INCIDENTAL TAKE PERMIT APPLICATION

AND

CONSERVATION PLAN

Prepared For
BARNEY DAVIS, LLC
BARNEY DAVIS ENERGY CENTER
CORPUS CHRISTI, TEXAS

PREPARED BY
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1.0 INTRODUCTION

1.1 PURPOSE

The Endangered Species Act of 1973 (ESA) was established to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the Act.

Section 9 of the ESA prohibits the take of any endangered species within the United States or the territorial sea of the United States. The ESA defines take "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Exceptions to the prohibitions listed in Section 9 of the Act are included in Section 10 of the Act. Section 10(a) includes allowable circumstances for permitting that include:

(A) Any act otherwise prohibited by Section 9 for scientific purposes or to enhance the propagation or survival of the affected species, including, but not limited to, acts necessary for the establishment and maintenance of experimental populations pursuant subsection (j); or

(B) Any taking otherwise prohibited by section 9(a)(1)(B) if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

A Conservation Plan must be submitted to the Secretary at the time of application in order for a permitting exception to be granted.

1.2 DESCRIPTION OF SPECIFIED ACTIVITY

Barney Davis, LLC owns Barney Davis Energy Center (BDEC, the facility), a natural gas-fired electric power generating facility. The facility is located in Nueces County, Texas on the south side of the City of Corpus Christi, at 4301 Waldron Road (See Figure 1). The plant has approximately 1,992 acres of land between the Laguna Madre and Oso Creek. The facility is comprised of two natural gas-fired combustion turbines (Units 3 & 4), two Heat Recovery Steam Generators (HRSGs), one steam turbine (Unit 2), one gas-fired boiler driving a Westinghouse steam turbine (Unit 1), Continuous Emission Monitoring (CEM) Buildings, multiple warehouses, the main building (housing administrative offices, control room, and laboratory), switch gear house, Resource Center (conference room), emergency generator building, and two chillers. Electric generation occurs year-round, with outage periods as necessary. The facility is applying for an Incidental Take Permit in accordance with rules established under Section 10(a)(1)(B) of the Endangered Species Act of 1973. The facility is requesting the permit be issued for a duration of 10 years.

Up to 540 million gallons per day (MGD) of water are drawn from the Laguna Madre to be used for non-contact cooling at the facility. This water travels down a 0.75-mile long cooling water intake canal (See Figure 2). Cooling water passes through the bulkhead where dead and dying seagrass fragments, referred to as "wrack," are removed. The water for each unit then passes through a traveling-trash rack composed of 0.5-inch steel bars on 3.5-inch centers, a concrete receiving area (bay) that is 13 feet wide, traveling-water screens, and then to sumps for the cooling water pumps. Passavant fine-mesh, center-flow screens are operated continuously to reduce the numbers of entrained organisms. The current screens are constructed with 1 x 2 mm rectangular nylon mesh to reduce clogging with a calculated maximum through-screen velocity of 1.15 ft/sec. As the screens rotate, high-pressure wash water flushes the back side of each panel at the top of the vertical cycle into an overhead trough which carries the impinged organisms and debris to a peripheral fish handling device. The screen-wash water goes to a sluiceway which empties into a concrete sump and from there is pumped directly into the facility's cooling pond via pipeline. A diagram of the cooling water intake structure (CWIS) is included as Figure 3.

According to the article "Frigid Waters, Frozen Sea turtles" on the National Oceanic and Atmospheric Administration's (NOAA) website, sea turtles can be "rendered immobile by cold weather due to a phenomenon known as cold stunning. Because sea turtles are cold-blooded animals, they assume the temperature of their surroundings: They are hot when their environment is hot and cold when their environment is cold. When sea turtles are exposed to frigid water temperatures (about 50 degrees F) over a period of several days, their circulatory systems can slow to the point that they become cold-stunned and unable to swim or function properly."

The phenomenon of cold stunning occurs to sea turtles in Texas inshore waters, including the waters around the facility's intake, the Laguna Madre. During cooler months, sea turtles in the Laguna Madre may become cold-stunned and therefore unable to swim. Once the sea turtles are cold-stunned, they are less able to control their movements and direction and are susceptible to floating into the facility's intake canal, toward the facility. The flow velocity in the intake canal is unknown, and there have not been any studies to look at whether or not the canal flow draws the cold-stunned turtles in.

The table below provides the cooling water intake volumes for BDEC by month during 2018 and 2019, in million gallons per month. The facility intakes water during each month of the year, however intake is lower during the colder months, due to reduced demand on the electric grid.

Barney Davis, LLC Cooling Water Intake Volume (Million gallons/month)		
Month	**2018**	**2019**
January	5929.80	5045.09
February	4422.30	1968.06
March	3408.30	1303.98
April	5945.80	6452.66
May	10114.00	11314.90
June	11845.80	10519.87
July	13512.60	14472.40
August	13650.40	14871.52
September	9350.60	13228.33
October	7327.60	9271.56
November	2916.10	5229.67
December	3293.70	5157.67
Total:	91717.00	98835.71

Water temperatures in the Laguna Madre and the BDEC intake canal were compared to determine if water temperatures in the intake canal were a contributing factor to the cold stunning of sea turtles. The tables below illustrate that the temperature in each body of water is substantially similar; therefore, it does not appear that the water temperature in the facility's intake canal is directly related to the cold stunning of the sea turtles.

2018 Average Monthly Temperature (°F) BDEC Intake Canal and Laguna Madre*												
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
BDEC	54	65	74	74	83	87	88	88	85	77	65	62
LM	53	64	71	73	83	86	87	87	85	76	64	61

2019 Average Monthly Temperature (°F) BDEC Intake Canal and Laguna Madre*												
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
BDEC	60	64	68	75	82	87	87	89	86	79	66	64
LM	58	62	65	73	81	87	87	87**	***	83**	66****	65****

* Temperature data obtained from the NOAA Tides and Currents website: Station 8776139, S. Bird Island, Texas.

** Temperature data was incomplete for the full month. The average temperature represented reflects the average of the available data.

*** Temperature data was not available on the NOAA Tides and Currents website at nearby Stations.

**** This data was not available at Station 8776139, S. Bird Island, Texas. Station 8776604, Baffin Bay, Texas, the station in the next closest proximity to BDEC was used.

Barney Davis, LLC is proposing to remove (i.e., take) the cold-stunned sea turtles from the facility intake canal and carry out the procedure in Attachment A. This take is incidental to an otherwise lawful activity, and is eligible for consideration of an incidental take permit, as stated in Section 10(a)(1)(B).

2.0 DESCRIPTION OF LISTED SPECIES POTENTIALLY IMPACTED BY THE ACTIVITY

2.1 AFFECTED THREATENED AND ENDANGERED SPECIES

The following table identifies the affected threatened and endangered sea turtle species that are known to occur in waters surrounding the facility. Although there are five species listed as threatened or endangered, only two of these species are known to be in the vicinity of the facility. The two species found in the vicinity of the site are in bold in the table below. This Conservation Plan will be reviewed and updated with current species as necessary.

Affected Threatened and Endangered Sea turtle Species – Nueces County, Texas		
Species Name	**Scientific Name**	**Status**
Green Sea turtle	***Chelonia mydas***	**Threatened**
Kemp's Ridley Sea turtle	***Lepidochelys kempii***	**Endangered**
Hawksbill Sea turtle	*Eretmochelys imbricata*	Endangered
Leatherback Sea turtle	*Dermochelys coriacea*	Endangered
Loggerhead Sea turtle	*Caretta caretta*	Threatened

2.2 GEOGRAPHICAL DISTRIBUTION

Green Sea Turtle

Listed under the ESA on July 28, 1978. In May 2016, the NMFS and USFWS issued the final rule to list 11 distinct population segments (DPSs) of the green sea turtle under the Endangered Species Act (ESA). This rule supersedes the 1978 final listing rule for green turtles.

- 8 "Distinct Population Segments" (DPSs) – Threatened
  - Central North Pacific DPS, East Indian – West Pacific DPS, East Pacific DPS, **North Atlantic DPS (critical habitat designated)**, North Indian DPS, South Atlantic DPS, Southwest Indian DPS, Southwest Pacific DPS
- 3 DPSs –Endangered
  - Central South Pacific DPS, Central West Pacific DPS, Mediterranean DPS

Kemp's Ridley Sea Turtle

Listed under the Endangered Species Conservation Act of 1970 on December 2, 1970, and subsequently under the ESA of 1973.

- ESA Endangered
  - Throughout its range (In the Atlantic Ocean and the Gulf of Mexico, ranging from Massachusetts to Texas, and Mexico)

Hawksbill Sea Turtle

Listed under the ESA in 1970.

- ESA Endangered
  - Throughout its range (Found throughout the world)

Leatherback Sea Turtle

Listed under the ESA in 1970.

- ESA Endangered
  - Throughout its range (Found throughout the world)

Loggerhead Sea Turtle

Listed under the ESA as threatened throughout its range on July 28, 1978. In September 2011, National Marine Fisheries Service (NMSF) and U.S. Fish and Wildlife Service listed 9 distinct population segments under the ESA.

- 5 DPSs - Endangered
  - South Pacific Ocean DPS, Northeast Atlantic Ocean DPS, Mediterranean Sea DPS, North Indian Ocean DPS, North Pacific Ocean DPS
- 4 DPSs – Threatened
  - Southwest Indian Ocean DPS, Northwest Atlantic Ocean DPS, South Atlantic Ocean DPS, Southeast Indo-Pacific Ocean DPS

2.3 CRITICAL HABITAT

This section details the critical habitats, if listed, of the affected threatened or endangered species potentially affected by the activities at BDEC. The Endangered Species Act Amendments of 1978 define the term "critical habitat" as follows:

(i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of this Act, on which are found those physical or biological features;
  (I) essential to the conservation of the species; and
  (II) which may require special management consideration or protection; and

(ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of this Act, upon a determination by the Secretary that such areas are essential for the conservation of the species.

Green Sea Turtle

- Green sea turtles are primarily restricted to tropical and subtropical waters. In U.S. Atlantic and Gulf of Mexico waters, green sea turtles are found from Massachusetts to Texas and in the U.S. Virgin Islands and Puerto Rico. Caribbean populations of green sea turtles have diminished significantly from historical levels, primarily due to the directed sea turtle fishery that existed prior to their listing under the ESA. Additionally, researchers have documented that habitat loss is a primary factor

slowing the recovery of the species throughout its range. Degradation of seagrass beds has slowed recovery of green sea turtles in the Caribbean due to reduced carrying capacity of seagrass meadows (Williams, 1988). Therefore, the extent of habitat required for foraging green sea turtles is likely to be increasing due to the reduced productivity of remaining seagrass beds.

The natal beaches of Culebra's juvenile green sea turtles have not yet been identified. After emerging from nests on natal beaches, post-hatchlings may move into offshore convergence zones for an undetermined length of time (Carr, 1986). Upon reaching approximately 25 to 35 cm carapace length, juvenile green sea turtles enter benthic feeding grounds in relatively shallow, protected waters (Collazo et al., 1992).

The importance of the Culebra archipelago as green sea turtle developmental habitat has been well documented. Researchers have established that Culebra coastal waters support juvenile and sub adult green sea turtle populations and have confirmed the presence of a small population of adults (Collazo et al., 1992). These findings, together with information obtained from studies conducted in the U.S. Virgin Islands, have reaffirmed the importance of developmental habitats throughout the eastern portion of the Puerto Rican Bank (Collazo et al., 1992). Additionally, the coral reefs and other topographic features within these waters provide green sea turtles with shelter during interforaging periods that serve as refuge from predators.

Culebra seagrasses provide foraging habitat for many valuable species. In addition to green sea turtles, the commercially important queen conch (*Strombus gigas*) and coral reef bony fishes (*Class Osteichthyes*), such as parrotfish (*Sparisoma spp.*), grunts (*Haemulon spp.*), porgies or sea breams (*Archosargus rhomboidalis*), and others, utilize this important habitat. Culebra's seagrass beds also provide habitat for the endangered West Indian manatee (*Trichechus manatus*) and several species of cartilaginous fishes (Class Chondrichthyes). Additionally, seagrass beds beneficially modify the physical, chemical, and geological properties of coastal areas. They provide nutrients, primary energy, and habitats that help sustain coastal fisheries resources while enhancing biological diversity and wildlife (Vicente and Tallevast, 1992).

The waters surrounding Mona Island also support a small green sea turtle population, which possibly is surviving only because of Mona's remoteness and the full-time presence of Puerto Rico Department of Natural and Environmental Resources fisheries/wildlife enforcement personnel. Limited green sea turtle nesting still occurs on Mona Island.

Waters surrounding Puerto Rican island of Culebra from the mean high water line seaward to three nautical miles (5.6 km) are designated critical habitat for the green sea turtle. These waters include Culebra's outlying Keys including Cayo Norte, Cayo Ballena, Cayos Geniquí, Isla Culebrita, Arrecife Culebrita, Cayo de Luis Peña, Las Hermanas, El Mono, Cayo Lobo, Cayo Lobito, Cayo Botijuela, Alcarraza, Los Gemelos, and Piedra Steven.

Kemp's Ridley Sea Turtle

- No critical habitat has been designated for this species. However, long-term habitat protection of two of the primary nesting beaches is maintained in Mexico (Rancho Nuevo, Tepehuajes) as federal, state, municipal, or private natural protected areas under a similar legally protective designation or mechanism. Long-term habitat protection of the nesting beach at Playa Dos, through establishment as a natural protected area or similar legally protective designation or mechanism would be initiated.

Hawksbill Sea Turtle

- The hawksbill sea turtle occurs in tropical and subtropical waters of the Atlantic, Pacific, and Indian Oceans. The species is widely distributed in the Caribbean Sea and western Atlantic Ocean. Within the United States, hawksbills are most common in Puerto Rico and its associated islands, the U.S. Virgin Islands, and Florida.

  International commerce in hawksbill shell, or ''bekko,'' is considered the most significant factor endangering hawksbill sea turtle populations around the world. Despite international trade protections under CITES, illegal trade in hawksbill shell continues. The illegal take of hawksbills at sea has not yet been fully quantified, but it is a continuing and serious problem.

  Juvenile hawksbills are thought to lead a pelagic existence before recruiting to benthic feeding grounds at a size of approximately 25 cm straight carapace length (Meylan and Carr, 1982). Additionally, the ledges and caves of the reef provide shelter for resting and refuge from predators.

  Mona and Monito Islands are uninhabited natural reserves managed by the Puerto Rico Department of Natural and Environmental Resources. The coral reefs of Mona and Monito Islands are among the few known remaining locations in the Caribbean where hawksbill sea turtles occur with considerable density (Diez and van Dam, 1996). Researchers have shown that the large juvenile population of hawksbill sea turtles around Mona and Monito are long-term residents, exhibiting strong site fidelity for periods of at least several years (Diez, 1996). Recent genetic studies indicate that this resident population comprises individuals from multiple nesting populations in the Wider Caribbean. This data indicates that the

conservation of the juvenile population of hawksbill sea turtles at Mona can contribute to sustaining healthy nesting populations throughout the Caribbean Region (Bowen et al., 1996). Additionally, data on hawksbill sea turtle diet composition and foraging behavior suggest that this high-density hawksbill population may play a significant role in maintaining sponge species diversity in the nearshore benthic communities of Mona and Monito Islands (van Dam and Diez, 1997).

Hawksbills utilize both low- and high energy nesting beaches in tropical oceans of the world. Both insular and mainland nesting sites are known. Hawksbills will nest on small pocket beaches and, because of their small body size and great agility, can traverse fringing reefs that limit access to other species.

Nesting within the southeastern United States occurs principally in Puerto Rico and in the U.S. Virgin Islands, with the most important sites being Mona Island in Puerto Rico and Buck Island Reef National Monument in the U.S. Virgin Islands. Mona Island supports the largest population of nesting hawksbill sea turtles in the U.S. Caribbean. Considerable nesting also occurs on the beaches of Culebra, Vieques, and mainland Puerto Rico, as well as St. Croix, St. John, and St. Thomas.

The coastal waters of Culebra also provide habitat for hawksbill sea turtles. Hawksbill sea turtles forage extensively on the nearby reefs and use Culebra's coastal waters to access nesting beaches.

Leatherback Sea Turtle

- The leatherback sea turtle has been listed as endangered since 1970 (35 FR 19320). Although the leatherback spends most of its life in waters of 150 feet depth or greater, it comes ashore to nest and lay eggs.

Courtship and mating are believed to occur in waters adjacent to nesting beaches just prior to the time of egg laying. Accordingly, the survival and recovery of the leatherback depends on the maintenance of suitable and undisturbed nesting beaches and protection of waters adjacent to those beaches.

During the early summer of 1977 the U.S. Fish and Wildlife Service (FWS) identified a nesting aggregation of leatherback sea turtles occurring at the western end of the island of St. Croix, U.S. Virgin Islands. Personnel of the FWS, NMFS, U.S. Coast Guard, and Government of the Virgin Islands conducted observation on St. Croix during the month of June. In excess of 70 leatherback nests were discovered on the 0.8 mile by 0.1 mile strip of Sandy Point Beach during these observations. This area constitutes a major beach under U.S. jurisdiction used for nesting by the endangered leather-back. The FWS designated Sandy Point Beach

on St. Croix as critical habitat for the leatherback sea turtle on September 26, 1978 (43 FR 43688).

Pursuant to an agreement between the FWS and the NMFS, the FWS has jurisdiction over sea turtles on the land and the NMFS over sea turtles in the marine environment. These regulations designate as critical habitat an area of the marine environment adjacent to a nesting beach previously designated as critical habitat by the FWS.

Since the area designated as critical habitat is used by the leatherback for courting and mating activities and provides an access to and from an important nesting beach, the NMFS believes the area is essential for the conservation of the leatherback sea turtle and requires special management protection. As such, these waters qualify for designation as critical habitat under the Endangered Species Act, as amended.

The coastal waters of Culebra also provide habitat for leatherback sea turtles. Leatherbacks use Culebra's coastal waters to access nesting beaches. Culebra and St. Croix beaches have the greatest density of leatherback nests within U.S. waters.

Loggerhead Sea Turtle

- Approximately 1,102 kilometers (km) (685 miles (mi)) of loggerhead sea turtle nesting beaches are designated as critical habitat in the States of North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi. These beaches account for 45 percent of an estimated 2,464 km (1,531 mi) of coastal beach shoreline and approximately 84 percent of the documented nesting (numbers of nests) within these six States. The critical habitat is located in Brunswick, Carteret, New Hanover, Onslow, and Pender Counties, North Carolina; Beaufort, Charleston, Colleton, and Georgetown Counties, South Carolina; Camden, Chatham, Liberty and McIntosh Counties, Georgia; Bay Brevard, Broward, Charlotte, Collier, Duval, Escambia, Flagler, Franklin, Gulf, Indian River, Lee, Manatee, Martin, Monroe, Palm Beach, Sarasota, St. Johns, St. Lucie, and Volusia Counties, Florida; Baldwin County, Alabama, and Jackson County, Mississippi.

- The NMFS has identified, as published in Volume 79, Number 132 of the Federal Register, a critical habitat to include *Sargassum* for loggerhead turtles, described as "developmental and foraging habitat for young loggerheads where surface waters form accumulations of floating material, especially *Sargassum*." As stated in the Federal Register, satellite imagery data from 2002-2008 was evaluated and found high concentrations of *Sargassum* in the northwest Gulf of Mexico from March to June. *Sargassum* then spreads eastward into the central and eastern Gulf of Mexico, and then into the Atlantic starting in about July. Observations from 2003

to 2007 suggest that *Sargassum* has a lifespan of approximately 1 year or less, and that the northwest Gulf of Mexico is a major nursery area (Gower and King 2011). High resolution imagery from 2010 suggested that *Sargassum* was more abundant and widespread in the western Gulf of Mexico compared to the central and eastern Gulf of Mexico, with the latter areas having smaller and more dispersed patches of *Sargassum* (Hardy et al. 2011). Further, NMFS has collected *Sargassum* on Gulf of Mexico ichthyoplankton surveys since 2002.

2.4 HABITAT REQUIREMENTS

Green Sea Turtle

- Green sea turtles are generally found in fairly shallow waters (except when migrating) inside reefs, bays, and inlets. The sea turtles are attracted to lagoons and shoals with an abundance of marine grass and algae. Open beaches with a sloping platform and minimal disturbance are required for nesting. Green sea turtles apparently have a strong nesting site fidelity and often make long distance migrations between feeding grounds and nesting beaches. Hatchlings have been observed to seek refuge and food in *Sargassum* rafts. Hatchlings leave the beach and apparently move into convergence in the open ocean; when they reach a carapace length of approximately 20 to 25 cm, they leave the pelagic habitat and enter benthic feeding grounds.

Kemp's Ridley Sea Turtle

- Kemp's Ridley sea turtles occur in the Atlantic Ocean and the Gulf of Mexico. The females come ashore only to lay eggs. Nesting of the Kemp's Ridley is essentially limited to the beaches of the western Gulf of Mexico, primarily in Tamaulipas, Mexico. Nesting also occurs regularly in Texas and infrequently in a few other U.S. states. Juvenile neritic Kemp's Ridleys occupy shallow coastal waters in the northern Gulf of Mexico. Adult Kemp's Ridleys occur primarily in the Gulf of Mexico, but are occasionally found on the U.S. Atlantic coats. Nearshore waters of 37 m or less provide the primary marine habitat.

Hawksbill Sea Turtle

- Hawksbills use different habitats at different stages of their life cycle. Research and gut-content analysis suggest that post-hatchling hawksbills occupy the pelagic environment, taking shelter in weedlines that accumulate at convergence zones.

  Coral reefs are widely recognized as the resident foraging habitat of juveniles, sub adults, and adults. Hawksbills depend on coral reefs for food and shelter; therefore, the condition of reefs directly affects the hawksbill's well-being. Destruction of coral reefs due to deteriorating water quality and vessel anchoring, striking, or grounding is a growing problem. This habitat association is directly related to the species' highly specific diet of sponges (Meylan, 1988). Gut content analysis conducted on

hawksbills collected from the Caribbean suggests that a few types of sponges make up the major component of their diet, despite the prevalence of other sponges on the coral reefs where hawksbills are found (Meylan, 1984). Vicente (1993) observed similar feeding habits in hawksbills foraging specifically in Puerto Rico.

Hawksbills are known to inhabit mangrove-fringed bays and estuaries, particularly along the eastern shore of continents where coral reefs are absent. In Texas, juvenile hawksbills are associated with stone jetties (Hildebrand 1987, Amos 1989).

Leatherback Sea Turtle

- Adult leatherbacks are highly migratory and believed to be the most pelagic of all sea turtles. Habitat requirements for juvenile and post-hatchling leatherbacks, however, are virtually unknown.

The coastal waters of Culebra provide habitat for leatherbacks. Leatherbacks use Culebra's coastal waters to access nesting beaches. Culebra and St. Croix beaches have the greatest density of leatherback nests within U.S. waters. Thompson (1984) reported a significant negative correlation between leatherbacks and water temperature in the spring, fall, and winter, suggesting that the species is not dependent upon warm temperatures and is likely to be associated with cooler, perhaps more productive waters. Summarizing incidental catch and interview data (1897-1980), as well as at-sea observations recorded during shore to Gulf Stream summer transects, Lee and Palmer (1981) also concluded that (at least off North Carolina) leatherbacks were rarely seen in the Gulf Stream and were most often seen in waters <500 fathoms in depth.

Loggerhead Sea Turtle

- Loggerheads live in three basic ecosystems: terrestrial zone (the nesting beach where both egg laying and embryonic development and hatching occur), neritic zone (the nearshore marine environment where water depths do not exceed 200 meters), and the oceanic zone (the vast open ocean environment where water depths are greater than 200 meters).

Juvenile stage loggerheads in the North Atlantic commonly inhabit continental shelf waters from Cape Cod Bay, Massachusetts, south through Florida, the Bahamas, Cuba, and the Gulf of Mexico. Estuarine waters, including areas such as Long Island Sound, Delaware Bay, Chesapeake Bay, Pamlico and Core Sounds, the large open sounds of South Carolina and Georgia, Mosquito and Indian River Lagoons, Biscayne Bay, Florida Bay, and numerous embayments fringing the Gulf of Mexico, comprise important inshore habitat (Musick and Limpus, 1997; Spotila et al., 1997; Hopkins-Murphy et al., 2003).

Logerheads appear to prefer relatively narrow, steeply sloped, coarse-grained beaches for nesting. Post-hatchling loggerheads inhabit areas where surface waters converge to form local downwellings (Witherington, 2002). These areas are characterized by linear accumulations of floating material, especially *Sargassum*, and are common between the Gulf Stream and the southeast U.S. coast, and between the Loop Current and the Florida coast in the Gulf of Mexico.

Non-nesting adult loggerheads in the neritic zone differ from the juvenile stage in that relatively enclosed, shallow water estuarine habitats with limited ocean access are less frequently used. Shallow water habitats with large expanses of open ocean access provide year-round resident foraging areas for significant numbers of male and female adult loggerheads.

2.5 FEEDING HABITATS

Green Sea Turtle

- Seagrasses are the principal dietary component of juvenile and adult green sea turtles throughout the Wider Caribbean region (Bjorndal, 1995). The seagrass beds of Culebra consist primarily of sea turtle grass (*Thalassia testudinum*). While seagrasses are distributed throughout temperate and tropical latitudes, sea turtle grass beds are a tropical phenomenon. In the caribbean, sea turtle grass beds consist primarily of sea turtle grass, but may include other species of seagrass, such as manatee grass (*Syringodium filiforme*), shoal grass (*Halodule wrightii*), and sea vine (*Halophila decipiens*), as well as several species of algae including green algae of the genera *Halimeda, Caulerpa,* and *Udotea*.

  Most common foraging habitats are pastures of seagrasses and/or algae, but small green turtles can be found over coral reefs, worm reefs, and rocky bottoms. Some feeding ground only support certain size classes of green turtles; the turtles move among foraging areas (called developmental feeding grounds) as they row. Coral reefs or rocky outcrops near feeding pastures are often used as resting areas, both at night and during the day.

Kemp's Ridley Sea Turtle

- Kemp's Ridley sea turtles are considered to be carnivorous, feeding primarily on decapod crustaceans. Juvenile Kemp's Ridleys spend on average two (2) years in the oceanic zone, when they decrease their swimming activity and become passive migrants in the oceanic currents. During this time the juvenile turtles presumably live and feed among floating algal communities. It is suggested that the distribution of foraging Kemp's Ridleys is related to the distribution and availability of all the major crab species that are consumed. Studies have also shown that their diets include various items such as mollusks, natural and synthetic debris, sea horses,

and tunicates. Use of the *Sargassum* community has been suggested as an epipelagic developmental habitat. At approximately two (2) years of age, they recruit to the neritic zone (settling into nearshore areas within the Gulf of Mexico and the Northwest Atlantic) and forage on benthic fauna, such as crabs.

Hawksbill Sea Turtle

- *Sargassum* and weedlines make up the habitat and food sources for post-hatchling Hawksbills. Coral reefs, like those found in the waters surrounding Mona and Monito Islands, are widely recognized as the primary foraging habitat of juvenile, sub adult, and adult hawksbill sea turtles. Specific foraging areas have not yet been identified for the hawksbill.

Leatherback Sea Turtle

- Food habits of leatherbacks are known primarily from the stomach samples of slaughtered animals (Brongersma, 1969, Hartoz, 1980, Hartog and Van Nierop, 1984). Leatherbacks feed on pelagic medusa (jellyfish), siphonophores, and salpae in temperate and boreal latitudes (e.g., Bleakney, 1965; Brongersma, 1969; Duron, 1978; Eisenberg and Frazier, 1983; Musick, 1988). Keith and Musick note that “many” leatherbacks are observed off the mouth of Chesapeake Bay, “presumably feeding on the abundant jellyfish [there].”

  Foraging has most often been observed at the surface, but Hartog (1980) speculated that foraging may occur at depth after finding nematocysts from deep water siphonophores in leatherback stomach samples.

Loggerhead Sea Turtle

- Juvenile loggerheads in the oceanic zone are primarily carnivorous, although they do ingest some vegetation (Bjorndal, 1997). Juvenile loggerheads consume primarily coelenterates (e.g. sea jellies, hydroids) and salps, but also ingest a range of organisms including the pelagic snail *Janthina* spp., barnacles (*Lepas* spp.), and crabs. Once juveniles transition from the oceanic to the necritic zone, they feed on a wide variety of organisms including benthic invertebrates, primarily mollusks and crabs. In south Texas, sea pens were the most common prey. Adult loggerheads feed on a wide variety of organisms inhabiting the neritic zone. Analysis of gut contents of larger (presumably older) individuals showed more mollusks than smaller, younger turtles. Limited studies of adult loggerheads indicate that mollusks and benthic crabs make up their primary diet, similar to the more thoroughly studied neritic juvenile stage (Youngkin, 2001).

2.6 REPRODUCTIVE STRATEGY

Green Sea Turtle

- The nesting season varies with the locality. In the Southeastern U.S., it is roughly

June through September. Nesting occurs nocturnally at 2, 3, or 4-year intervals. Only occasionally do females produce clutches in successive years. A female may lay as a many as nine clutches within a nesting season (overall average is about 3.3 nests per season) at about 13-day intervals. Clutch size varies from 75 to 200 eggs. Mating occurs in the water off the nesting beaches. Incubation ranges from about 45 to 75 days, depending on incubation temperatures. Hatchlings generally emerge at night. Temperature dependent sex determination has been demonstrated for green sea turtles, with eggs incubated below a pivotal temperature (temperature varies among populations) producing male turtles and eggs incubated above the pivotal temperature producing primarily females. Age at sexual maturity is believed to be 20 to 50 years.

Kemp's Ridley Sea Turtle

- After hatching, males spend their entire lives in the water while the female comes ashore only to nest. A female will lay eggs during the day and may return to the same nesting beach the next year. Females reach sexual maturity in 10-15 years. A female may lay as many as 120 eggs in a nest, and may nest up to 3 times during the nesting season. Eggs hatch in 45-58 days and the hatchlings return to the sea. The hatchlings swim offshore into deeper ocean water where they feed and grow until returning at a larger size to nearshore coastal habitats. Kemp's Ridley sea turtles usually nest on the Gulf Coast beaches of Mexico and Texas from April to July primarily during daylight hours. Nesting often occurs in synchronized emergences termed *arribadas* or *arribazones*, which may be triggered by high wind speeds, especially north winds, and changes in barometric pressure. Survival rates for all life stages except eggs to hatchlings are difficult to estimate due to the wide range of migration habits of the species.

Hawksbill Sea Turtle

- Hawksbill sea turtles have a 6-month nesting season, longer than that of any other sea turtles. Most nests are made from July to October. Courtship and mating apparently begin somewhat earlier, and may occur either along the migratory route or off the nesting beach. Nesting is primarily during the nighttime. Hawksbills nest an average of 4.5 times per season (Corliss et al. 1989, Van Dam and Sarti 1990) at approximately 14 day intervals and as many as 12 clutches may be produced by a single female in one season (Melucci et al. 1992). Clutch size is approximately 140 eggs and hatchling success at nesting beaches in the U.S. is approximately 80 percent (Van Darn Sarti 1990, Hills 1990). Recoveries of tagged adult hawksbills suggest that some populations or groups within a population undertake reproductive migrations (Meylan 1982, 1984a, Bjomdal et al. 1985).

Leatherback Sea Turtle

- Nesting grounds of leatherbacks are distributed circumglobally (Sternberg, 1981), with the Pacific coast of Mexico supporting the world's largest known concentration

of nesting leatherbacks. Nesting begins as early as late February or March for leatherbacks. Data gathered at Sandy Point NWR and Isla Culebra found that females arrive at the nesting beach asynchronously, renest an average of every 9-10 days, deposit 5-7 nests annually, and remigrate predominantly at 2-3 year intervals. Courtship and mating are believed to occur in waters adjacent to nesting beaches just prior to the time of egg laying. The survival and recovery of the leatherback depends on the maintenance of suitable and undisturbed nesting beaches and protection of waters adjacent to those beaches. Due to a proclivity for nesting in high energy and thus frequently unpredictable environments, it is not uncommon that large numbers of eggs are lost to erosion (Bacon, 1970; Pritchard, 1971; Hughes, 1974; Mrosovsky, 1983; Eckert, 1987). The majority of females return to the same nesting beach throughout the season, however some females are known to nest on separate beaches >100 km apart within a season. Virtually nothing is known of the pelagic distribution of hatchling or juvenile leatherback turtles.

Loggerhead Sea Turtle

- In the U.S., loggerheads nest from Texas to Virginia. Nesting begins in late April and lasts through early September. The clutch size of loggerheads ranges from approximately 100-126 eggs with a 42-75 day incubation duration. Loggerheads nest on average 3-5.5 times per season with a 45-70% nest productivity rate. The remigration interval is approximately 2.5-3.7 years. Loggerheads nest on ocean beaches and occasionally on estuarine shorelines with suitable sand. Nests are typically laid between the high tide line and the dune front.

2.7 STATE/PROVINCE CONSERVATION STATUS

Green Sea Turtle

- S3: Vulnerable

Kemp's Ridley Sea Turtle

- S3: Vulnerable

Hawksbill Sea Turtle

- S2: Imperiled

Leatherback Sea Turtle

- S1: Critically Imperiled

Loggerhead Sea Turtle

- S4: Apparently Secure

Conservation Status obtained from NatureServe Explorer.

3.0 CONSERVATION PLAN

This Conservation Plan is comprised of two sections. The first section describes the anticipated impact of continued facility operations on sea turtles. The second section describes the measures the facility will implement to minimize take.

3.1 ANTICIPATED IMPACT OF THE ACTIVITY ON SEA TURTLES

3.1.1. Impacted Species

Based on the distribution and habitat requirements of the threatened and endangered sea turtle species in the vicinity of the facility, the green and Kemp's ridley sea turtles are most likely to be affected by the facility's cooling water intake canal and CWIS. The likelihood of the presence of hawksbill, loggerhead, and leatherback sea turtles in the vicinity of the facility is low. To date, the facility has not encountered any hawksbill, loggerhead, or leatherback sea turtles in the intake canal.

3.1.2. Types of Impacts

The facility anticipates two potential types of impacts. The first is the presence and confinement of a sea turtle in the intake canal, requiring capture and transfer to the Texas Sea Turtle Stranding and Salvage Network (TX STSSN) for subsequent evaluation, treatment, and release. The second is a direct interaction with the facility's CWIS, resulting in contact with the traveling trash racks and other facility equipment resulting in impingement or entrainment. The facility monitors the intake canal and bulkhead leading into the CWIS in an effort to intercept sea turtles prior to their contact with the CWIS traveling trash racks. When a sea turtle is located during business hours, the sea turtle is collected by Texas Parks and Wildlife Department (TPWD) and held at their nearby facility (CCA Marine Development Center) located within the facility property (4301 Waldron Road) until the United States Fish and Wildlife Service (USFWS) collects the sea turtle(s) for tagging and rehabilitation at the Animal Rehabilitation Keep (ARK) prior to release in the Gulf. The collection and transfer of each animal will follow TX STSSN protocols. If TPWD is unable to collect the turtle, they will instruct facility personnel to collect the animal. A telescopic pole with a net attached will be utilized to collect the turtle. The turtle will then be placed in an open-top container to be measured and documented prior to being transferred to a secure area inside and placed in a dry plastic pool to await collection by TPWD. If a turtle is located after hours, trained facility personnel will collect the animal utilizing the same procedure identified above. This collection is considered a "harassment" of the sea turtles, however, no physical harm is expected from this collection activity. These procedures were developed in accordance with communications between the National Park Service, Division of Sea Turtle Science and Recovery, Padre Island National Seashore and Talen EHS.A complete copy of the procedure, "Management of Sea Turtles

Entering the Intake Canal" is provided in Attachment A. A copy of the email correspondence verifying this procedure is provided in Attachment B.

Typically, turtles are located in the intake canal and/or bulkhead prior to reaching the traveling-trash racks; however, as mentioned above, it is possible that a sea turtle may become impinged on the travelling-trash rack. Due to the arrangement and operations of the CWIS, impingement of turtles may be lethal. The historical take data includes turtles that were located in the intake canal and/or bulkhead, as well as any turtles that may have been impinged on the trash racks. Records specifying the location of the turtles are unavailable for historic takes. However, discussions with facility personnel indicate that the majority of turtles have been and continue to be located in the intake canal and bulkhead prior to entering other components of the CWIS. The facility has implemented recordkeeping procedures to document takes of sea turtles including the location of the take. The recovery of turtles will follow the procedure identified in Attachment A. A description of the facility's CWIS (Figure 3) and its operation are below:

> Cooling water passes through the bulkhead where dead and dying seagrass fragments, referred to as "wrack," are removed. The water for each unit then passes through a traveling-trash rack composed of 0.5-inch steel bars on 3.5-inch centers, a concrete receiving area (bay) that is 13 feet wide, traveling-water screens, and then to sumps for the cooling water pumps. Passavant fine-mesh, center-flow screens are operated continuously to reduce the numbers of entrained organisms. The current screens are constructed with 1 x 2 mm rectangular nylon mesh to reduce clogging with a calculated maximum through-screen velocity of 1.15 ft/sec. As the screens rotate, high-pressure wash water flushes the back side of each panel at the top of the vertical cycle into an overhead trough which carries the impinged organisms and debris to a peripheral fish handling device. The screen-wash water goes to a sluiceway which empties into a concrete sump and from there is pumped directly into the facility's cooling pond via pipeline.

Although the facility has been in operation since 1974, the presence of sea turtles in the intake canal has only occurred during the past eleven (11) years. Operational changes have been made over the past eleven (11) years; however, none of the changes would lead to an increased presence of turtles in the intake canal. Historically, records identifying the number or species of turtles taken have not been maintained. Official procedures for managing the take of turtles were not established until the preparation of this Conservation Plan in 2015; however, the facility has had unofficial procedures in place and has coordinated with TPWD to assist with the collection of turtles for years prior to the development of official procedures. With the increase in frequency and quantity of turtles located in the intake canal each year, the facility has implemented procedures to monitor and record takes and has applied for an Incidental Take Permit (12/23/2015). A copy of the facility's procedures regarding the management of sea turtles in the intake canal can be found in Attachment A of this document.

The table below identifies all turtles recovered from BDEC between 2009-2019, per TX STSSN records. This data was provided by Donna Shaver, NPS, TX STSSN State Coordinator, to NOAA in February 2020, personal communications, and subsequently provided to Barney Davis, LLC in April 2020.

Year	Species	Alive	Dead	Total
2009	CM	1	0	1
2010	CM	5	0	5
2011	CM	0	0	0
2012	CM	8	2	10
2013	CM	70	13	83
2014	CM	67	6	73
	LK	1	0	1
2015	CM	6	1	7
2016	CM	12	1	13
2017	CM	7	1	8
2018	CM	5	0	5
2019	CM	1	0	1
Total		183	24	207

3.1.3. Anticipated Impact of the Activity on Habitat

Significant habitat modification or degradation which kills or injures sea turtles is not expected to be caused by the continued operation of the facility. BDEC is an existing facility that has been in operation since 1974. There are no planned construction activities or operational changes that would affect the habitat in the vicinity of the facility.

3.1.4. Anticipated Take

Listed Species Affected:

Endangered Species
Kemp's ridley turtle – *Lepidochelys kempii*

Threatened Species
Green turtle (North Atlantic Distinct Population Segment) - *Chelonia mydas*

Barney Davis, LLC is requesting to incidentally take Kemp's ridley and green sea turtles, as specified below, during the regular and ongoing legal operation of their facility, the BDEC, for the 10-year duration of the requested permit.

Species	Total Captures Over 10-year period (includes turtles found in the intake canal and cooling water intake structure)	Mortalities Over 10-year period (*subset of total captures)
Green sea turtle (*Chelonia mydas*)	206	24*
Kemp's ridley sea turtle (*Lepidochelys kempii*)	4	0

The incidental take request applies to sea turtles that are observed and collected from the facility property, including free swimming animals collected from the intake canal (cold-stunned or healthy), dead animals collected from the intake canal, and live or dead animals that are collected from the CWIS after impingement. The requested takes are based on historical data obtained from the TX STSSN. Given that the facility records on historic sea turtle takes are incomplete, the data provided by the TX STSSN is considered the best scientific data available on past sea turtle interactions at the facility. If an animal was found on facility grounds, either in the canal or in the trash rack, it would have been immediately reported to TPWD, who in turn would have reported the animal to the TX STSSN.

Per the table above, Barney Davis, LLC is requesting the lethal take of up to 24 green sea turtles over the lifetime of the requested permit (10 years). While the facility's goal is to minimize the impact of the continued operation of the facility on sea turtles, there is the possibility that some sea turtles would not be intercepted prior to reaching the CWIS, leading to the potential for mortality. Barney Davis, LLC has instituted a monitoring program (see Section 3.2) and record keeping procedures to reduce the risk of sea turtles reaching the CWIS undetected. Without routine canal monitoring by trained staff, it can be assumed that all or most sea turtles would reach the CWIS undetected, resulting in mortality for all or most of the sea turtles. By adding dedicated monitoring to the facility protocols, the potential for mortalities can be reduced from approximately 200 individual sea turtles (i.e. the total number anticipated to be taken over the 10-year period) to just 24, with the remaining collected from the canal alive and transferred to the TX STSSN for treatment and subsequent release back into the wild.

The recovery of turtles will follow the procedure identified in Attachment A. The procedure provides a tracking mechanism for the facility and a means to identify the life stage and species of each turtle. Copies of these records will be maintained on-site for ten (10) years, on a rolling basis, or for the full permit duration, whichever is longer.

Additionally, the data gathered as part of the Barney Davis Conservation Plan and requested permit may help inform resource managers on the occurrence of green sea turtles in this area of Texas.

3.2 MONITORING AND MITIGATION OF ANTICIPATED TAKES

As identified previously, healthy or cold-stunned sea turtles may float or swim into the intake canal and subsequently become impinged or entrained on the CWIS trash rack or other equipment, causing severe injuries or mortality. To minimize injuries to sea turtles at the CWIS, the facility has implemented a robust monitoring program to intercept the sea turtles in the intake canal, prior to their arrival at the CWIS. Additionally, the sighting and removal of cold-stunned sea turtles from the canal as quickly as possible is expected to improve outcomes for those animals. Although water temperature during cold stunning events is unrelated to the operation of the facility, if a cold-stunned turtle remains in the intake canal for longer amounts of time, the turtle will have a lower survival rate. Therefore, in order to prevent as many turtles as possible from reaching the CWIS and to get cold-stunned turtles out of the canal as quickly as possible, the facility has implemented a canal monitoring program as part of this conservation plan. As part of the monitoring program, the facility has implemented recordkeeping procedures to document takes of sea turtles, including the location of the take.

The facility utilizes a 0.75-mile cooling water intake canal leading to the CWIS from the Laguna Madre (See Figure 1). Facility personnel will visually monitor from the area immediately surrounding the cribhouse, which includes the bulkhead, trash racks, and intake canal on a seasonal schedule. From December 1st through March 31st, monitoring will be conducted a minimum of four (4) times per twelve (12) hour shift, spaced at approximately three (3) hour intervals. From April 1st through November 30th, monitoring will be conducted one (1) time per shift, or once approximately every twelve (12) hours. Visual monitoring will last for approximately fifteen (15) minutes during each monitoring event. The frequency and length of each monitoring event provides sufficient opportunity to identify turtles in the intake canal and bulkhead prior to the turtles reaching the traveling-trash racks. Monitoring will only be conducted from the crib house due to safety concerns at the facility (i.e. lighting, guardrails, and safe walking surfaces are not available for the entire length of the intake canal).

If an animal is sighted within the canal the following collection and handling procedures will be followed. These procedures are to be followed regardless of the season or condition of the animal (live or dead). Note, this is a summary of the facility's procedure "Management of Sea Turtles Entering the Intake Canal" which is provided in its entirety in Attachment A.

- Immediately notify the control room operator (CRO) upon sighting of a sea turtle during visual observations.
- The CRO shall:
    - Immediately contact the Texas Parks & Wildlife Department Hatchery (TPWDH) and request a TPWDH employee be sent to collect the animal.

- Initiate a Sea Turtle Discovery & Notification Log
- If TPWDH staff is unavailable to collect the turtle in a timely manner, trained personnel may be instructed by TPWDH to collect the animal.
- If the CRO is unable to reach TPWDH staff, the CRO shall call the Padre Island NS Division of Sea Turtle Science & Recovery to request their staff come collect the sea turtle.
- If Padre Island NS Division of Sea Turtle Science & Recovery staff is unreachable/unavailable, the CRO shall call the 24/7 on-call emergency phone for the National Park Service to arrange for the sea turtle to be collected.
- The CRO shall confirm that TPWDH has made arrangements for the transport of the turtle upon collection.
- Upon collection of the turtle, the CRO shall notify security of the transport arrangement for the animal.
- If transport is not completed by the scheduled time, the CRO shall call the Padre Island NS Division of Sea Turtle & Recovery for additional instructions.

- Rescue of Sea Turtles
  - All required PPE and equipment must be available/in-place and be utilized by all parties, regardless of the organization rescuing the sea turtle.
  - Persons rescuing the animal must utilize the appropriate equipment (i.e. telescoping pole with net, open-top container, etc.).
  - If TPWDH responds for collection of the animal:
    - The BDEC employee who reported the presence of the turtle will assist the TPWDH during collection activities, as requested.
    - The TPWDH and BDEC employees shall place the turtle in a dry open-topped container in a shaded area to be measured, identified, and photographed prior to transport off-site.
    - TPWDH will make arrangements for the turtle to be removed by the facility and provide an estimated time of transport to the CRO and/or BDEC staff.
  - If BDEC staff is instructed to collect the animal:
    - Capture procedures provided during training must be followed.
    - If seasonal collection instructions are provided by TPWDH or other agencies, BDEC staff collecting the animal must follow those instructions.
    - The turtle shall be placed in a dry open-topped container in a shaded area to be measured, identified, photographed, and held until the responding agency can collect the animal.
    - Confirm with TPWDH that transport of the turtle has been arranged and ensure the CRO has been informed of the transportation arrangements.

- Recordkeeping
    - The following documentation shall be maintained on-site for a period of 10 years on a rolling basis. A copy of these forms are provided in Attachment A:
        - Sea Turtle Discovery & Notification Log
            - Includes the date, time, and location of initial discovery; initial notification records and action to be taken; identification of the individual(s) rescuing the turtle; individual(s) making the identification; species of turtle; size of the turtle; turtle transport information; and CRO sign-off.
        - Sea Turtle Picture Information Sheet
            - Includes a photograph of the turtle; date, time, location, and photographer; and notes/dimensions, etc.
        - Routine Crib House Inspection Log
            - Includes the inspection start and end times; visibility impairment(s), if any; number of turtles observed, and identification of observer.

Photos of potentially affected species are included in Attachment A to assist personnel with species identification. The collection report, included in Attachment A, also requires facility personnel to obtain the length of the turtle(s) collected to assist in estimating the age of the turtle(s) collected. Official procedures for monitoring and mitigation activities at the facility are located in Attachment A. Copies of these records will be maintained on-site for ten (10) years, on a rolling basis, or for the full permit-duration, whichever is longer.

Facility personnel responsible for monitoring the intake canal and collecting sea turtles will be trained upon hire, and again annually, in the proper procedures required for the collection of turtles. This training will include proper recordkeeping procedures, as well as turtle identification training, in order to maintain accurate facility records. This training is to be conducted by the National Park Service, Division of Sea Turtle Science and Recovery, Padre Island National Seashore, STSSN. Training records will be maintained on-site for review and/or inspection.

The full monitoring program in this conservation plan relies heavily on support from TPWD and the TX STSSN to collect and subsequently transport and evaluate the sea turtles that are collected. Given that these are state and Federal entities, it is unlikely that these organizations/Agencies would discontinue their support and/or involvement in this conservation plan. However, if information is received indicating that these entities can no longer assist with the collection and care of the animals found at BDEC, NMFS will be contacted to determine alternative trained and permitted responders that can assist.

In developing this conservation plan, Barney Davis, LLC reviewed available documents for similar activities to determine potential monitoring and mitigation actions that could be taken. On March 24, 2016, NOAA's National Marine Fisheries Service issued a biological opinion on the continued operation of the St. Lucie Nuclear Power Plant, in St. Lucie County, Florida. In review of this document we found that sea turtles are taken by the St. Lucie facility in a similar manor to the anticipated take at the BDEC. At the St. Lucie facility, turtles are free swimming in an intake pipeline and intake canal system and if they are not intercepted and removed quickly they could be susceptible to impingement and entrainment in the facility intake equipment, trash racks and condensers. While the number of turtles that are historically taken at the St. Lucie facility is much higher than at BDEC, and the water intake process is more complex, the monitoring and mitigation requirements are comparable to what is proposed in this conservation plan for BDEC. Ideally, turtles will be intercepted and removed from the intake system prior to interception at water intake facility and trash racks (NMFS, 2016).

3.3 FUNDING

Barney Davis Energy Center is an existing facility that has been in operation since 1974. Monitoring and mitigation activities outlined in Attachment A are currently being conducted at the facility by employees trained on this procedure and/or employees of the TPWD. TPWD operates a fish hatchery on facility property and will continue to assist with mitigation efforts. BDEC is an existing facility and there are no construction activities planned, nor additional funding. Continued monitoring related to the take of sea turtles is included as part of the operator's daily base tasks; therefore, monitoring activities are not a separate line item in the facility's annual operating budget. The cost of daily monitoring is less than 3% of the facility's annual operating budget; which provides for and ensures that requirements identified in the facility's ITP will be sufficiently funded through the duration of the permit.

3.4 ENFORCEMENT

The National Marine Fisheries Services, Marine Mammal and Sea Turtle Division will oversee the facility's permit and ensure the facility is in compliance with all applicable requirements found in the Endangered Species Act of 1973. Facility employees responsible for monitoring the intake canal will receive appropriate training upon hire, and refresher training annually, to ensure the conditions of the permit are met. Employees will complete the attached "Management of Sea turtles at the Intake Canal" form and completed forms will be maintained on-site for ten (10) years, on a rolling basis, or for the full permit-duration, whichever is longer.

3.5 ALTERNATIVES CONSIDERED

The facility has considered the following alternative actions to address the take at the facility:

- **Seasonal outages of the facility during winter months when the incidence of take is higher.**
  This alternative is not feasible for the facility due to the nature of operations and the year-round need for the facility to supply electricity to the power grid. The facility generates electricity that is used to power residences, small businesses, and large businesses in Texas through the Electric Reliability Council of Texas (ERCOT) grid. ERCOT manages the flow of electricity from approximately 75,000 MW of installed capacity to 24 million Texas customers, representing 90% of the state's electric load. BDEC is a key electric generating facility in the ERCOT-South subregion because of its ability to start up quickly and respond to load variability and meet energy demands. Based on the principle of supply and demand, a reduction in the availability of electricity generated by the facility could lead to a negative economic impact on areas receiving power from the facility due to a shortage in availability of electricity. If sufficient power is not generated, not only could prices of electricity increase, but businesses in need of power could also lose revenue due to power shortages. Additionally, the wages of employees of affected businesses could be negatively impacted due to loss of work. Seasonal outages would also greatly affect facility personnel. BDEC employs twenty-eight (28) full time staff members, adding another economic hardship to this alternative.

- **No action taken**
  The alternative to take no action to mitigate take at the facility was considered as part of the preparation of the facility's Conservation Plan. Due to the nature of the take occurring, if no action was taken to identify and collect turtles in the intake canal, there would be a 100% mortality rate for the turtles. With this approach, facility personnel would not make any efforts to identify and collect the turtles located in the intake canal prior to reaching the CWIS. This option is not preferred, as implementing procedures to locate and collect turtles can greatly reduce the likelihood of turtles becoming caught in the CWIS.

- **Additional monitoring equipment located prior to the CWIS.**
  The addition of electronic monitoring equipment prior to the CWIS was reviewed as an option to reduce potential impingement of turtles. Due to the variability in the size of turtles and other debris that migrates up the intake canal to the CWIS, this technology is not feasible. The equipment would not be able to differentiate between turtles and other debris and would result in excessive man-hours verifying alarm notifications to identify the trigger.

- **Physical barriers at the entrance of intake canal**
  Installation of physical barriers at the entrance of the intake canal on the Laguna Madre was evaluated as part of the preparation of the facility's Conservation Plan. Due to the volume of water moving through the intake canal and other debris that migrates into the intake canal this is not currently a viable option.

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ATTACHMENT A
MANAGEMENT OF SEA TURTLES
AT THE INTAKE CANAL

Barney Davis, LLC	Management of Sea Turtles Entering the Intake Canal		
Number: **BD-ENVR-001**	Subject: **Environmental Policy**		
Approved for use by: **Gary Clark**	Current Issue: **Rev 4**	Original Issue Date: **15 Dec 2015**	Last Revision Date: **26 June 2020**
Prepared by: CAMS and Talen Energy Generation, LLC for Barney Davis			

Document Revision History

DATE OR REVIEW	REVISION #	DESCRIPTION OF CHANGES / COMMENTS
12/15/15	0	Initial Issuance of Procedure.
05/06/16	1	Revisions to procedure based on feedback received from NOAA. Species identification and further collection instructions have been included.
08/20/18	2	Update Recordkeeping Form.
10-16-18	3	Revisions to procedure based on feedback received from NOAA and reformatting to ensure the procedure is clear & concise.
6-26-2020	4	Update procedure to reflect name change from Barney M. Davis LP to Barney Davis, LLC

All revisions must be approved by the appropriate corporate contacts for the facility

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Contents

ATTACHMENTS

1. REFERENCES

1.1 Incidental Take Permit

1.1.1 *Permit to be added once permit is issued*;

1.1.2 Incidental Take Permit Under Section 10(a) (1) (B) of the Endangered Species Act of 1973 (ESA)

1.2 National Oceanic and Atmospheric Administration (NOAA)

2. PURPOSE

The purpose of this procedure is to outline the requirements to comply with the management of sea turtles that enter the Facility's intake canal. This take is incidental as considered by the Incidental Take Permit Under Section 10(a) (1) (B) of the Endangered Species Act of 1973 (ESA).

3. SCOPE

This Program establishes the guidelines to assist with ensuring that Sea Turtles of the Atlantic and Gulf of Mexico which enter into the Barney Davis, LLC ("Barney Davis") Intake Canal are being observed, reported, handled as required, properly identified, and/or documented correctly.

4. DEFINITIONS

4.1 **Cold-Stunned** - refers to the hypothermic reaction that occurs when sea turtles are exposed to prolonged cold water temperatures. Initial symptoms include a decreased heart rate, decreased circulation, and lethargy, followed by shock, pneumonia and possibly death.

4.2 **Cooler Months** – refers to the period of time each year beginning on December 1st and lasting until March 31st.

4.3 **Cribhouse** – the structure at the end of the intake canal which is closest to the facility and includes the following structures: portion of the intake canal which is visible from the intake structure itself, the bulkhead, the trash racks, the platforms/walking surfaces, the conveyor belt, and the dump truck

4.4 **Facility** – Barney Davis, LLC ("Barney Davis")

4.5 **Intake Canal** – the permitted canal which extends from the cut into the Laguna Madre to the Cribhouse.

4.6 **Site EHS Representative –** the individual(s) who is(are) assigned by Site Management to perform environmental, health, & safety functions for the Facility.

4.7 **Site Employee** - Individual who works at the site under the direct supervision of Site Management.

4.8 **Site Management** – The plant/site manager and the management/supervisory team.

4.9 **Program** – Management of Sea Turtles Entering the Intake Canal

4.10 **Warmer Months -** refers to the period of time each year beginning on April 1st and lasting until November 30th.

5. RESPONSIBILITIES

5.1 ***Site Management*** shall be responsible for;

5.1.1 The implementation and enforcement of this Program at the site.

5.1.2 Monitoring compliance with this Program by employees and contractors working on site.

5.1.3 Ensuring that the activities outlined in this Program are being performed, documented, and records are being maintained.

5.1.4 Ensuring employees are made aware of and have been trained on the requirements of this Program.

5.2 Site Environmental, Health & Safety Representative shall be responsible for;

5.2.1 Gathering the documentation which is outlined in this Program and maintaining it in a manner which is suitable for both internal and external review.

5.3 Site Employees shall be responsible for;

5.3.1 Ensuring that they ask questions if there is any uncertainty surrounding this Program or the requirements placed upon the Facility.

5.3.2 Ensuring that they are performing their work in compliance with this Program.

5.3.3 Ensuring that the required inspections and subsequent documentation is being filled out and placed in the correct location(s).

5.3.4 Ensuring that information needed to comply with this procedure is properly documented and made available upon request.

5.3.5 Participating in annual training and performing work duties in accordance with the training.

6. ROUTINE INSPECTIONS

6.1 Intervals

6.1.1 Cooler Months

6.1.1.1 The Cribhouse **shall be** inspected by a Site Employee four (4) times per 12 hour shift.

6.1.2 Warmer Months

6.1.2.1 The Cribhouse **shall be** inspected by a Site Employee one (1) time per 12 hour shift.

6.2 Routine Inspection Process

6.2.1 The Site Employee performing the inspection **shall**:

6.2.1.1.1 First, document who is performing the inspection, the atmospheric conditions at the time of the inspection, and the date and time in which the inspection commenced.

6.2.1.1.2 Secondly, visually inspect the bulkhead, the trash racks, the conveyor belt, and the dump truck to ensure a turtle is not located in these areas.

6.2.1.1.3 Next, move to a location in which they can clearly see the Intake Canal.

***NOTE**: During inspections performed after sunset, the area of the Intake Canal which is visible will be much less than the area which is visible in the daylight.*

6.2.1.1.4 Lastly, document the time in which the inspection was completed.

6.2.1.1.5 These inspections **shall be** spaced out by approximately 3 hour intervals;

6.2.1.1.6 The inspections **shall be** documented via **Attachment 3**

6.2.1.1.7 During each routine inspection, the visual monitoring **shall last** 15 minutes.

***NOTE:** Visual monitoring from the Cribhouse provides Site Employees with the opportunity to identify turtles in the Intake Canal prior to them reaching other components of the Cribhouse. Visually monitoring the Intake Canal for a period of 15 minutes provides sufficient time for the majority of turtles to surface, be seen, notifications be made, and an attempt to be removed prior to reaching other components of the Cribhouse; however, at times turtles may be underwater, unable to be located, and/or not be removed prior to reaching other components of the Cribhouse.*

6.3 Turtle Discovery - Notifications

6.3.1 If during the course of the routine inspection a turtle is discovered, the Site Employee performing the inspection **shall**:

6.3.1.1.1 Immediately notify the control room operator (CRO).

6.3.1.1.2 Wait for further guidance from the CRO.

6.3.2 The CRO **shall**:

6.3.2.1.1 Immediately contact Texas Parks & Wildlife Hatchery ("TPWH") and request that TPWH send someone to remove the turtle.

6.3.2.1.2 Initiate a Sea Turtle Discovery & Notification Log (**Attachment 1**).

6.3.2.1.3 Ensure that the TPWH clearly states the action to be taken next.

***NOTE**: If the TPWH is unable to rescue the turtle in a timely manner and instructs facility personnel to rescue the turtle, the CRO **shall** instruct another Site Employee to head to the Cribhouse to assist with rescuing the turtle. The Site Employees are to rescue the turtle if they can do so in a manner which does not jeopardize their personal safety.*

6.3.2.1.4 Instruct another Site Employee to head to the Cribhouse to assist with the rescuing of the turtle.

6.3.2.1.5 Instruct the Site Employee who reported the turtle's presence, once help arrives, to rescue the turtle if they can do so in a manner which does not jeopardize their personal safety.

6.3.2.1.6 In the event that no one is reached at the TPWH, call the Padre Island NS Division of Sea Turtle Science & Recovery to see if someone from their organization could come out to pick up the turtle.

6.3.2.1.7 Next, if no one is reached at the Padre Island NS Division of Sea Turtle Science & Recovery phone number, call the 24/7 on-call emergency phone for the National Park Service and they will arrange for someone to come out to pick up the turtle.

6.3.3 Turtle Discovery – Rescue

6.3.3.1 Texas Parks & Wildlife Hatchery ("TPWH") responds:

6.3.3.1.1 TPWH arrives onsite, reports to the control room, and signs into the Facility.

6.3.3.1.2 The CRO **shall** brief TPWH on the requirements of the Facility's safety procedure for working near or around water.

6.3.3.1.3 The CRO **shall** have a Site Employee escort TPWH to the Cribhouse and turn them over to the Site Employee who reported the turtle.

6.3.3.1.4 The Site Employee who reported the presence of the turtle **shall** ensure that all required PPE & equipment is available/in-place and being utilized by all parties.

6.3.3.1.5 The Site Employee who reported the presence of the turtle **shall** provide assistance to TPWH in rescuing the turtle as requested.

***NOTE**: The Site Employee **shall** ensure that they can rescue the turtle in a manner which does not jeopardize their personal safety. Additionally, the Site Employee should do everything possible not to touch the turtle with his hands and to limit the agitation of the turtle.*

6.3.3.1.6 TPWH and the Site Employee **shall** place the turtle in a dry open-topped container located in a shaded area to be measured, identified, and held until Texas Parks and Wildlife can come collect the animal.

***Note:** Photo(s) of the rescued turtle shall be taken by a Site Employee once the turtle is placed in a dry open-topped container located in a shaded area. The photo(s) shall be documented via the Sea Turtle Picture Information Sheet provided in **Attachment 2**.*

6.3.3.1.7 TPWH **shall** identify the species of sea turtle which was rescued.

6.3.3.2 Site Employees Respond:

6.3.3.2.1 The CRO **shall** have a second Site Employee report to the Cribhouse to assist the Site Employee who reported the turtle.

6.3.3.2.2 The Site Employees **shall** ensure that all required PPE & equipment is available/in-place and being utilized by all parties.

6.3.3.2.3 The Site Employees **shall** work together to rescue the turtle.

***NOTE**: The Site Employees **shall** ensure that they can rescue the turtle in a manner which does not jeopardize their personal safety. Additionally, the Site Employees should do everything possible not to touch the turtle with their hands and to limit the agitation of the turtle.*

6.3.3.2.4 The Site Employees **shall** place the turtle in a dry open-topped container to be measured, identified, and held until Texas Parks and Wildlife can come collect the animal.

***Note:** Photo(s) of the rescued turtle shall be taken by a Site Employee once the turtle is placed in a dry open-topped container located in a shaded area. The photo(s) shall be documented via the Sea Turtle Picture Information Sheet provided in **Attachment 2**.*

6.3.3.2.5 The Site Employees **shall** attempt to correctly identify the species of sea turtle which was rescued.

***Note:** Information needed to help with the identification of the rescued turtle can be found in **Attachment 6**.*

6.3.4 Turtle Discovery – Transport Off-Site

6.3.4.1 Texas Parks & Wildlife Hatchery ("TPWH") Rescue:

6.3.4.1.1 The CRO and/or the Site Employee(s) involved with the rescue effort **shall** confirm that TPWH has made arrangements for the turtle to be removed from the Facility.

6.3.4.1.2 The CRO and/or the Site Employee(s) involved with the rescue effort **shall** get an estimated time of arrival for when the turtle will be transported off-site.

6.3.4.1.3 The CRO **shall** notify security of the turtle transport.

Note: *The CRO **shall** call the Padre Island NS Division of Sea Turtle Science & Recovery, contact information listed in **Attachment 5**, if no one arrives to the Facility by the estimated time of arrival.*

6.3.4.2 Site Employees Rescue:

6.3.4.2.1 The CRO **shall** confirm that TPWH has made arrangements for the turtle to be removed from the Facility and get an estimated time of arrival for the turtle transport.

Note: *The CRO **shall** call the Padre Island NS Division of Sea Turtle Science & Recovery, contact information listed in **Attachment 5**, if the TPWH states they have not made arrangements and/or they can't be reached to make arrangements for the turtle to be transported from the Facility.*

6.3.4.2.2 The CRO **shall** notify security of the turtle transport.

Note: *The CRO **shall** call the Padre Island NS Division of Sea Turtle Science & Recovery, contact information listed in **Attachment 5**, if no one arrives to the Facility by the estimated time of arrival.*

7. RECORDKEEPING

7.1 The Facility shall ensure that the following documentation is being maintained in an organized manner:

7.1.1 Sea Turtle Discovery & Notification Log

7.1.2 Sea Turtle Picture Information Sheet

7.1.3 Routine Crib House Inspection Log – Cooler Months

7.1.4 Routine Crib House Inspection Log – Warmer Months

7.2 The Facility shall maintain all documentation required by this Program for a 10 year (rolling) period.

8. TRAINING

8.1 Training shall be provided to employees per the following:

8.1.1 Before a Site Employee is assigned duties which are covered under this Program;

8.1.2 Whenever there is a change to this Program;

8.1.3 Whenever Site Management believes that a deviation from the requirements of this Program and/or inadequacies in employee's knowledge or use of this Program exists; and

8.1.4 Annually just prior to the Cooler Months, to ensure that all site employees understand the requirements of the Program.

8.2 A record of all training sessions shall be maintained and shall certify that the training required above has been completed.

8.2.1 This record may be in the form of an

8.2.1.1.1 Initial qualification card, which has been signed off on, or

8.2.1.1.2 A training log which contains the Site Employee's name, the Site Employee's signature, the signature of the trainer, and the date of the training.

Attachment 1

Sea Turtle Discovery
&
Notification Log

Barney Davis
Sea Turtle Discovery & Notification Log

Initial Discovery

Date:	**Time**:	**Location (*mark location*)**:
		☐ Intake Canal, List the approximate distance from Trash Rack _____ ft ☐ Bulkhead ☐ Trash Rack Check one of the following: ☐ **On** or ☐ **Against** ☐ Conveyor Belt ☐ Dump Truck ☐ Debris Pit

Initial Notification

Site Employee Making Call to TPWD:	**TPWH or USFW Employee Whom Took the Report:**
Name:	
Time:	

Action to be Taken:

☐ TPWH will respond and capture the turtle.

☐ TPWH has instructed the facility
to contact US Fish & Wildlife.

☐ TPWH did not respond.

☐ USFW stranding pager was called.

☐ Other (*Please specify*):

Continue Onto Next Page/Back of Form

Barney Davis
Sea Turtle Discovery & Notification Log

Turtle Rescue

Individual(s) Rescuing Turtle:

Turtle Identification

Individual(s) Making the Identification:

Species of Turtle (m*ark correct species):*

☐ Green Sea Turtle

☐ Loggerhead Turtle

☐ Kemp's Ridley Sea Turtle

☐ Unknown

Approximate size of the turtle:_____

Turtle Transport

Whom Arranged for Transportation Off-Site:	**Agency/Group Contacted:**
☐ TPWH	_____
☐ Barney Davis	**Estimated Time of Arrival:**_____ ☐ am ☐ pm

CRO/Final Sign Off

Name:

Date & Time:

Signature:

Attachment 2

Sea Turtle Picture
Information Sheet

Barney Davis
Sea Turtle Picture Information Sheet

Attach Photo Here

PHOTO NUMBER: **_____ of _____**	**NOTES, DIMENSIONS, ETC:**
DATE TAKEN:	
TIME TAKEN:	
LOCATION:	
PHOTOGRAPHER:	

ADD ADDITIONAL SHEETS AS NECESSARY

Attachment 3

Routine Crib House Inspection Log
Cooler Months

Barney Davis

Routine Crib House Inspection Log - Cooler Months

(*December 1st and lasting until March 31st*)

DATE:

Insp #	Start Time		End Time		Visibility Impairment(s)	# of Turtles Observed	Inspector Initial
1		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Precipitation ☐ Fog/Haze ☐ Night/Dark		
2		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Precipitation ☐ Fog/Haze ☐ Night/Dark		
3		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Precipitation ☐ Fog/Haze ☐ Night/Dark		
4		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Precipitation ☐ Fog/Haze ☐ Night/Dark		
5		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Precipitation ☐ Fog/Haze ☐ Night/Dark		
6		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Precipitation ☐ Fog/Haze ☐ Night/Dark		
7		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Precipitation ☐ Fog/Haze ☐ Night/Dark		
8		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Precipitation ☐ Fog/Haze ☐ Night/Dark		

If a turtle(s) is observed in the intake canal and/or the Cribhouse, ensure that the steps listed within the procedure are followed.

Attachment 4

Routine Crib House Inspection Log
Warmer Months

Barney Davis

Routine Crib House Inspection Log - Warmer Months

(*April 1st and lasting until November 30th*)

Date	Insp #	Start Time		End Time		Visibility Impairment(s)		# of Turtles Observed	Inspector Initial
	1		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Fog/Haze	☐ Precipitation ☐ Night/Dark		
	2		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Fog/Haze	☐ Precipitation ☐ Night/Dark		
	1		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Fog/Haze	☐ Precipitation ☐ Night/Dark		
	2		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Fog/Haze	☐ Precipitation ☐ Night/Dark		
	1		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Fog/Haze	☐ Precipitation ☐ Night/Dark		
	2		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Fog/Haze	☐ Precipitation ☐ Night/Dark		
	1		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Fog/Haze	☐ Precipitation ☐ Night/Dark		
	2		☐ am ☐ pm		☐ am ☐ pm	☐ None ☐ Fog/Haze	☐ Precipitation ☐ Night/Dark		

If a turtle(s) is observed in the intake canal and/or the Cribhouse, ensure that the steps listed within the procedure are followed.

Attachment 5

Key Contact Information

Barney Davis
Sea Turtle Reporting Key Contacts

Group/Agency	Role	Primary	Misc.
Barney Davis Control Room	Report, Document	**(361) 939-5056**	Site Employee
Texas Parks & Wildlife Hatchery	Collect & Hold	**(361) 939-7784**	
US Fish & Wildlife	Document, Tag, & Release	**(361) 876-8462**	
US Fish & Wildlife	After Hours Stranding Pager	**(361) 876-8462**	**PAGER** Someone On-Call 24/7
Padre Island NS Division of Sea Turtle Science & Recovery	Transport Off-Site & Rehabilitate	**(361) 949-8173** **Ext 266**	

Attachment 6

Misc. Information
&
Guidance Documents

ATTACHMENT B
EMAIL CORRESPONDENCE REGARDING TURTLE COLLECTION PROCEDURES BETWEEN C. GARCIA-RIOS (TALEN EHS) AND L. GUILLEN (NATIONAL PARK SERVICE, DIVISION OF SEA TURTLE SCIENCE AND RECOVERY)

Hailey Cofty

From: Garcia-Rios, Cecilia <cgarciarios@topazpowergroup.com>
Sent: Thursday, April 7, 2016 2:24 PM
To: Alison Davis; Hailey Cofty
Subject: FW: Barney Davis Power Plant Turtles

TALEN ENERGY

Cecilia Garcia-Rios • Environmental Director Jade Operations
Topaz Power Group • (956) 763-3510 cgarciarios@topazpowergroup.com
Barney Davis Energy Center • Laredo Energy Center • Nueces Bay Energy Center

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From: Guillen, Lucia [mailto:lucia_guillen@nps.gov]
Sent: Wednesday, December 09, 2015 2:48 PM
To: Garcia-Rios, Cecilia
Cc: Cynthia Rubio
Subject: Re: Barney Davis Power Plant Turtles

Ms. Rios,

I verified with the T.P.W.D Hatchery and they will go and pick up any turtles that you get. Just call Rodney or Ruben at 939-7784 to get them. If you cannot contact their staff or if it is after hours please put the animal in a box or container without water place it in a secure area inside and call our stranding pager 361-876-8462 anytime. We will make arrangements to pick up the animal as soon as possible.

Thank you,

On Wed, Dec 9, 2015 at 10:15 AM, Garcia-Rios, Cecilia <cgarciarios@topazpowergroup.com> wrote:

Got it. thanks.

TALEN ENERGY

Cecilia Garcia-Rios • Environmental Director Jade Operations
Topaz Power Group • (956) 763-3510 cgarciarios@topazpowergroup.com
Barney Davis Energy Center • Laredo Energy Center • Nueces Bay Energy Center

---

From: Guillen, Lucia [mailto:lucia_guillen@nps.gov]
Sent: Wednesday, December 09, 2015 10:12 AM
To: Garcia-Rios, Cecilia
Subject: Barney Davis Power Plant Turtles

Test email.

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****

Lucia Guillen

Biological Science Technician

Division of Sea Turtle Science and Recovery

Padre Island National Seashore

National Park Service

http://www.nps.gov/pais/

LIKE US on FACEBOOK at

www.facebook.com/nps.pais.seaturtles

Address for mail:

Padre Island National Seashore

P.O. Box 181300

Corpus Christi, TX 78480-1300

Address for express mail services:

Padre Island National Seashore

Ranger Station

20301 Park Road 22

Corpus Christi, TX 78418

Phone: (361) 949-8173 ext. 258

Fax: (361) 949-9134

E-mail: lucia_guillen@nps.gov

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Lucia Guillen
Biological Science Technician
Division of Sea Turtle Science and Recovery
Padre Island National Seashore
National Park Service
http://www.nps.gov/pais/
LIKE US on FACEBOOK at
www.facebook.com/nps.pais.seaturtles

Address for mail:
Padre Island National Seashore
P.O. Box 181300
Corpus Christi, TX 78480-1300

Address for express mail services:
Padre Island National Seashore
Ranger Station

20301 Park Road 22
Corpus Christi, TX 78418

Phone: (361) 949-8173 ext. 258
Fax: (361) 949-9134
E-mail: lucia_guillen@nps.gov

****

FIGURE 1
FACILITY LOCATION

OUTFALL 001
POINT OF DISCHARGE

COOLING RESERVOIR

TPWD - HACHERY
CCA MARINE DEVELOPMENT
CENTER LOCATION

COOLING WATER
OUTLET

PROPERTY
BOUNDARY

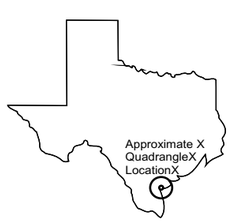
FACILITY

LAGUNA MADRE
INTAKE

ENVIRONMENTAL PROFESSIONALS

The WCM Group, Inc.3
P.O. Box 3247
Humble, TX 77347-3247
(281) 446-7070 Fax (281) 446-3348

Location on 7.5 Minute USGS Topo Quads: Pita Island & Oso Creek, Texas; Zone 15



FACILITY LOCATION MAP3

BARNEY DAVIS, LLC 3
Barney Davis Energy Center 3
Corpus Christi, Nueces County, Texas 3

FIGURE
1

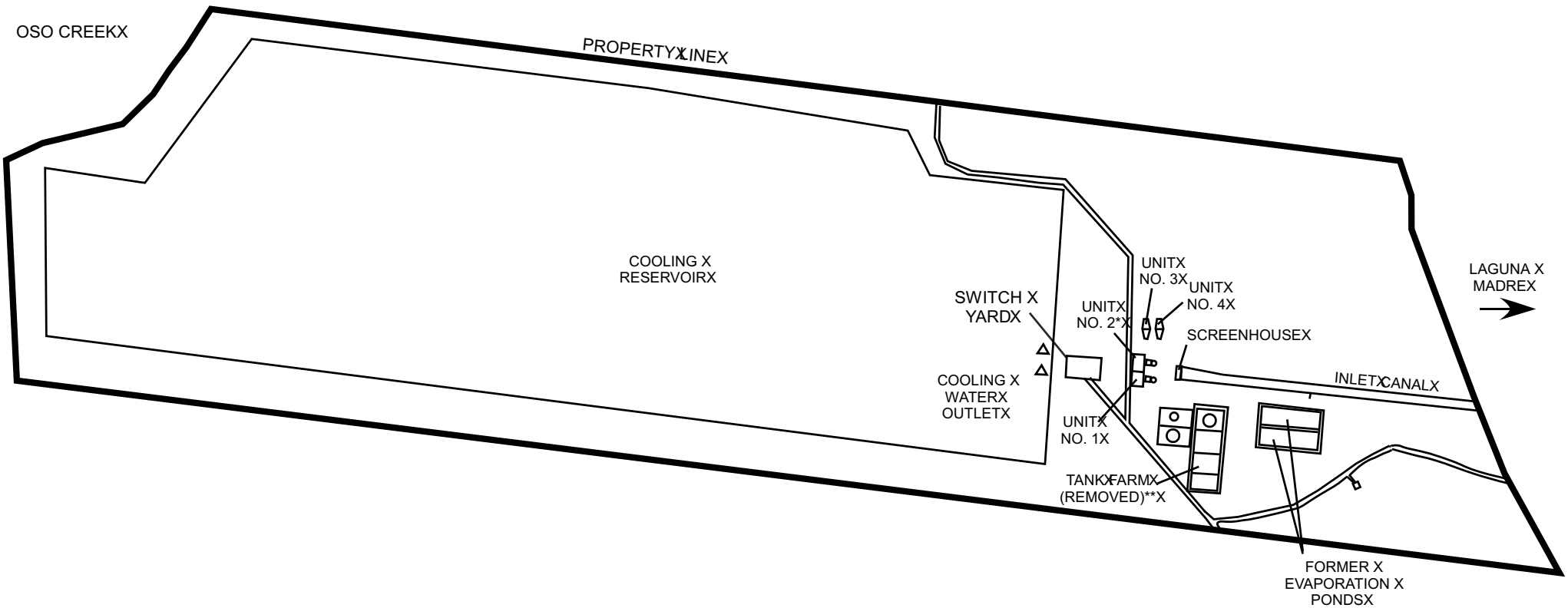
DRAWN BY	AKD/HJC3
DATE	12/10/20153
REV. DATE:	6/26/2020
DRAWING ID:	Y:\BMD\CC\ITA18_21481\15931680093

SCALE 1:24,0003

Approx. Scale in Feet3
03 10003 20003

N

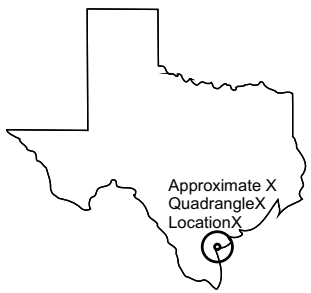
FIGURE 2
FACILITY LAYOUT



ENVIRONMENTAL PROFESSIONALS

The WCM Group, Inc.
P. O. Box 3247
Humble, TX 77347-3247
(281) 446-7070 Fax (281) 446-3348

Location on 7.5 Minute USGS Topo Quads: Pita Island & Oso Creek NE, Texas; Zone 15



FACILITY LAYOUT MAP 6

BARNEY DAVIS, LLC 6
Barney Davis Energy Center 6
Corpus Christi, Nueces County, Texas 6

FIGURE 6

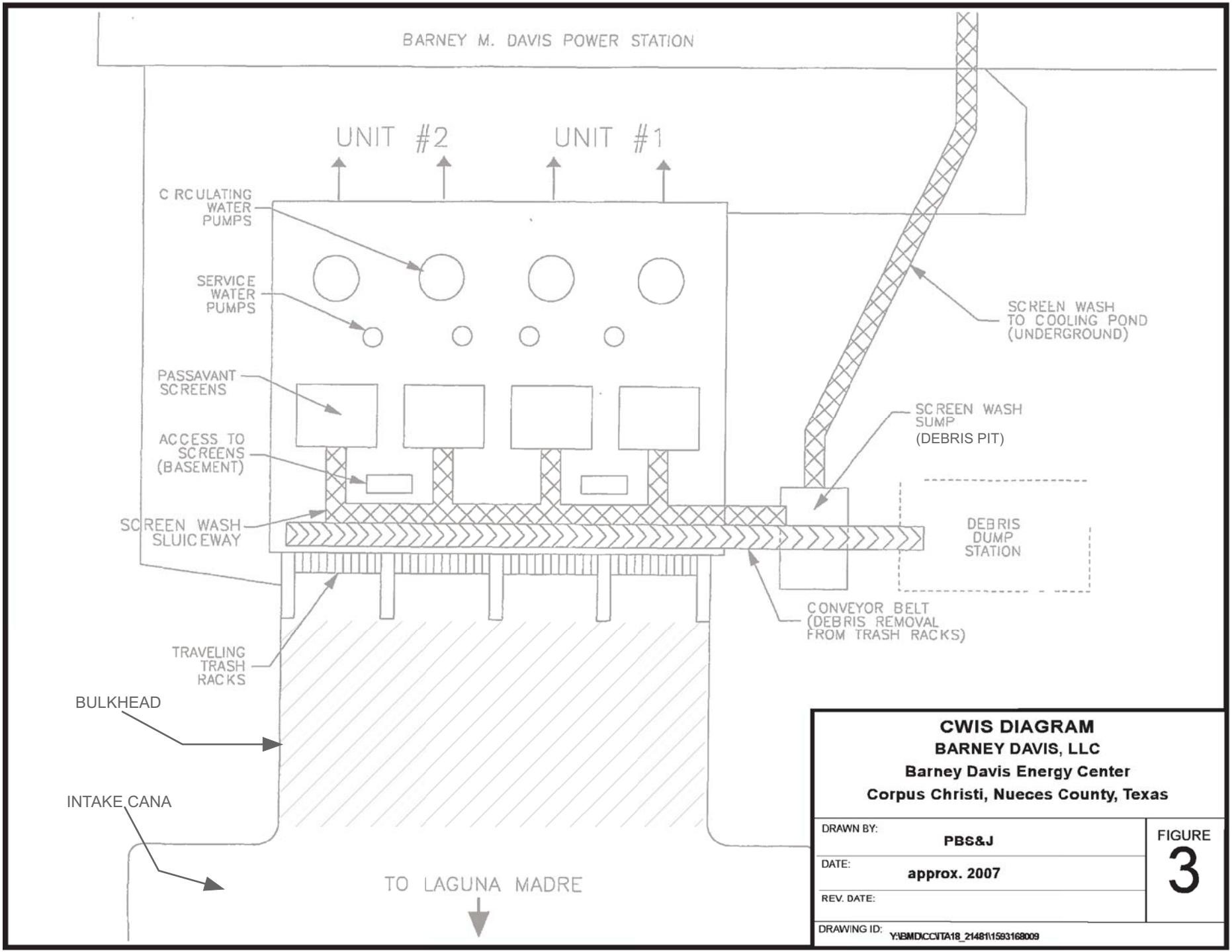
2X

DRAWN BY:	LLS/HJC6
DATE	10/13/2006
REV. DATE:	6/26/20206
DRAWING ID:	Y:\BMD\CC\ITA18_21481\1593168009

Not to Scale

N

FIGURE 3
CWIS DIAGRAM



CWIS DIAGRAM

BARNEY DAVIS, LLC

Barney Davis Energy Center

Corpus Christi, Nueces County, Texas

DRAWN BY:	PBS&J	FIGURE 3
DATE:	approx. 2007	
REV. DATE:		
DRAWING ID:	Y:\BMD\CC\TA18_21481\1593168009	