Public Notice

US Army Corps of Engineers
Philadelphia District
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390
ATTN: CENAP-OP-R

Public Notice No. **CENAP-OP-R-2017-661**
Date **October 16, 2017**
Application No. **CENAP-OP-R-2017-661**
File No. **CENAP-OP-R-2017-661-23**
In Reply Refer to: **REGULATORY BRANCH**

This District has received an application for a Department of the Army permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344).

The purpose of this notice is to solicit comments and recommendations from the public concerning issuance of a Department of the Army permit for the work described below.

APPLICANT: Delaware Division of Fish and Wildlife, c/o Mr. John Clark

AGENT: Century Engineering, Inc., c/o Mr. T.J. Austen

WATERWAY: Little River

LOCATION: The Little Creek Boating Access Facility project is located in the Town of Little Creek, Kent County, Delaware. The site is situated northeast of the intersection of South Little Creek Road and Bayside Drive (Route 9) at Tax Map Parcel 2-00-07800-01-0800-00001.

ACTIVITY: The Delaware Division of Fish and Wildlife (DFW) has applied for a Department of the Army permit to construct a public boating access facility on the Little River at the above referenced location.

Project Features: The Little Creek Boat Launch will involve the creation of a concrete boat launch with associated courtesy dock, a recreational fishing pier, and fire/enforcement boat docking facility on and adjacent to the Little River. A paved parking surface will provide spaces for single, trailering, and fire/enforcement vehicles. In the fire/enforcement area, two concrete pads will be constructed for use by fire/enforcement personnel. Additionally, an above ground fuel storage tank for fire/enforcement vessels will be placed on one of the concrete pads adjacent to the fire/enforcement dock (see attached plans E-1 through E-12).

Method of Construction: The site would be cleared of existing vegetation and graded where parking and boat launch facilities are planned. The method of construction would utilize standard paving equipment (e.g. excavators, dozers, dump trucks, pavers, vibratory rollers, etc.). The piers/docks and pilings would be installed by mechanical drivers to a depth determined by soil borings. Such driving would occur by land where practical and likely by waterborne equipment. The landward portions of the piers/docks would be placed on reinforced concrete abutments. A transition zone from land-based gangways to floating docks will be spanned by an ADA compliant (30-foot long) fluctuating metal gangway. Floating docks would be allowed to rise and fall with tide cycles. The boat ramp would be

concrete, cast-in-place, and supported on 10" timber piles. Steel sheet piles would be driven alongside the ramp to prevent lateral movement and scouring. The stream bank would be graded to reduce sloughing. Proper Delaware Erosion and Sediment Control Standards would be utilized throughout the construction process.

Permanent and Temporary Wetland Impacts:

ID	Impact Type	Resource Type	Area (AC.)	Area (SF)	Impact Description
1	Permanent	Section 10–EEM	0.067805	2953.59	Pavement
2	Permanent	Section 10–EEM	0.013819	601.96	Fill-Grading
3	Temporary	Section 10–EEM	0.013013	566.85	Grading
4	Permanent	Section 10–EEM	0.252252	10988.1	Pavement
5	Permanent	Section 10–EEM	0.020191	879.52	Boat Ramp
6	Permanent	Section 10–EEM	0.005165	224.99	Concrete Pad
7	Permanent	Section 10–EEM	0.038377	1671.7	Fill-Grading
8	Permanent	Section 10–EEM	0.000826	35.98	Concrete Pad
9	Temporary	Section 10–EEM	0.016876	735.12	Grading
10	Temporary	Section 10–EEM	0.144633	6300.21	Grading
11	Temporary	Section 10–EEM	0.055559	2420.15	Construction Access
12	Permanent	Section 10–EEM	0.007819	340.6	Fill-Grading
13	Permanent	Section 10–EEM	0.000003	0.13	Pavement
14	Permanent	Section 10–EEM	0.000024	1.05	Pavement

Total Permanent Wetlands Impacts:	0.4063 AC.	17,698.45 SF
Total Temporary Wetlands Impacts:	0.2301 AC.	10,023.16 SF

Structures In/Over Section 10 Resources and Fills below MHW:

ID (Location-Description)	Quantity	Dimensions in Section 10 Resource	Resource Impact	Impact Description
Fishing Pier-Piles	6	10" Diameter, depth TBD by soil borings.	EEM wetland and in/below MHW	Timber pile support for gangway/floating dock.
Fishing Pier-Footing	1	1.29 CY	EEM wetland	Concrete abutment for gangway.
Fishing Pier-Gangway	—	30' x 8' and 40' x 8'	Over EEM wetland and MHW	Aluminum gangway, two sections. 40' section fixed.
Fishing Pier-Float Dock	—	80' x 8'	Over MHW	Floating dock, fixed to timber pile.
Enforcement-Piles	5	10" Diameter, depth TBD by soil borings	In/below MHW	Timber pile support for floating dock.

Enforcement-Footing	1	1.29 CY	EEM wetland	Concrete abutment for gangway.
Enforcement-Gangway	—	42’ x 8’ and 30’ x 8’	Over EEM wetland and MHW	Aluminum gangway, two sections. 42’ section fixed.
Enforcement-Float Dock	—	80’ x 10’	Over MHW	Floating dock, fixed to timber pile.
Boat Ramp-Piles	21	10” Diameter, depth TBD by soil borings	EEM wetland and in/below MHW	Timber pile support foundation for boat ramp.
Boat Ramp-Ramp Structure	—	56.10 CY	Below MHW	Stone base, cast-in-place concrete ramp.
Boat Ramp-Sheet Pile	—	143.5 LF x 0.375” thickness, depth TBD	In/Below MHW	Above MLW, top elevation will be 4.5 ft NAVD 88. Below MLW, sheet pile will be flush with ramp.
Courtesy Dock-Gangway	—	40’ x 8’	Over MHW	Floating Dock. Above MLW, dock will rest on boat ramp.
Courtesy Dock-Piles	2	10” Diameter, depth TBD by soil borings	In/below MHW	Timber pile support for floating dock.
Courtesy Dock-Float Dock	—	25’ x 8’	Over MHW	Floating dock, fixed to timber pile.

PURPOSE: The project involves the installation of three (3) docks/piers, a single concrete boat launching ramp, parking facilities, two concrete pad sites, and above ground fuel storage tank along the southern bank (right descending bank) of the Little River (a tidal waterway) in Little Creek, Delaware. Currently there are no boat launching facilities located on the Little River. The proposed activity would provide recreational boating access to the Little River, recreational fishing access along Little River, and will serve public safety as a docking facility for fire and law-enforcement vessels. The stated purpose of the project is to provide public, recreational and emergency fire and law enforcement access to navigable waters for navigational purposes.

On April 10, 2008, the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency published a *Final Rule on Compensatory Mitigation for the Losses of Aquatic Resources* (33 CFR 325 and 332 and 40 CFR 230). The rule took effect on June 9, 2008. In accordance with 33 CFR Part 325.1(d)(7) of the rule, the applicant has stated that the proposed project has been designed to avoid and minimize adverse effects on the aquatic environment to the maximum extent practicable, and has further documented that compensatory mitigation is not necessary. The following aspects and features of the project demonstrate the applicant’s efforts in this regard.

Avoidance and Minimization: The project cannot be avoided entirely because it is, by its nature, a water-dependent activity. Given the location and nature of the project, complete avoidance of impacts to waters is impracticable. Permanent impacts to waters of the United States are necessary for the construction of the docks/piers and boat ramp, and to provide parking access for vehicles utilizing the facilities. Much of the surrounding marsh is dominated by *Phragmites australis* which provides limited value to saltmarsh dependent wildlife. Care has been taken to determine and limit the amount of impacts to tidal wetlands. The selected site contains the greatest amount of uplands

along the entire navigable portion of Little River that could provide boat launching access. The selected site was previously filled and paved decades ago for commercial activities. The current *phragmites*-dominated wetland vegetation has colonized this paved portion and represents the large majority of the wetland area to be disturbed.

Alternative locations would result in greater impacts to waters of the United States. A no-build option would not achieve the project goal and may increase risks to public safety without the development of a docking facility for fire and enforcement vessels.

As noted above, design considerations include impacts to wetlands only to the extent necessary to achieve parking, boating access, and fire/law-enforcement docking facilities. The project was revised through consultation with state and federal agencies to compress and compact the project features. The docks/piers extend only the amount necessary into the waterway. A single-vehicle parking area was relocated away from an ecologically important *Spartina patens* marsh.

Bank grading will only occur in selected areas where docks and piers are proposed. The proposed grading would help eliminate sloughing and provide a transition zone for tidal dependent vegetation to self-restore.

Temporary construction access through estuarine emergent wetlands would be via 12-foot-wide timber matting to reduce load impact on the marsh. Waterborne equipment will be utilized wherever practical to reduce temporary construction impacts to the surrounding marsh.

The DFW has coordinated the proposed project activities with the Corps' Section 408 program representative, who has determined that the work would have no effect on federally authorized projects (i.e., Little River Navigation Project).

Mitigation Plan: A mitigation plan was prepared by the Delaware Division of Fish and Wildlife (DFW). The project is anticipated to impact 0.4456-acre of jurisdictional wetlands, of which 897.20 Sq. Ft. (0.0206 acre) is *Spartina*-dominated marsh. The remaining wetlands to be impacted are relatively low-value as they are primarily fringe wetlands dominated by *Phragmites* and located in an area which was paved in the past for commercial activities (i.e., the *Phragmites* plants are growing through the old asphalt and fill). On February 14, 2017, the DFW met with USACE staff to discuss the project and potential mitigation sites. The proposed site for mitigation is an old, unused dredge disposal site along the Little River (right descending bank), located on State Wildlife Area lands approximately one-quarter mile downstream of the proposed launch ramp site. The old disposal site is approximately 6 acres in size.

In 2001, approximately 2.5 acres of the old disposal site were converted into *Spartina altiniflora* tidal marsh to compensate for impacts associated with a permit issued to the town of Little Creek (CENAP-OP-R-2001-723). The wetland was created by excavating two permanent breaches in the dike separating the disposal site from the tidal waters of the Little River, thereby allowing the tidal cycle to enter and exit the site on a daily basis. This previous compensation area now consists of 2.5 acres of dense and healthy *Spartina alterniflora* marsh, with the exception of a few patches of *Phragmites*.

The remaining area (approximately 3.5 acres) of the old disposal site is currently an upland landscape, vegetated by a mixture of early successional herbs, shrubs and young red cedar trees.

To compensate for the unavoidable wetland impacts associated with construction of the proposed boat launching facility, the Division of Fish and Wildlife proposes to create an additional 0.4456 acre of *Spartina* marsh within the old disposal site immediately adjacent to the previously restored marsh. This would be accomplished by excavating a portion of the old dredged material from the upland portions of the disposal site. The intention is to restore the ground surface of the new creation area to the elevation of the adjacent, healthy *Spartina* marsh. Rather than have a completely flat marsh surface, the DFW proposes to include micro-topography to the new wetland, thereby encouraging microclimates to develop within the creation area. The excavated material would be placed, graded and stabilized to match the adjacent upland areas. The construction plan figures show that the elevation of the existing *Spartina* marsh is between 0.9 and 1.3m. To achieve matching elevations within the new marsh, the DFW would remove approximately 1600 cubic yards of upland soils, resulting in the creation of 0.4456 acres of new *Spartina altiniflora* marsh. All side slopes would be graded to a 3:1 slope to minimize erosion back into the new wetland area.

Due to the close proximity of the existing *Spartina* marsh, the DFW is not proposing to conduct any vegetative planting at the wetland creation site. It should be noted that a ready supply of *Spartina* seed is available within the adjacent marsh and would be delivered to the new site by the daily tidal cycle. The DFW has a decided preference for natural recruitment of native seed over nursery plugs. However, should natural recruitment fail to occur within one year of creation of the new site, the DFW proposes to plant the site using 500 *Spartina alterniflora* plugs.

The upland portions of the site would be stabilized in conformance with DelDOT Standard Specifications for Road and Bridge Construction Section 734. The upland stabilization seed shall be the mix specified for Permanent Grass.

The existing patches of *Phragmites* within the upland portions of the site and those within the existing *Spartina* marsh would be sprayed and burned by the DFW in order to control the spread of this species.

It should also be noted that a buried gas pipeline passes through the wetland creation area (southwest corner to northeast corner). The DFW proposes to coordinate its activities with the pipeline owner to establish a narrow pipeline buffer zone prior to excavation. In order to protect the pipeline in situ, no excavation would occur within the buffer.

A preliminary review of this application indicates that the proposed work would not affect listed species or their critical habitat pursuant to Section 7 of the Endangered Species Act as amended. As the evaluation of this application continues, additional information may become available which could modify this preliminary determination.

The decision whether to issue a permit will be based on an evaluation of the activity's probable impact including its cumulative impacts on the public interest. The decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue from the work must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the work will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs and welfare of the

people. A Department of the Army permit will be granted unless the District Engineer determines that it would be contrary to the public interest.

The Corps of Engineers is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Comments on the proposed work should be submitted, in writing, within 15 days to the District Engineer, U.S. Army Corps of Engineers, Philadelphia District, Wanamaker Building, 100 Penn Square East, Philadelphia, Pennsylvania 19107-3390.

Review of the National Register of Historic Places indicates that no registered properties or properties listed as eligible for inclusion therein are located within the permit area of the work. The District has determined that the project will have no effect on properties eligible for or listed in the National Register of Historic Places.

Essential Fish Habitat: The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act 1996 (Public Law 104-267), requires all Federal agencies to consult with the National Marine Fisheries Service on all actions, or proposed actions, permitted, funded, or undertaken by the agency that may adversely effect Essential Fish Habitat (EFH).

Effects of the Project: The project is located in Essential Fish Habitat identified on sheet 70 of the *Guide to Essential Fish Habitat Designations in the Northeastern United States, Volume IV: New Jersey and Delaware*, dated March 1999. The following managed species of fish have been listed in the guide as occurring in the vicinity of the project: winter flounder (*Pleuronectes americanus*), windowpane flounder (*Scophthalmus aquosus*), red hake (*Urophycis chuss*), bluefish (*Pomatomus saltatrix*), Atlantic sea herring (*Clupea harengus*), long finned squid (*Loligo pealei*), short finned squid (*Illex illecebrosus*), Atlantic butterfish (*Peprilus triacanthus*), summer flounder (*Paralicthys dentatus*), scup (*Stenotomus chrysops*), black sea bass (*Centropristus striata*), surf clam (*Spisula solidissima*), ocean quahog (*Artica islandica*), spiny dogfish (*Squalus acanthias*), Atlantic mackerel (*Scomber scombrus*), king mackerel (*Scomberomerus cavalla*), Spanish mackerel (*Scomberomerus maculatus*), cobia (*Rachycentron canadum*), sandbar shark (*Carcharhinus obscurus*), sand tiger shark (*Odontaspis Taurus*), and dusky shark (*Carcharhinus plumbeus*).

Analysis of the Effects: The proposed work would occur in a small area of waters within a federally authorized navigational channel (Little River) subject to seasonal boating activity, bank erosion and high sediment rates. In addition, the project site is located approximately three miles upstream from the Delaware Bay. For most of that distance, the Little River is uniformly shallow (approximately 2 feet or less at low tide), and has a large shoal at its mouth, discouraging entrance by the above-mentioned fish species. For these reasons the work area is an unlikely spawning or nursery area for the managed species. Consequently, concentrations of the sessile life stages (eggs and larva) of the

listed species are not expected to be within the work area. The pelagic adults and juveniles of the listed species are highly mobile and capable of avoiding impacts associated with the work.

Corps of Engineers View: Based upon the above analysis, the Corps of Engineers has determined that the proposed project would not have substantial direct, indirect, site-specific, or habitat-wide impacts on EFH, or upon the managed species and their life stages listed in the above referenced

EFH guide, either individually, cumulatively or synergistically. The proposed project would not eliminate, diminish, nor disrupt the functions of EFH.
Proposed Mitigation for EFH: Because the impacts of the proposed work on EFH have been determined to be minor, the Corps of Engineers has determined that mitigation measures are not necessary.

In accordance with Section 307(c) of the Coastal Zone Management Act of 1972, applicants for Federal Licenses or Permits to conduct an activity affecting land or water uses in a State's coastal zone must provide certification that the activity complies with the State's Coastal Zone Management Program. The applicant has stated that the proposed activity complies with and will be conducted in a manner that is consistent with the approved State Coastal Zone Management (CZM) Program. No permit will be issued until the State has concurred with the applicant's certification or has waived its right to do so. Comments concerning the impact of the proposed and/or existing activity on the State's coastal zone should be sent to this office, with a copy to the State's Office of Coastal Zone Management.

In accordance with Section 401 of the Clean Water Act, a Water Quality Certificate is necessary from the State government in which the work is located. Any comments concerning the work described above which relate to Water Quality considerations should be sent to this office with a copy to the State.

The evaluation of the impact of the work described above on the public interest will include application of the guidelines promulgated by the Administrator, U.S. Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act.

Any person may request, in writing, to the District Engineer, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for a public hearing shall state in writing, with particularity, the reasons for holding a public hearing.

Additional information concerning this permit application may be obtained by calling John Brundage at 302-736-9763, or by writing this office at the above address.

Edward E. Bonner
Chief, Regulatory Branch

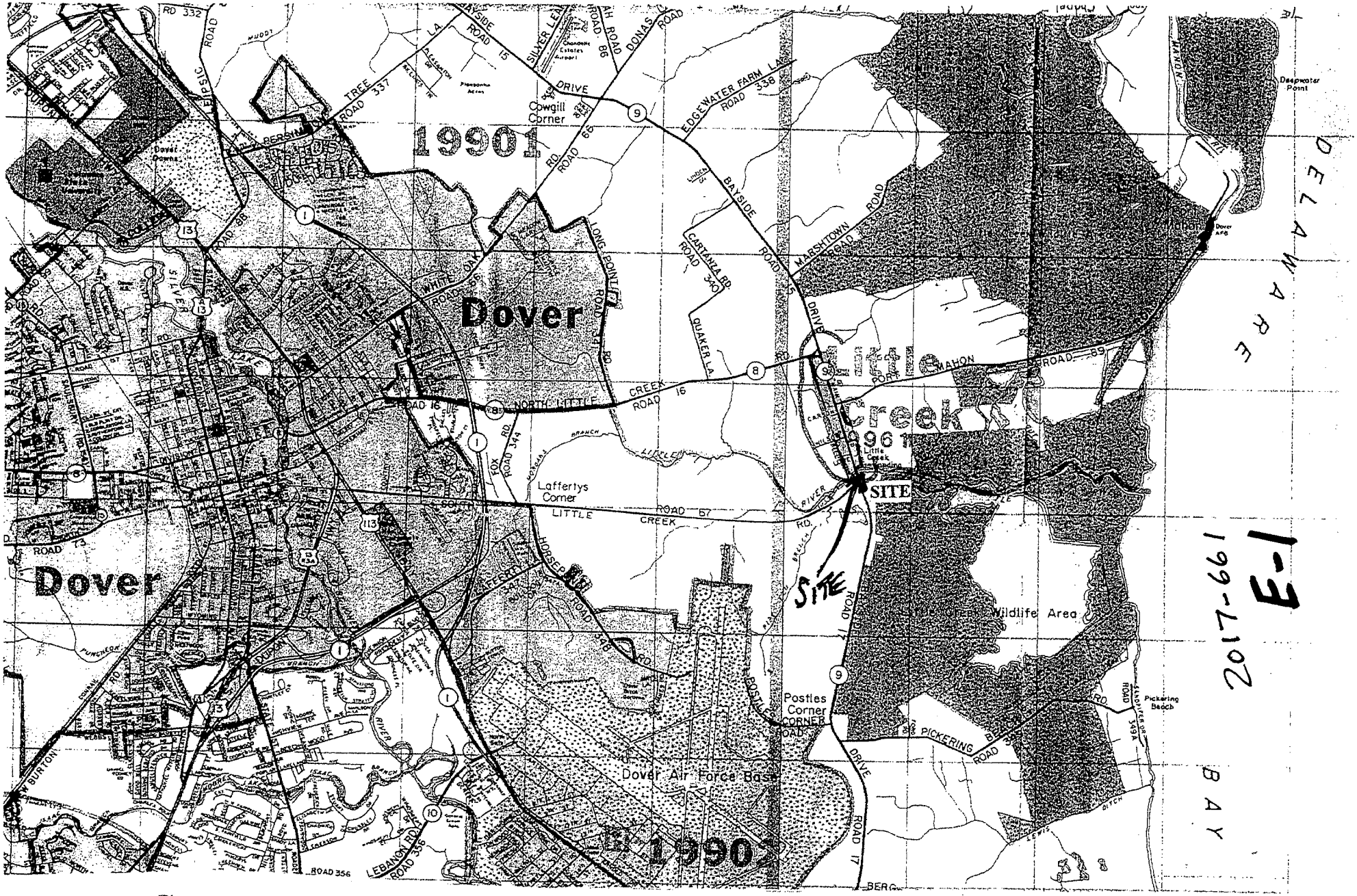
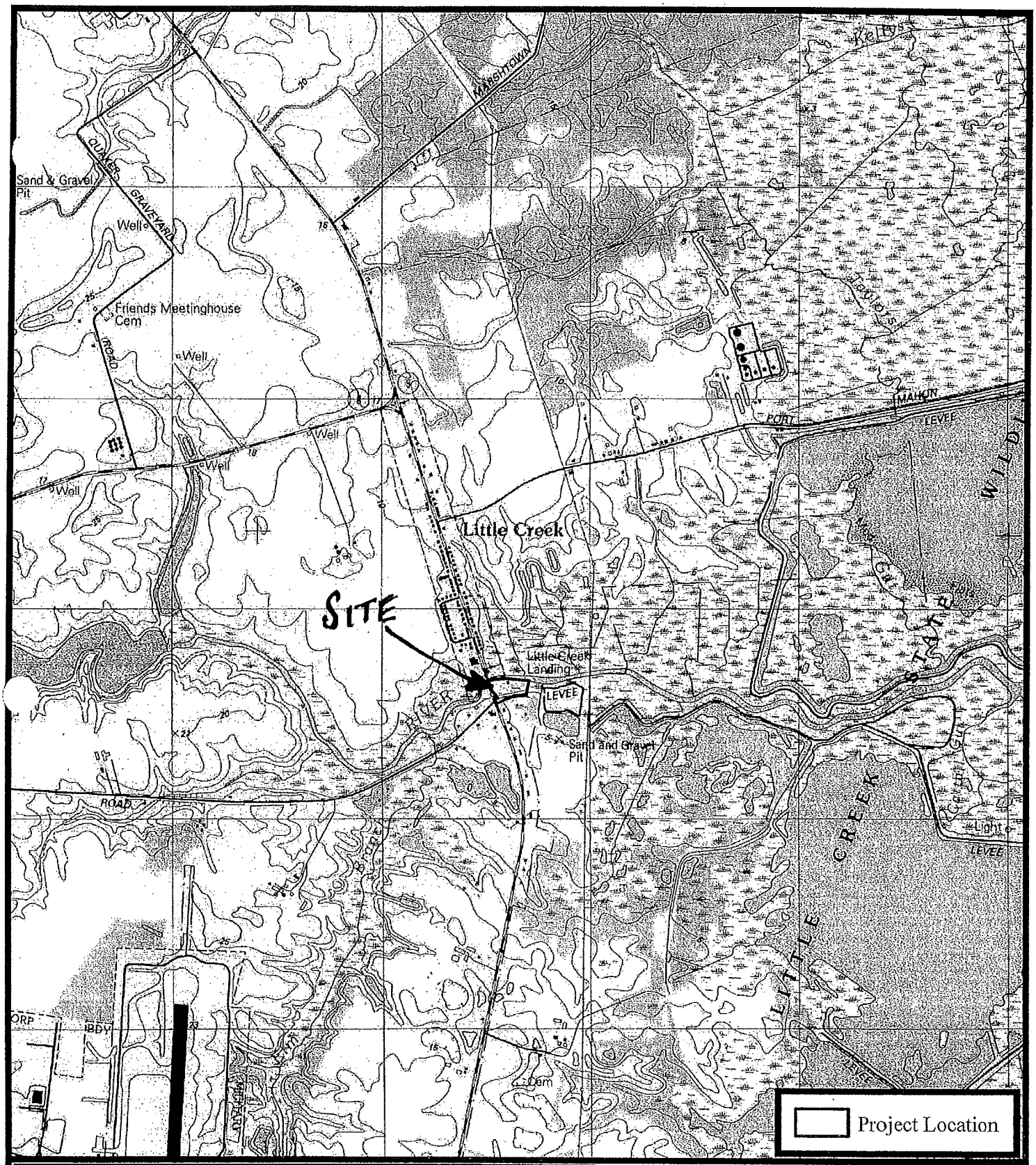


Figure 2. Map of Little Creek, Kent County, Delaware, showing site location, Bundek Property (2.7 acres), Little Creek Wildlife Area, Bayside Drive, Little Creek. Directions to site (From DNREC offices, Dover, DE): Route 8 (Division Street/North Little Creek Road) westbound to Route 9 (Bayside Drive); turn right (southbound) onto Route 9;



CENTURY ENGINEERING
134 North DuPont Highway
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2017-661
E-2

USGS TOPOGRAPHIC QUADRANGLE MAP

LITTLE CREEK BOAT RAMP

KENT COUNTY, DELAWARE

USGS Topo Quad: Little Creek (DE)
Latitude: 39° 09' 36"N
Longitude: 75° 26' 39"W
Approx. Project Area: 3.65 +/- acres
Elevation: ~0 - 5 feet
Scale: 1:24,000
Source: http://resources.arcgis.com/

ID	Impact Type	Jurisdiction	Activity	Area (Acres)
1	Permanent	Federal	Pavement	0.057805
2	Permanent	Federal	Fill-Grading	0.013419
3	Temporary	Federal	Grading	0.013013
4	Permanent	Federal	Pavement	0.252252
5	Permanent	Federal	Boat Ramp	0.020191
6	Permanent	Federal	Concrete Pad	0.005165
7	Permanent	Federal	Fill-Grading	0.038377
8	Permanent	Federal	Concrete Pad	0.000826
9	Temporary	Federal	Grading	0.016876
10	Temporary	Federal	Grading	0.144633
11	Temporary	Federal	Construction Access	0.055559
12	Permanent	Federal	Fill-Grading	0.007819
13	Permanent	Federal	Pavement	0.009003
14	Permanent	Federal	Pavement	0.000024
			Total Permanent Impacts	0.404281 Ac.
			Total Temporary Impacts	0.230081 Ac.

20 10 0 20 40 60 Feet
1 inch = 20 feet

Legend

Project Features

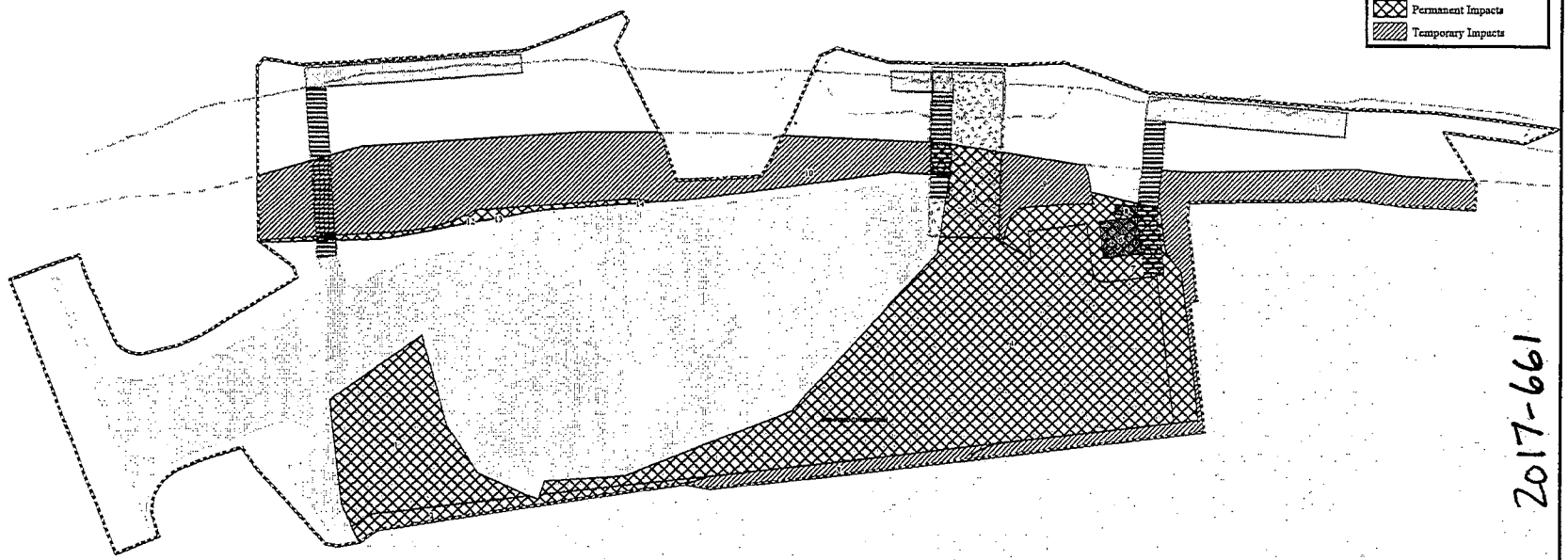
- Parcel
- Limits of Construction
- Pavement
- Concrete Pad
- Deck
- Gangway
- Sheet Pile
- Boat Ramp

Environmental Features

- Federal Wetlands (EEM)
- Mean High Water (DEOS)
- Mean Low Water (DEOS)
- Proposed Mean Low Water

Impact Features

- Wetland Grading Limits
- Permanent Impacts
- Temporary Impacts



2017-661

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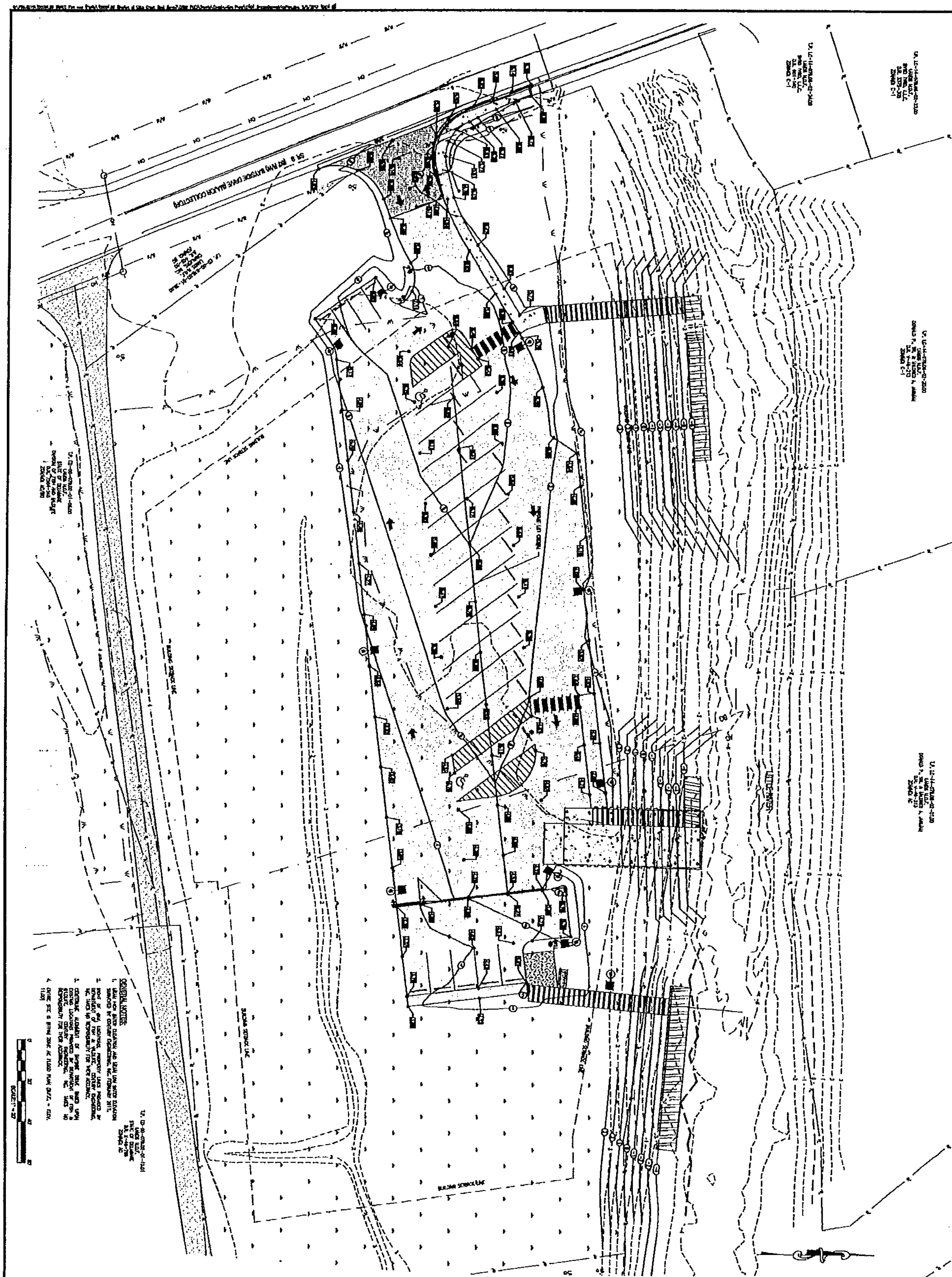
LITTLE CREEK BOATING ACCESS FACILITY

FEDERAL WETLANDS IMPACTS MAP

KENT COUNTY, DELAWARE

E-3

Project Manager:	AS
Drawn:	TA
Job Number:	155091.03
Revisions:	NONE



CONSTRUCTION PLANS

FOR

DELAWARE DIVISION OF FISH & WILDLIFE

LITTLE CREEK BOAT RAMP

BAYSIDE DRIVE (SR9, K17), LITTLE CREEK, DELAWARE

LITTLE CREEK HUNDRED, KENT COUNTY, DELAWARE

SHEET TITLE: SITE GRADES AND GEOMETRICS PLAN

DIVISION OF FISH AND WILDLIFE 60% SUBMISSION

MAY 3, 2017

DRAWN	CHK'D/DESIGNER
DLD	AES
SCALE: 1" = 20'	SHEET NO. C104
PROJECT NO. 15301.03	

REVISIONS

DATE	DESCRIPTION	APPROVAL
3/20/17	REVISED KENT COUNTY COMMENTS	

E-4

CENTURY ENGINEERING

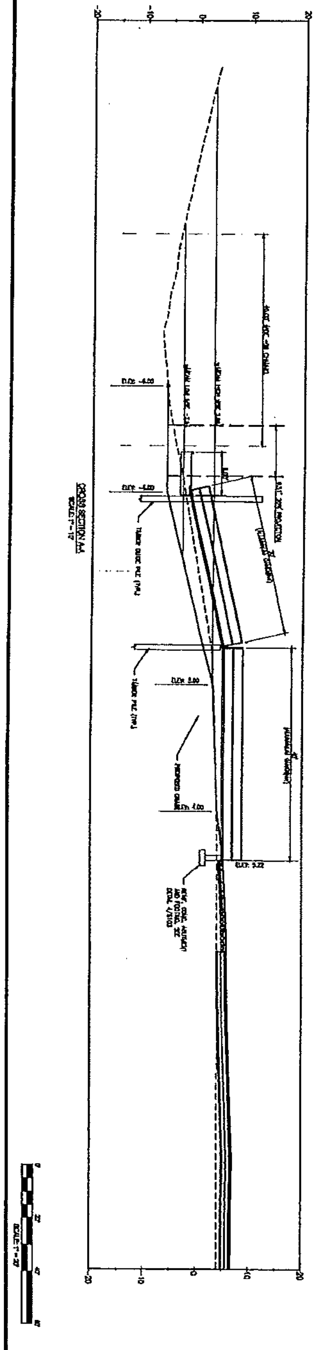
CONSULTING ENGINEERS ■ SURVEYORS

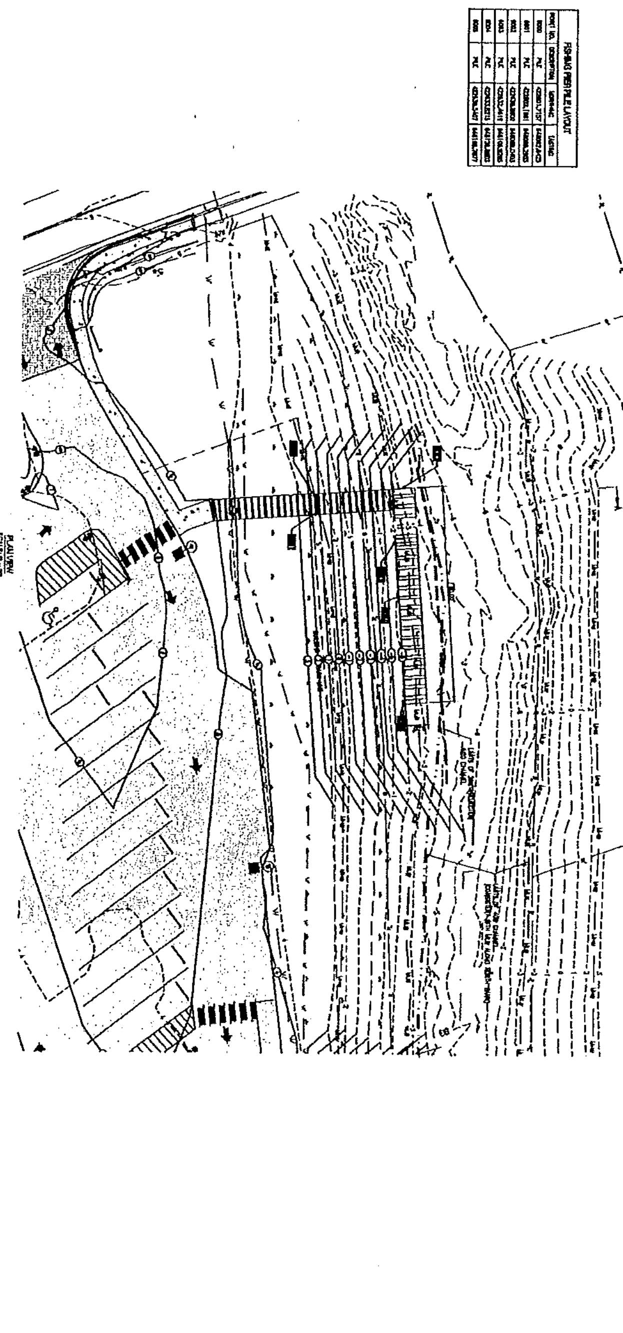
ADDRESS:
4134 NORTH DUPONT HIGHWAY
DOVER, DE 19901
P: (302) 734-9188 F: (302) 734-4589

WEBSITE:
www.centuryeng.com

EMAIL:
cei@centuryeng.com

2017-661





2017-661

DIVISION OF FISH AND WILDLIFE 60% SUBMISSION MAY 5, 2017	SHEET TITLE: CROSS SECTION - FISHING PIER	PROJECT: **CONSTRUCTION PLANS** FOR DELAWARE DIVISION OF FISH & WILDLIFE LITTLE CREEK BOAT RAMP BAYSIDE DRIVE (SR9, K17), LITTLE CREEK, DELAWARE LITTLE CREEK HUNDRED, KENT COUNTY, DELAWARE	DESCRIPTION / ADDENDUM / DATE	REVISIONS: 5/24/17 REVISED KENT COUNTY COMMENTS	CENTURY ENGINEERING CONSULTING ENGINEERS ■ SURVEYORS

DRAWN: DLD CHK'D/DESIGNER: AES
SCALE: AS NOTED SHEET NO. S101
PROJECT NO. 15500.03

E-5

ADDRESS:
4134 NORTH DUPONT HIGHWAY
DOVER, DE 19901
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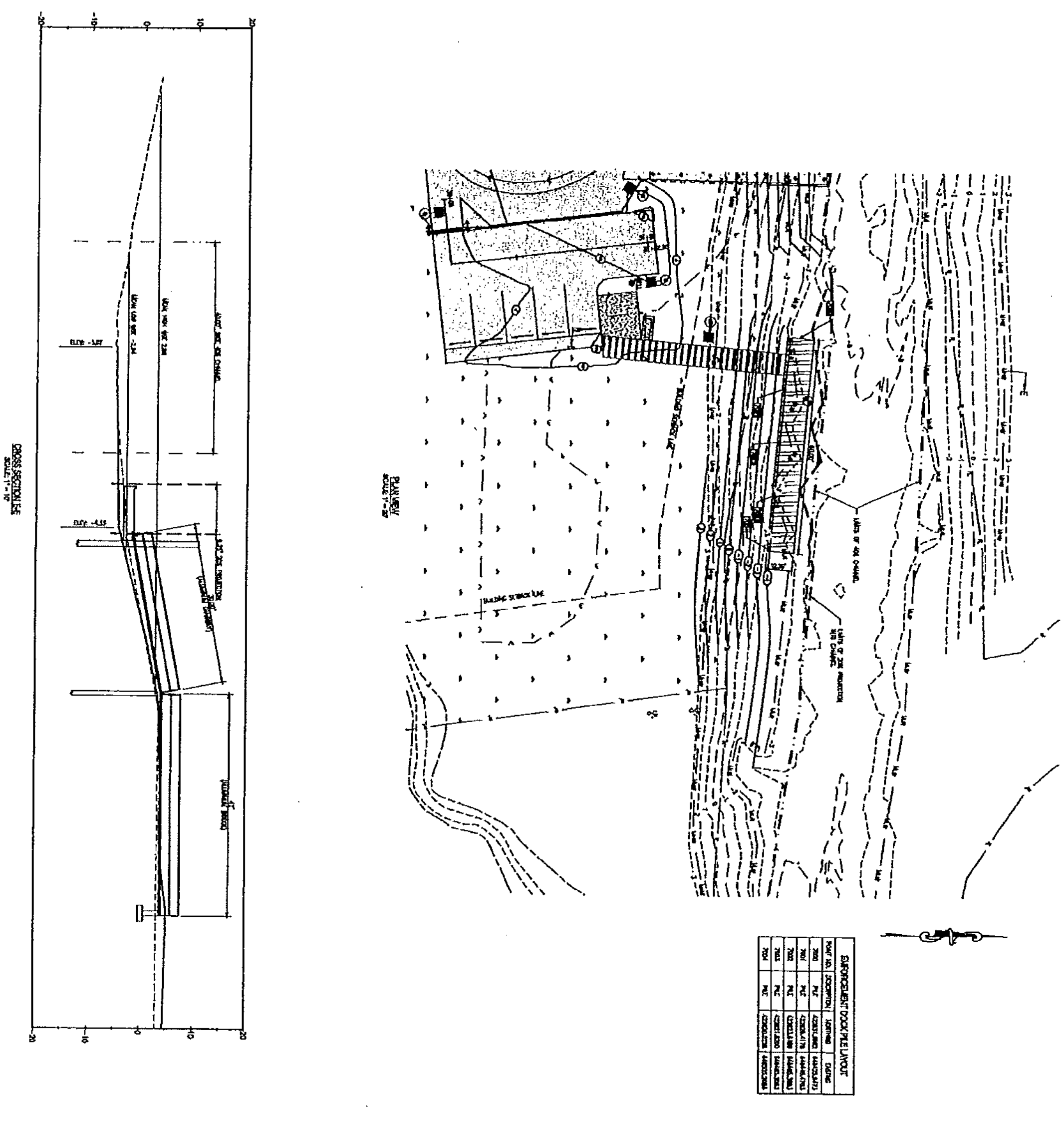
EMAIL: ce@centuryeng.com



ENFORCEMENT DOCK PILE LAYOUT			
POINT NO.	DESCRIPTION	NORTHING	EASTING
7000	PILE	[illegible]	[illegible]
7001	PILE	[illegible]	[illegible]
7002	PILE	[illegible]	[illegible]
7003	PILE	[illegible]	[illegible]
7004	PILE	[illegible]	[illegible]

2017-661

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CONSTRUCTION PLANS

FOR

DELAWARE DIVISION OF FISH & WILDLIFE

LITTLE CREEK BOAT RAMP

BAYSIDE DRIVE (SR9, K17), LITTLE CREEK, DELAWARE

LITTLE CREEK HUNDRED, KENT COUNTY, DELAWARE

SHEET TITLE: CROSS SECTION - ENFORCEMENT DOCK

DIVISION OF FISH AND WILDLIFE 60% SUBMISSION

MAY 5, 2017

DRAWN: DLD CHECKED: AES

SCALE: AS NOTED

S102

CENTURY ENGINEERING
CONSULTING ENGINEERS ■ SURVEYORS
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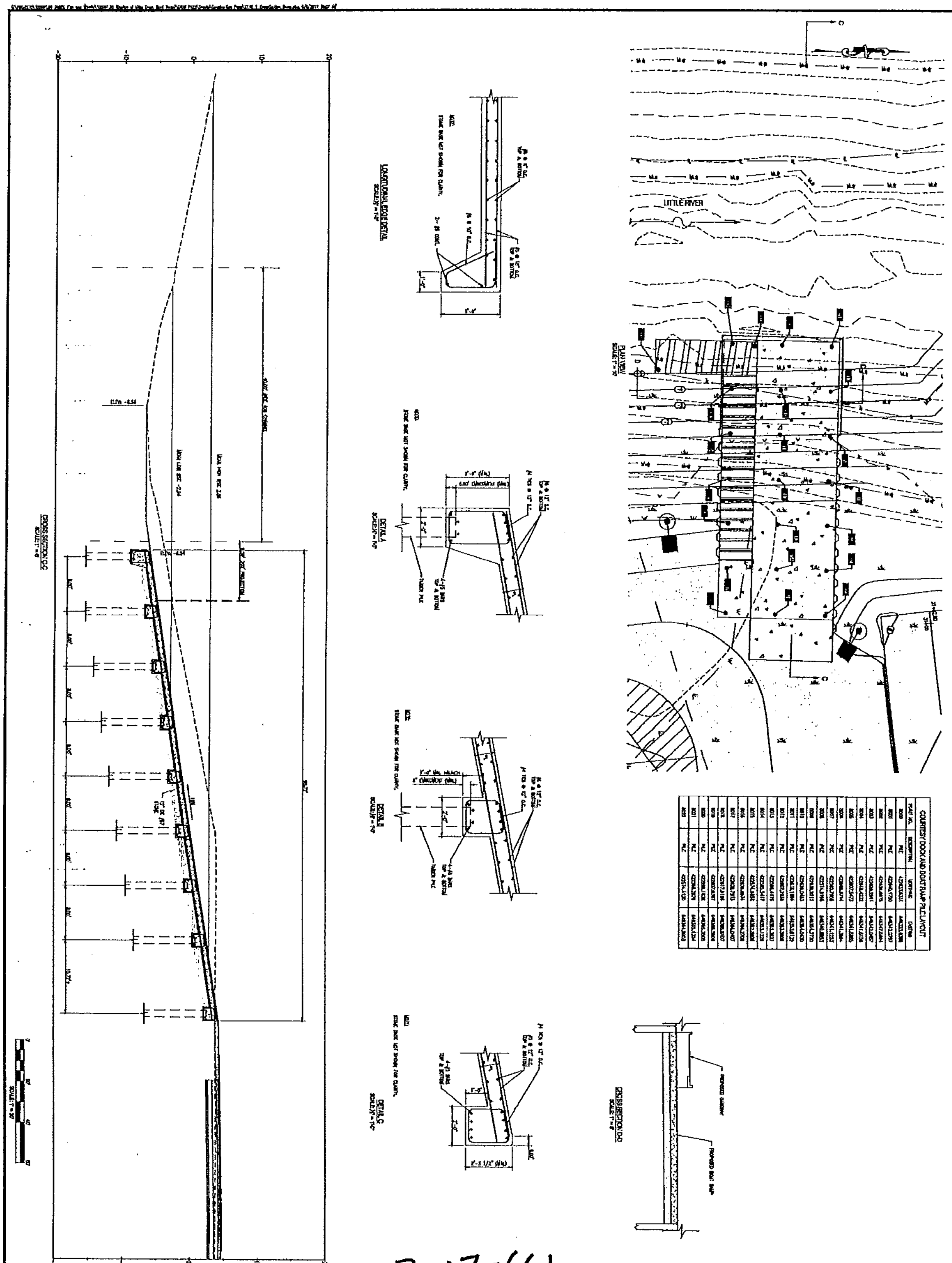

COURTESY DOCK AND BOAT RAMP PILE LAYOUT

POINT NO.	DESCRIPTION	NORTHING	EASTING
3000	PILE	[illegible]	[illegible]
3001	PILE	[illegible]	[illegible]
3002	PILE	[illegible]	[illegible]
3003	PILE	[illegible]	[illegible]
3004	PILE	[illegible]	[illegible]
3005	PILE	[illegible]	[illegible]
3006	PILE	[illegible]	[illegible]
3007	PILE	[illegible]	[illegible]
3008	PILE	[illegible]	[illegible]
3009	PILE	[illegible]	[illegible]
3010	PILE	[illegible]	[illegible]
3011	PILE	[illegible]	[illegible]
3012	PILE	[illegible]	[illegible]
3013	PILE	[illegible]	[illegible]
3014	PILE	[illegible]	[illegible]
3015	PILE	[illegible]	[illegible]
3016	PILE	[illegible]	[illegible]
3017	PILE	[illegible]	[illegible]
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3019	PILE	[illegible]	[illegible]
3020	PILE	[illegible]	[illegible]
3021	PILE	[illegible]	[illegible]
3022	PILE	[illegible]	[illegible]

2017-661

PROJECT

CONSTRUCTION PLANS

FOR

DELAWARE DIVISION OF FISH & WILDLIFE

LITTLE CREEK BOAT RAMP

BAYSIDE DRIVE (SR9, K17), LITTLE CREEK, DELAWARE

LITTLE CREEK HUNDRED, KENT COUNTY, DELAWARE

SHEET TITLE: CROSS SECTION - BOAT RAMP

DIVISION OF FISH AND WILDLIFE 60% SUBMISSION

MAY 5, 2017

DRAWN: DLD — CHECK/DESIGNED: AES

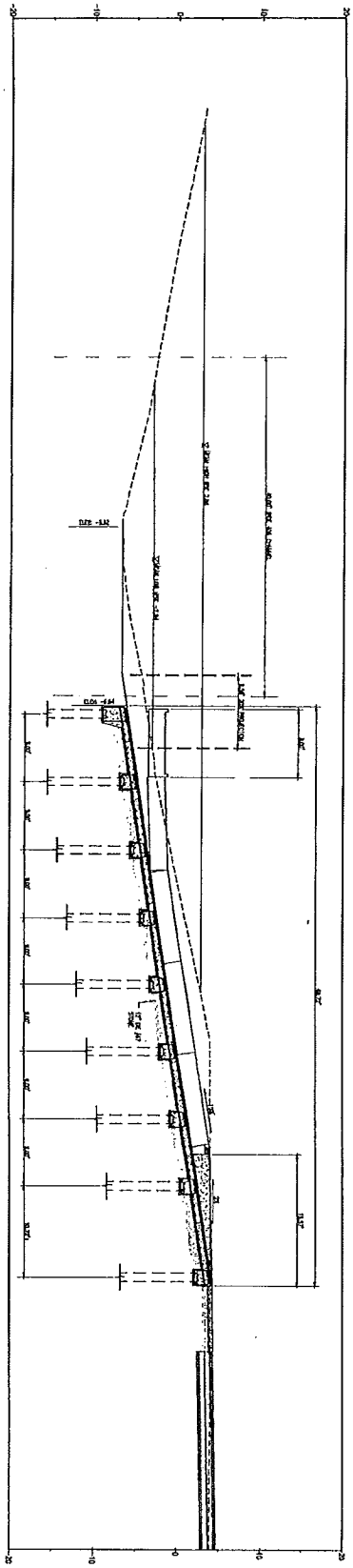
SCALE: AS NOTED

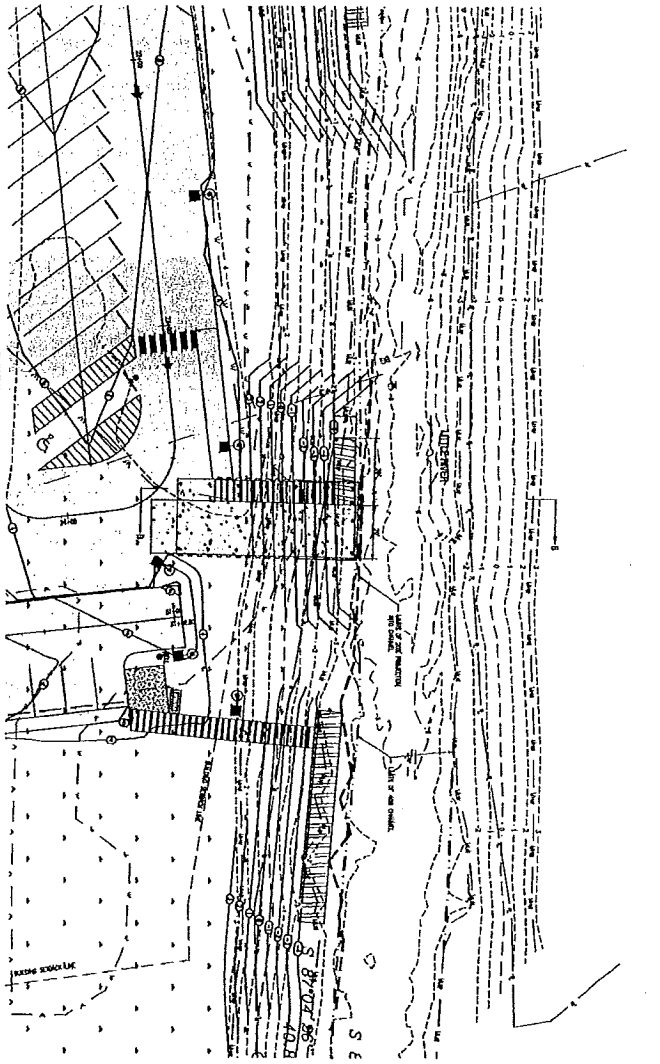
PROJECT NO.: 15500123

SHEET NO.: S104

E-1

CENTURY ENGINEERING
CONSULTING ENGINEERS ■ SURVEYORS
ADDRESS: 4134 NORTH DUPONT HIGHWAY, DOVER, DE 19901
P: (302) 734-9188 F: (302) 734-9589
WEBSITE: www.centuryeng.com
EMAIL: cei@centuryeng.com





2017-661

CONSTRUCTION PLANS

FOR

DELAWARE DIVISION OF FISH & WILDLIFE

LITTLE CREEK BOAT RAMP

BAYSIDE DRIVE (SR9, K17), LITTLE CREEK, DELAWARE

LITTLE CREEK HUNDRED, KENT COUNTY, DELAWARE

PROJECT

SHEET TITLE: CROSS SECTION - COURTESY DOCK

DIVISION OF FISH AND WILDLIFE 60% SUBMISSION

MAY 5, 2017

DRAWN: DLD

CHECKED: AES

SCALE: AS NOTED

PROJECT No. 13500.03

SHEET No. S105

E-8

DESCRIPTION	DATE
REVISED PER COUNTY COMMENTS	5/26/17

REVISIONS

CENTURY ENGINEERING

CONSULTING ENGINEERS ■ SURVEYORS

ADDRESS: 4134 NORTH DUPONT HIGHWAY, DOVER, DE 19901

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WEBSITE: www.centurymg.com

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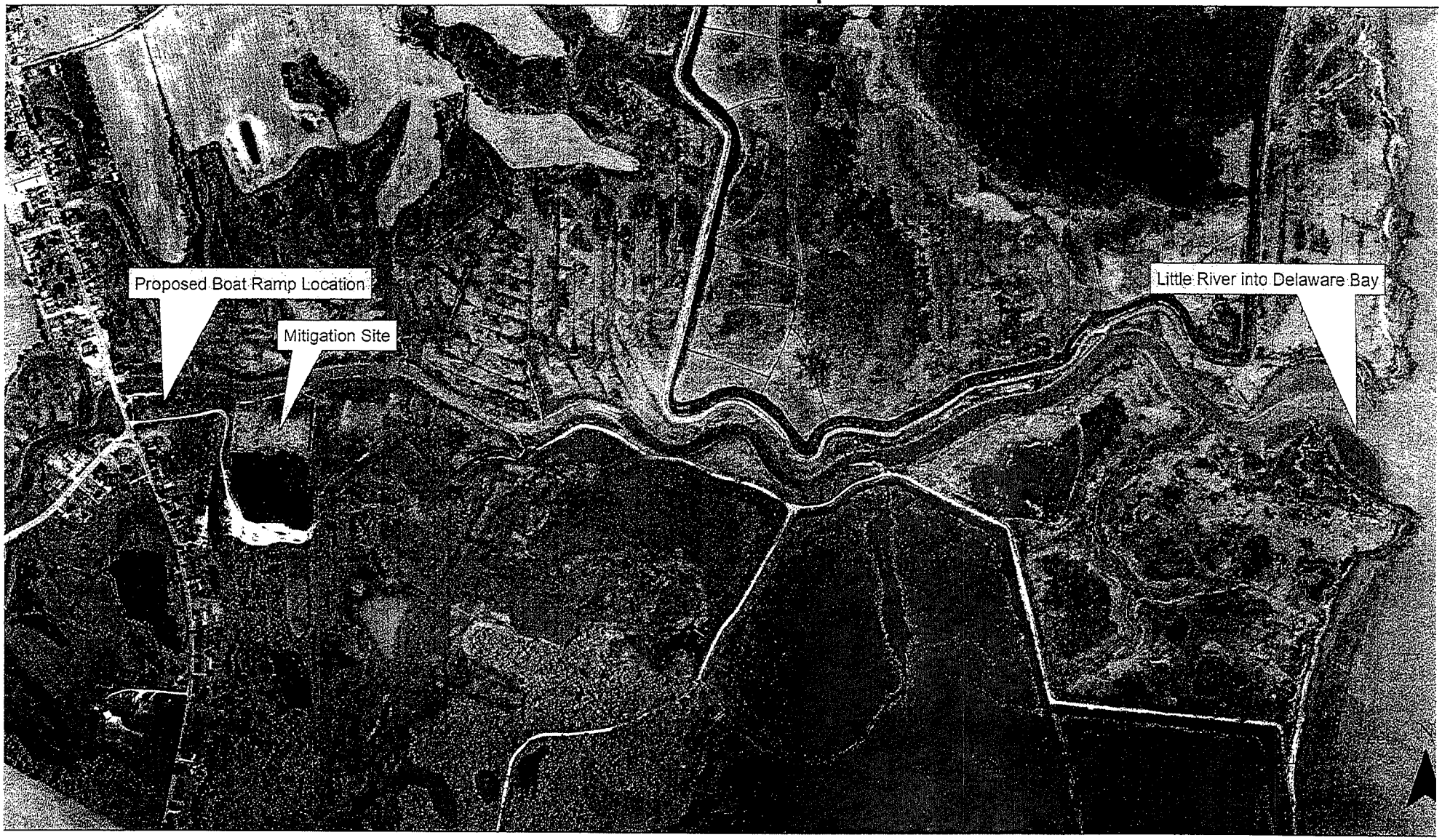
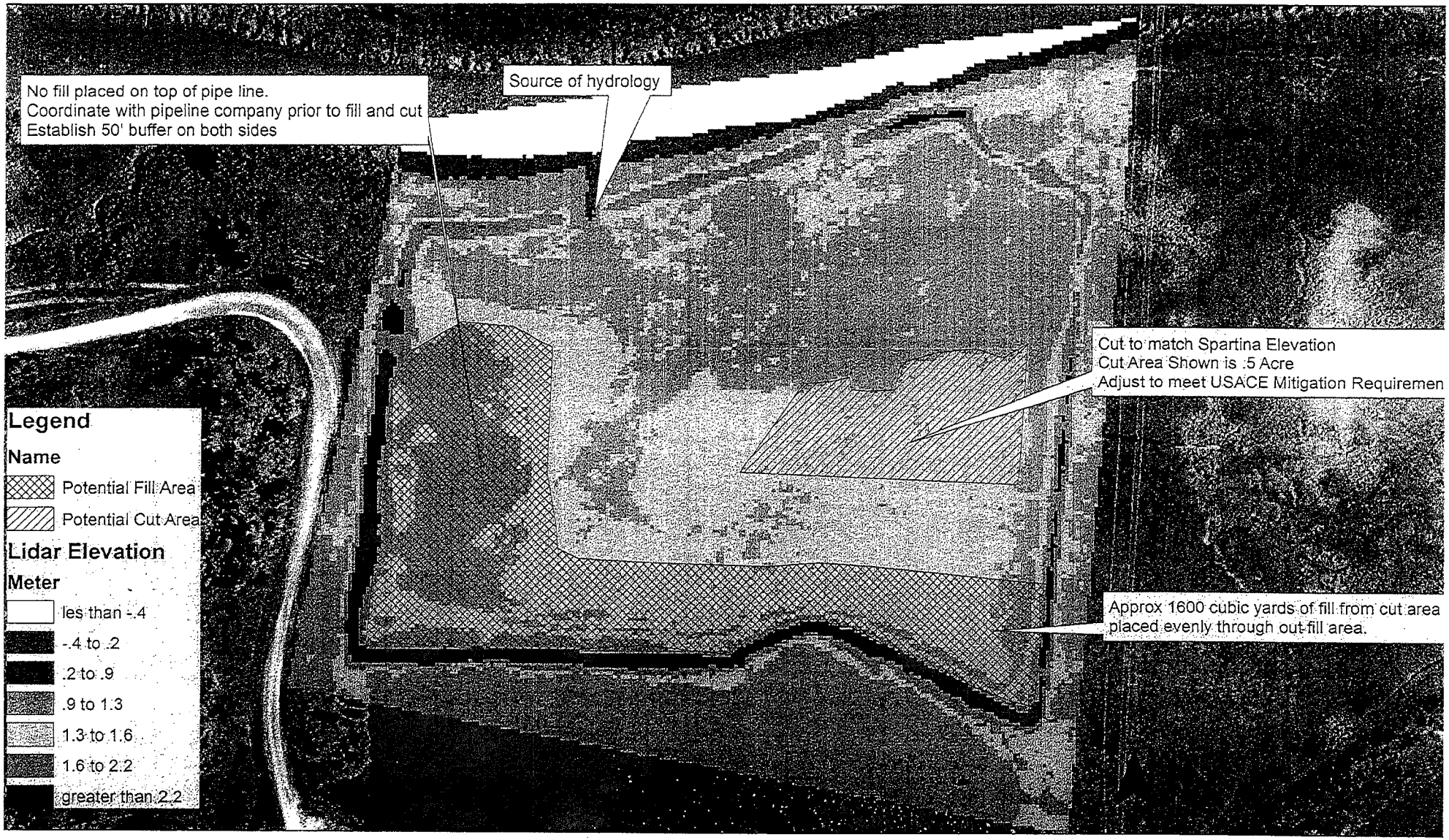
Little Creek Boat Ramp Mitigation Plan
Location Map

2017-1691
E-9



2017-661
E-10

Little Creek Boat Ramp Mitigation Construction Plan

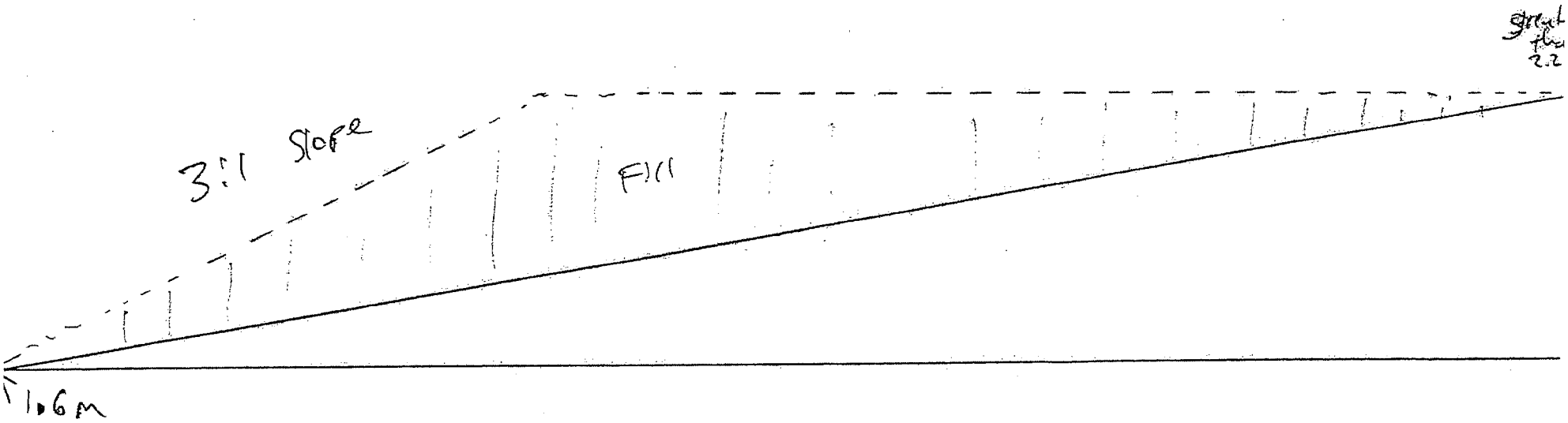


Cross-Sectional Fill Area

* Not To Scale

E-11

2017-661



* spartina ends @ 1.3 so there is a .3m buffer

Cross Sectional Cut area

* Not to Scale

2017-691

E-12