Coccinella novemnotata</i>

Seaside grasshopper	<i>Trimerotropis maritima</i>
Atlantic ghost crab	<i>Ocypode quadrata</i>
Mole crab	<i>Emerita talpoida</i>

PLANT SPECIES OBSERVED 2007-2010

Latin	Common	Primary Location
<i>Ammophila. Breviligulata*</i>	American beachgrass	SPA NPA BA SD
<i>Cakile edentula*</i>	sea rocket	SPA NPA BA
<i>Carex kobomugi</i>	Asiatic sand sedge	NPA
<i>Cenchrus tribuloides</i>	sandune sand spur	SPA SD
<i>Centaurea maculosa</i>	spotted knapweed	SD
<i>Centaurea sp.</i>	knapweed	SD
<i>Celastrus orbicularis</i>	Oriental bittersweet	SD
<i>Chamaesyce poygonifolia*</i>	seaside spurge	SPA, NPA, BA
<i>Conyza canadensis*</i>	horseweed	NPA, SBA, SPA
<i>Cyperus grayii</i>	flat sedge	SPA
<i>Digitaria sanguinalis</i>	large crabgrass	SPA, BA
<i>Digitaria sp.*</i>	crabgrass	SPA, NPA SD
<i>Diodia teres</i>	poorjoe	SPA, SD
<i>Eragrostis pectinata</i>	lovegrass	SPA
<i>Euthamia tenuifolia</i>	slender fragrant goldenrod	SD
<i>Linaria canadensis</i>	toadflax	SPA
<i>Lathyrus maritimus*</i>	beach pea	BA, SPA, NPA,SD
<i>Lechea maritima</i>	beach pinweed	SPA
<i>Mollugo verticillata</i>	green carpetweed	SPA, SD
<i>Morella cerifera*</i>	Southern bayberry	NPA,BA,SD
<i>Oenothera oakesiana</i>	Oake's evening primrose	SPA, NPA,SD
<i>Panicum amarum</i>	bitter panicgrass	NPA
<i>Phragmites australis</i>	common reed	SD
<i>Plantago psyllium</i>	sand plantain	SD
<i>Poa .*</i>	cool season grass	SPA,SD
<i>Polygonum cuspidatum</i>	Japanese knotweed	SD
<i>Salsosa kali</i>	prickly saltwort	SPA
<i>Saponaria officinalis</i>	soapwort	SPA
<i>Rhus coppalina</i>	winged sumac	SD
<i>Rosa Carolina</i>	Carolina rose	SD
<i>Rosa rugosa</i>	Rugosa rose	SD, NPA
<i>Solidago canadensis</i>	Canada goldenrod	SD
<i>Solidago nemoralis</i>	Gray goldenrod	SD
<i>Solidago sempervirens*</i>	seaside goldenrod	NPA, SPA, BA, SD

<i>Solidago</i> sp.	goldenrod	SD
<i>Spartina patens</i> *	salt meadow cordgrass	SPA, NPA, SBA, SD
<i>Spartina pectinata</i>	prairie cordgrass	SD
<i>Strophostyles helvula</i>	trailing wild bean	NPA
<i>Toxicodendron radicans</i>	poison ivy	SD
<i>Taraxacum</i> sp.	dandelion	SPA
<i>Triplasis purpurea</i> *	purple sandgrass	SPA, BA, NPA
<i>Xanthium strumarium</i> *	rough cocklebur	SPA, NPA
<i>Yucca filamentosa</i> *	spoonleaf yucca	SPA

*** indicates plants identified within protection areas**

**** Possible sighting**

NPA – Northern Protection Area

SPA – Southern Protection Area

BA- Beach outside protection areas

SD- Secondary Dune Area

APPENDIX D

2010 GEODATA TABLES and METADATA SAMPLE

SEA GIRT NGTC (ASGECI # 2844) DATA COLLECTION AND CORRELATION TABLE

Geodatabase Feature Class	Data Description
fauna_man_hab_buffer_zone_area	300-foot buffer zone around northern protection area.
	25-foot buffer area around base of cell tower osprey nest
fauna_special_species_area	Area of observed piping plover activity.
	Location of 'No Rake Zone'
	GPS location of habitat requiring special attention (north side).
	GPS location of habitat requiring special attention (south side).
fauna_special_species_point	Center point of area of observed piping plover activity.
	Center point of 'No Rake Zone'
	Center point of habitat requiring special attention (north side).
	Center point of habitat requiring special attention (south side).
fauna_study_area	Area where monitoring occurred
fauna_viewing_point	Location of observed in-flight species.
	Location of observed land species.
habitat_sample_point	Center point of survey plot area where species habitat assessment occurred
nesting_area	Area around known nesting site
nesting_point	Location of known osprey nesting site.
	Location of known piping plover nesting site.
flora_sample_area	Location of survey plot area where vegetation assessment occurred
flora_sample_point	Center point of survey plot area where vegetation assessment occurred
flora_special_species_area	GPS location of area with observed Asiatic sand sedge.
	Location of secondary dune area (via aerial interpretation).
flora_special_species_point	Center point of area with observed Asiatic sand sedge.
flora_special_species_mgt_area	Location of the northern protection area
	Location of the southern protection area
land_vegetation_area	Location of primary dune area (via aerial interpretation).
photograph_location_point	Location within study area where a photographic record was created
shoreline	Boundary representing the mean high water line (from topographic survey)
elevation_area	Area of similar vertical elevation (from topographic survey)

DATA COLLECTION AND CORRELATION TABLE (Continued)

elevation_contour_line	Lines representing 1-foot intervals of vertical elevation (from topographic survey)
topography_slope_aspect_area	Direction of the inclined surface faces from horizontal (from topographic survey)
topography_slope_gradient_area	Amount of inclination from level of the inclined surface faces (from topographic survey)

flora special species point

Metadata:

- ⌘ Identification Information
- ⌘ Data Quality Information
- ⌘ Spatial Data Organization Information
- ⌘ Spatial Reference Information
- ⌘ Entity and Attribute Information
- ⌘ Distribution Information
- ⌘ Metadata Reference Information

Identification_Information:Citation:

Citation_Information:

Originator: Amy S. Greene Environmental Consultants, Inc.
(ASGECI)

Publication_Date: March 2, 2010

Title:

flora special species point

Geospatial_Data_Presentation_Form:

vector digital data

Online_Linkage: \\wetland\GIS\GIS-
Projects\Project

Archive\2844_Sea_Girt_NGTC_Veg_Sur
vey\2009_GIS

FILES\NJARNG_CY2009_v91.mdb

Description:

Abstract:

This data is a digital representation of the Flora Special Species Point, which involves the specific location of threatened, endangered, invasive, or threatened flora species. Sea Girt National Guard Training Center implements protection measures for endangered and threatened species onsite as specified in the Sea Girt National Guard Training Center (NGTC) Integrated Natural Resources Management Plan INRMP. This includes the establishment and regular monitoring of the Northern and Southern Protection Areas (NPA and SPA respectively), in which public entry is not permitted. In particular, this data set include the specific location of known Asiatic Sand Sedge.

Purpose:

This Geographic Information Systems data was developed for Rare Species Monitoring Services conducted during the 2009 season performed by Amy S. Greene Environmental Consultants, Inc. (ASGECI) for the work performed under delivery order no.: W912KN-07-F-0050 of contract no.: GS10F0002T. This is an

updated data table incorporating data from the 2008 and 2007 monitoring seasons, which includes data from previous years. The monitoring conducted is part of a larger effort to provide monitoring and other environmental services for calendar years 2007, 2008, and 2009; and is in support of monitoring and other environmental services conducted in prior years. The work will support the approved Sea Girt National Guard Training Center (NGTC) Integrated Natural Resources Management Plan (INRMP). The Sea Girt NGTC contains two Federally-listed and possibly six State-listed Threatened or Endangered species. The services performed by ASGECI help the NJ Army National Guard (NJARNG) protect and maintain the Sea Girt NGTC's rare species and natural resources. By sustaining the biodiversity of the training facility, NJRANG may achieve and sustain its military mission at the facility. The NGTC facility is under environmental regulation by Army Environmental Regulation AR 200-1, the Federal Endangered Species Act (16 U.S.C. §§ 1531-1544), the Sikes Act (16 USC 670a670o, 74 Stat. 1052), Section 404 of the Clean Water Act (33 U.S.C. § 1251 et seq.; 40 C.F.R. §§ 104.1 et seq.), regarding wetland protection, the NJ Freshwater Wetland Protection Act, the NJ Wetlands Act of 1970 (N.J.S.A 13:9) and the NJ Coastal Areas Facilities Review Act (N.J.S.A. 13:19-1 et seq.). Protection measures for these endangered and threatened species include the establishment and regular monitoring of the Northern and Southern Protection Areas (NPA and SPA respectively), in which public entry is not permitted. Additional protections include vehicle restrictions and limitations on the beach including a "No rake zone" in front of the NPA; limitation of vehicles within the 100M buffer during the monitoring season; a vehicle ban within the 100M buffer zone (of the NPA) when nesting birds are present; and the installation of a "no pet" policy onsite. Each season appropriate signage regarding policies and restrictions is installed onsite.

Time_Period_of_Content:Time_Period_Information:Single_Date/Time:Calendar_Date: 2009 Currentness_Reference: ground condition

Status:Progress: In work

Maintenance_and_Update_Frequency: Annually

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -74.032159

East_Bounding_Coordinate: -74.025857

North_Bounding_Coordinate: 40.137469

South_Bounding_Coordinate: 40.117633

Keywords:

Theme:

Theme_Keyword_Thesaurus: ISO 19115 Topic Category
Theme_Keyword: flora
Theme_Keyword: biota
Theme_Keyword: environment

Access_Constraints: Permission of Amy S. Greene Environmental Consultants, Inc. *Use_Constraints:*
None

Point_of_Contact:Contact_Information:

Contact_Person_Primary:Contact_Person: John R Pabish
Contact_Organization: Amy S. Greene Environmental Consultants, Inc.

Contact_Position: GIS Specialist

Contact_Address:

Address_Type: mailing and physical address
Address:

4 Walter E. Foran Blvd, Suite 209 *City:* Flemington

State_or_Province: New Jersey

Postal_Code: 08822

Country: USA

Contact_Voice_Telephone: (908) 788-9676

Contact_Facsimile_Telephone: (908) 788-6788

Contact_Electronic_Mail_Address: jpabish@amygreene.com

Native_Data_Set_Environment:

Microsoft Windows XP Version 5.1 (Build 2600) Service Pack 3; ESRI ArcCatalog 9.2.6.1500

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Data_Quality_Information:Logical_Consistency_Report:

Data captured as GPS points during field surveys. Any points that were intended to be within certain geographic areas were checked for spatial accuracy to ensure topology.

Completeness_Report:

No information was omitted while deriving this data set. Any minor generalization to the data only occurred to better represent the data more accurately. No features were excluded for any reason.

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report:

Meeting National Map Accuracy Standards (NMAS) at a given printed map scale (hardcopy / paper sources).

Lineage:

Process_Step:

Process_Description:

Bounded areas of known flora species were developed using a Trimble GPS unit in the field and supplemented with heads up digitized using aerial photography as a guide. Additional areas of potential flora habitat were generated on aerial photography based on field personnel observation.

Process_Contact:

Contact_Information:

Contact_Person_Primary:Contact_Person:

John R. Pabish *Contact_Organization:*

Amy S. Greene Environmental
Consultants, Inc.

Contact_Position: GIS Specialist

Contact_Address:Address_Type:

mailing and physical address

Address:

4 Walter E. Foran

Boulevard, Suite 209 *City:*

Flemington *State_or_Province:*

NJ *Postal_Code:* 08822

Country: USA

Contact_Voice_Telephone: (908)

788-9676, ext. 18

Contact_Facsimile_Telephone:(908)

788-6788

Contact_Electronic_Mail_Address

: jpabish@amygreene.com

Process_Step:Process_Description:

Metadata imported.

Source_Used_Citation_Abbreviation:

M:\GIS-Projects\Project Archive\2844_Sea_Girt_NGTC\2009

GIS FILES\Metadata Export

Files\fauna_man_hab_buffer_zone_area.xml

Process_Step:

Process_Step:

Process_Step:

Process_Step:

Process_Description:

Dataset copied.

Source_Used_Citation_Abbreviation:
\\forest\gis\GIS-Projects\Project
Archive\2844_Sea_Girt_NGTC\NJARNG_CY2009
.mdb

Process_Step:

Process_Description:

Dataset copied.

Source_Used_Citation_Abbreviation:
\\wetland\GIS\GIS-Projects\Project
Archive\2844_Sea_Girt_NGTC_Veg_Survey\2009
GIS FILES\NJARNG_CY2009_v91_draft.mdb

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Spatial_Data_Organization_Information:Direct_Spatial_Reference_Method: Vector
*Point_and_Vector_Object_Information:SDTS_Terms_Description:*SDTS_Point_and_Vector_Object_Type: Entity point
Point_and_Vector_Object_Count: 61

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Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:Planar:Grid_Coordinate_System:Grid_Coordinate_System_Name: Universal
Transverse Mercator
Universal_Transverse_Mercator
:UTM_Zone_Number: 18
Transverse_Mercator:Scale_Factor_at_Central_Meridian:
0.999600
Longitude_of_Central_Meridian
: -75.000000
Latitude_of_Projection_Origin:
0.000000 *False_Easting:*
500000.000000 *False_Northing:*
0.000000
Planar_Coordinate_Information
:
Planar_Coordinate_Encoding_Method: coordinate pair
Coordinate_Representati

on:Abscissa_Resolution: 0.001000
Ordinate_Resolution: 0.001000

Planar_Distance_Units: meters

Geodetic_Model:

Horizontal_Datum_Name: D_WGS_1984
Ellipsoid_Name: WGS_1984
Semi-major_Axis: 6378137.000000
Denominator_of_Flattening_Ratio: 298.257224

Vertical_Coordinate_System_Definition:

Altitude_System_Definition:Altitude_Resolution: 0.001000
Altitude_Encoding_Method: Explicit elevation coordinate included with horizontal coordinates

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Entity_and_Attribute_Information:
Detailed_Description:

Entity_Type:

Entity_Type_Label: flora special species point

Entity_Type_Definition:

The Flora Special Species Point involves the specific location of individual threatened, endangered, invasive, or sensitive flora species. These locations were determined during field surveys and positions taken using GPS equipment.

Entity_Type_Definition_Source:

SDSFIE Release 2.600

Attribute:

Attribute_Label: coord_y

Attribute_Definition:

The y component of individual coordinate point.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:

Attribute_Label: OBJECTID

Attribute_Definition:

Internal feature number.

Attribute_Definition_Source:

ESRI

Attribute_Domain_Values:
Unrepresentable_Domain:

Sequential unique whole numbers that are automatically generated.

Attribute:

Attribute_Label: SHAPE

Attribute_Definition:

Feature geometry.

Attribute_Definition_Source:

ESRI

Attribute_Domain_Values:

Unrepresentable_Domain:

Coordinates defining the features.

Attribute:Attribute_Label:

map_id

Attribute_Definition:

Foreign Key. Used to link the record to the appropriate map.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

meta_id

Attribute_Definition:

Foreign Key. Used to link the record to the applicable feature level metadata record(s).

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

media_id

Attribute_Definition:

Foreign Key. Used to link the record to associated multimedia records that reference data such as imagery, video, audio, scanned documents, drawings, and other digital media.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

coord_id

Attribute_Definition:

Foreign Key. Used to link the record to the appropriate point coordinate record (s).

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

area_size

Attribute_Definition:

The size of the area, zone, or polygon in square units.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

area_u_d

Attribute_Definition:

The unit of measure for area.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

perim

Attribute_Definition:

The distance around the boundary of the area, zone, or subject item in linear units.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:

Attribute_Label: perim_u_d

Attribute_Definition:

The unit of measure for length

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

user_flag

Attribute_Definition:

An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

coord_z

Attribute_Definition:

The z component of individual coordinate point.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

SUBTYPEID

Attribute:Attribute_Label:

instln_id

Attribute_Definition:

Foreign Key. Used to link the record to the applicable INSTALLATION record.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

habcat_d

Attribute:Attribute_Label:

facil_id

Attribute_Definition:

Foreign Key. Used to link the record to the Facility Record.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

coord_x

Attribute_Definition:

The x component of individual coordinate point.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

grid_value

Attribute_Definition:

A numeric identification of a raster element in an image or grid that represents the feature.

Attribute_Definition_Source:

SDSFIE Release 2.600

Attribute:Attribute_Label:

sur_crs_id

Attribute:Attribute_Label: river_mile *Attribute:Attribute_Label:*

hab_use_d *Attribute:Attribute_Label:* feat_desc

Attribute:Attribute_Label: pop_date

Attribute:Attribute_Label: pop_count

Attribute:Attribute_Label: flo_cls_id

Attribute:Attribute_Label: species_id

Attribute:Attribute_Label: plant_num

Attribute:Attribute_Label: spec_typ_d

Attribute:Attribute_Label: plnt_typ_d

Attribute:Attribute_Label: stem_diam

Attribute:Attribute_Label: crown_diam

Attribute:Attribute_Label: plant_ht

Attribute:Attribute_Label: dim_u_d

Attribute:Attribute_Label: veget_id

Attribute:Attribute_Label: flrange_id

Attribute:Attribute_Label: feat_name

Attribute:Attribute_Label: date_sampl

Attribute:Attribute_Label: hab_typ_d

Attribute:Attribute_Label: hab_stt

Attribute:Attribute_Label: flclass_d

Attribute:Attribute_Label: mantyp_d

Attribute:Attribute_Label: gnis_id

Overview_Description:Entity_and_Attribute_Overview:

The Flora Special Species Point involves the specific location of individual threatened, endangered, invasive, or sensitive flora species. These locations were determined during field surveys and positions taken using GPS equipment.

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Distribution_Information:Distributor:Contact_Information:

Contact_Person_Primary:Contact_Person: John Pabish

Contact_Organization: Amy S. Greene Environmental Consultants, Inc.

Contact_Position: GIS Specialist

Contact_Address:Address_Type: mailing and physical address

Address: 4 Walter E. Foran Boulevard, Suite 209

City: Flemington

State_or_Province: NJ *Postal_Code:*

08822 *Country:* USA

Contact_Voice_Telephone: (908) 788-9676, ext. 18

Contact_Facsimile_Telephone: (908) 788-6788

Contact_Electronic_Mail_Address:

jpabish@amygreene.com

Resource_Description: Downloadable Data

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Metadata_Reference_Information:

Metadata_D

ate: 20100302

Metadata_Contact:

Contact_Information:

Contact_Person_Primary:Contact_Person: John R. Pabish

Contact_Organization: Amy S. Greene Environmental Consultants, Inc.

Contact_Position: GIS Specialist

Contact_Address:Address_Type: mailing and physical address

Address: 4 Walter E. Foran Boulevard, Suite 209

City: Flemington

State_or_Province: New Jersey

Postal_Code: 08822. *Country:* USA

Contact_Voice_Telephone: (908) 788-9676.

Contact_Facsimile_Telephone: (908) 788-6788

Contact_Electronic_Mail_Address:

jpabish@amygreene.com

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial

Metadata_Metadata_Standard_Version: FGDC-STD-001-1998

Metadata_Time_Convention: local time *Metadata_Extensions:*

Online_Linkage:<http://www.esri.com/metadata/esriprof80.html> *Profile_Name:* ESRI Metadata Profile

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APPENDIX E

2010 SURVEY DATA SHEETS, NJDEP NATURAL HERITAGE FORMS & MAP AND PET POLICY LETTERS

Endangered Species Survey Data Sheet

Presence/absence surveys for piping plover
National Guard Training Center
Sea Girt, NJ
ASGECI Project # 3307

**NATIONAL GUARD TRAINING CENTER
SEA GIRT, MONMOUTH COUNTY,
NEW JERSEY**

Location: Beach at Training Center
Surveyor: K. Quaglia

Date: 10/22/10

Time: Arrive: 8:15 am
Leave: 1:00 pm

Temperature: 54 degrees F

Conditions: Mostly sunny, wind northwest 10 mph Seas calm

Rainfall Today (time/inches): none

Most Recent Rain Event: 10-21-10 0.01"

Photos: yes

GIS/GPS Data Collected: No

Field Notes:

Endangered and Threatened Observed: Two Cooper's hawks were noted flying over the dunes behind the Southern Beach area. In addition, a short-eared owl was observed. The owl was in the grass in the back area of the Northern Protection Area. It then flew straight out over the ocean.

Potential Wildlife Threats Observed: Fox and/or dog tracks were observed in all three study areas. Other mammal tracks in the study areas included rabbit and a large amount of small unidentified mammal tracks. Limited human activity on beach – primarily fishermen.

Additional Wildlife Observed - Beach:

Birds Beach:

Herring gull, great black-backed gull, double-crested cormorant, Canada goose, sanderling, Cooper's hawk, short-eared owl

Stockton Lake, wetlands and fields: Canada goose

Additional Notes/Activities: A field meeting with Pete Van Wallendael of VS Land Data was conducted to review information for the 2010 topographic survey (see Vegetation Section of Survey Data Sheet).

Endangered Species Survey Data Sheet

Presence/absence surveys for piping plover
National Guard Training Center
Sea Girt, NJ
ASGECI Project # 3307

**NATIONAL GUARD TRAINING CENTER
SEA GIRT, MONMOUTH COUNTY,
NEW JERSEY**

Location: Beach at Training Center
Surveyor: H.Strano, S.Bray

Date: 12/3/10

Time: Arrive: 9:45 am
Leave: 3:30 pm

Temperature: 35-40 degrees F

Conditions: Mostly sunny, wind west 5 mph Seas calm 1-2'

Rainfall Today (time/inches): none

Most Recent Rain: 12-1-10 1.5"

Photos: yes

GIS/GPS Data

Collected: No

Field Notes:

Endangered and Threatened Observed: A Cooper's hawk was observed flying/foraging over the secondary dunes behind the NPA. An American kestrel was observed perched on the guy-wires and foraging from the wind data tower.

Potential Wildlife Threats Observed: Fox and dog tracks were observed throughout beach. Some possibly predated bird remains were identified in the NPA. Limited human activity on the beach.

Additional Wildlife Observed - Beach:

Birds Beach/Dunes: herring gull, great black-backed gull, ring billed gull, Cooper's hawk, house finch, song sparrow, N. gannet, common loon

Stockton Lake, wetlands and fields: Canada goose, snow goose, horned lark, double-crested cormorant, American kestrel, hooded merganser, great blue heron, ruddy duck

Additional Notes/Activities: All symbolic fencing within the NPA and SPA and related signs were removed and put into storage for the season. These items are stored in a small storage room between the main maintenance garage and the military museum. Completed delineation of the freshwater wetland section for NJDEP permitting and will be surveyed by VS Land Data in the near future.

Amy S. Greene Environmental Consultants, Inc.

Endangered Species Survey Data Sheet

Presence/Absence surveys for
Seabeach amaranth
National Guard Training Center
Sea Girt, NJ
ASGECI Project # 3307

**NATIONAL GUARD TRAINING
CENTER SEA GIRT, MONMOUTH
COUNTY, NEW JERSEY**

Location: Beach at Training Center

Surveyor: H.Strano, S.Bray

Date: 12/3/10

Time: (Plant Survey/Fence Removal)
9:50 -11:30 AM

Temperature: 35-40 degrees F

Conditions: Mostly sunny, wind west 5
mph Seas calm

Rainfall Today (time/inches): none

Most Recent Rain: 12-1-10 1.5"

Photos: yes

GIS/GPS Data Collected: No

Field Notes:

Seabeach Amaranth: No seabeach amaranth or rare plants were identified during this field visit. A large amount of sand accretion along the dune edge in the NPA likely buried the plant identified earlier this year. Appears that some super high tides have partially flattened shelf along the front edge of the NPA.

Plant ID information (if applicable)

GPS code

Species

Size (diameter)

Associate Species

Observed Threats to Plant

Additional Notes/Activities:

Examined dune area previously occupied by Asiatic Sand Sedge. None observed onsite.

Amy S. Greene Environmental Consultants, Inc.

Walter E. Foran Blvd., Suite 209
Flemington, NJ 08822

Phone : 908.788.9676

FAX: 908.788.6788

Email: mail@amygreene.com

APPENDIX F

2010 VEGETATION SURVEY REPORT

APPENDIX G

2010 TOPOGRAPHIC SURVEY PLAN

APPENDIX H

**STUDY AREA FIGURE
SHOWING DATA COLLECTED**

APPENDIX I

**ADDITIONAL PROJECT MATERIALS
(Back Pocket Disc)**

**2010 Awareness Brief PowerPoint Presentation
2010 Vegetation Survey Data Tables**

