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October 4, 2022

VIA EMAIL to: John.Stokely@boem.gov; mary.boatman@boem.gov

United States Department of Interior – Bureau of Ocean Energy Management
ATTN: John Stokely, Office of Renewable Energy Programs
45600 Woodland Road, Mailstop: VAM-OREP
Sterling, VA 20166

Re: Project Minor Change – Addition of Temporary Wave Buoys *Supplemental Information*

Dear John,

On July 8, 2022, in accordance with 30 CFR § 585.634(a) South Fork Wind (SFW), notified the Bureau of Ocean Energy Management (BOEM) of a minor change in the project description identified in the Construction and Operations Plan (COP) for the South Fork Wind Farm (SFWF) and South Fork Export Cable (SFEC) (the Project), specifically to include use of temporary wave buoys in two locations. As requested by BOEM, SFW respectfully provides the following information for review, including additional information responding to comments provided by BOEM on September 28, 2022. For ease of review, additional supplemental information is highlighted in blue.

BOEM requested that SFW provide the following information:

1. *Number and location of the buoys:* SFW plans to install two temporary buoys to monitor metocean conditions during Project construction and operation activities. The monitoring instrumentation will consist of wave buoys at the following locations, depicted in Attachment 1. Both of these locations are within the area evaluated in the COP:
    a) SFW Nearshore Cable Corridor Area (nearshore buoy): -72.23467, 40.91784
    b) SFW Wind Farm Area (wind farm buoy): -71.19166, 41.07474 (The exact buoy location is subject to change based on construction logistics. The exact location will be provided to mariners prior to deployment)

2. *Estimation of deployment and recovery dates, and description of deployment, recovery, and decommissioning*: The wave buoys will be installed during the construction phase, starting with deployment of the HDD buoy in late October or at the latest early November 2022 followed by the deployment of the windfarm buoy in April 2023. The wind farm buoy will remain for three years to support offshore installation activities and the load measurement campaign, and the nearshore buoy will remain for up to 9 months after export cable construction start (including HDD).

    The deployment of the metocean buoys will require a vessel equipped with a crane and/or A-Frame, a large enough deck area, and a deck winch. Depending on the sea conditions

during the date of deployment, and the site water depth, the buoy will be installed either sinker first or buoy first. Below is a detailed description of both deployment options:

The wave buoy recovery and decommissioning will occur in the following manner:

3. *Brief description of buoys:* The wave buoys, supplied by Woods Hole Group, will collect information on wave height, period, and direction. The purpose of the measurement is to support and plan offshore installation and operations in an efficient and safe manner. The

wave buoys are 0.5m tall and 2m in diameter with a Surlyn foam hull covered with a tough outer skin and is integrated with a stainless-steel internal structure. A 2m tall aluminum meteorological and antenna tower is mounted on top of the buoy. Beneath the buoy, a rigid 4-sided stainless-steel bridle provides a framework for buoy ballast for mounting instruments and for connecting to the mooring line. The buoys have a net buoyancy of more than 1.3 tons. Additional information on the specifications for the buoy model are included in Attachment 2.

The same type of buoy will be installed in the nearshore and offshore locations and the mooring configuration will be the same at both locations. The mooring system will consist of a single mooring line attached to a 2 ton (approximately) sinker weight (concrete or steel block). The mooring line is comprised of several steel chain segments (16 and 19mm galvanized non-stud links) connected by steel shackles, plus jacketed steel wire rope. The mooring configuration is as follows:

1. A heavy chain attached to the underside of the buoy to keep it upright and allow it to move and rotate freely for accurate wave measurements (via an inertia sensor).
2. Below this segment, there is a jacketed steel wire rope to reduce drag under currents and also to reduce the overall weight of the mooring line, which facilitates its handling during deployment and recovery.
3. Below this segment, another heavy chain segment is inserted that mainly rests on the seabed and connects to the sinker weight.

The proposed mooring will minimize the risk of entanglement, per the BOEM Project Design Criteria (PDC). The mooring layout is designed to maximize the accuracy of the wave sensor; increase safety of operations (lifting and handling on deck) due to smaller weights; and has been used successfully in several wave buoys deployed on the east coast of the United States.

4. *Information about the seafloor and verification that shipwrecks are avoided in relation to the proposed buoy location(s):* A description of the seabed conditions is found in Appendix H1 of the SFW COP. The buoy will be moored by clump surface weights specifically designed to provide sufficient mass to anchor the proposed buoys. The effectiveness of the clump weights is not dependent on seabed conditions, as they do not require seafloor penetration. The mooring design is tested and proven from past campaigns and has been deployed in similar environments along the east coast.

   For the nearshore buoy, the benthic habitat was evaluated in the Habitat Mapping Report in the COP (Appendix N2 of the COP) and the habitat in the nearshore area was mapped as sand and muddy sand) and therefore, is not located in complex benthic habitat. Attachment 3, Figure 1 provides information from the relevant figure in Appendix N2 of the COP. The nearshore buoy is located within the Area of Potential Effect evaluated in the Marine Resources Archaeological Assessment (Appendix R of the COP, confidential) and no shipwrecks or other avoidance areas were identified.

> For the wind farm buoy, the benthic habitat was also evaluated in the Habitat Mapping Repot in the COP (Appendix N2 of the COP). Attachment 3, Figure 2 depicts areas of habitat complexity and demonstrates that the buoy is located in an area that is Not Complex. The wind farm buoy is located within the Area of Potential Effect evaluated in the Marine Resources Archaeological Assessment (Appendix R of the COP, confidential). Attachment 3, Figure 2 also depicts marine archaeological paleolandscape avoidance areas and no such areas were identified in the vicinity of the buoy location.

In addition to this information requested by BOEM, SFW also evaluated the potential environmental impacts associated with this proposed change, and as described in Table 1, this proposed change will not result in any significant change to the environmental impacts previously evaluated by BOEM in the FEIS.

The use of temporary wave buoys is not among the activities for which a proposed revision to the COP would be necessary pursuant to 30 CFR § 585.634(c); does not change the description of the project reviewed by BOEM in the Record of Decision (ROD) for the Project, does not result in a significant change to the environmental impacts previously evaluated by BOEM in its FEIS and the ROD, and does not require any additional federal consultations, pursuant to 30 CFR § 585.634(d); and does not change the final determinations and findings described in the Section 106 Memorandum of Agreement for the Project.

Prior to installation, SFW will distribute relevant PATON and Notice to Mariners for each buoy.

This is a technical feasibility and time sensitive matter for SFW and we would appreciate your response as soon as possible. If you have questions or would like to discuss further, please contact me directly at ROSOD@orsted.com.

Sincerely,

Robert B. Soden

Robert Soden
SFW Permit Manager, Northeast Permitting

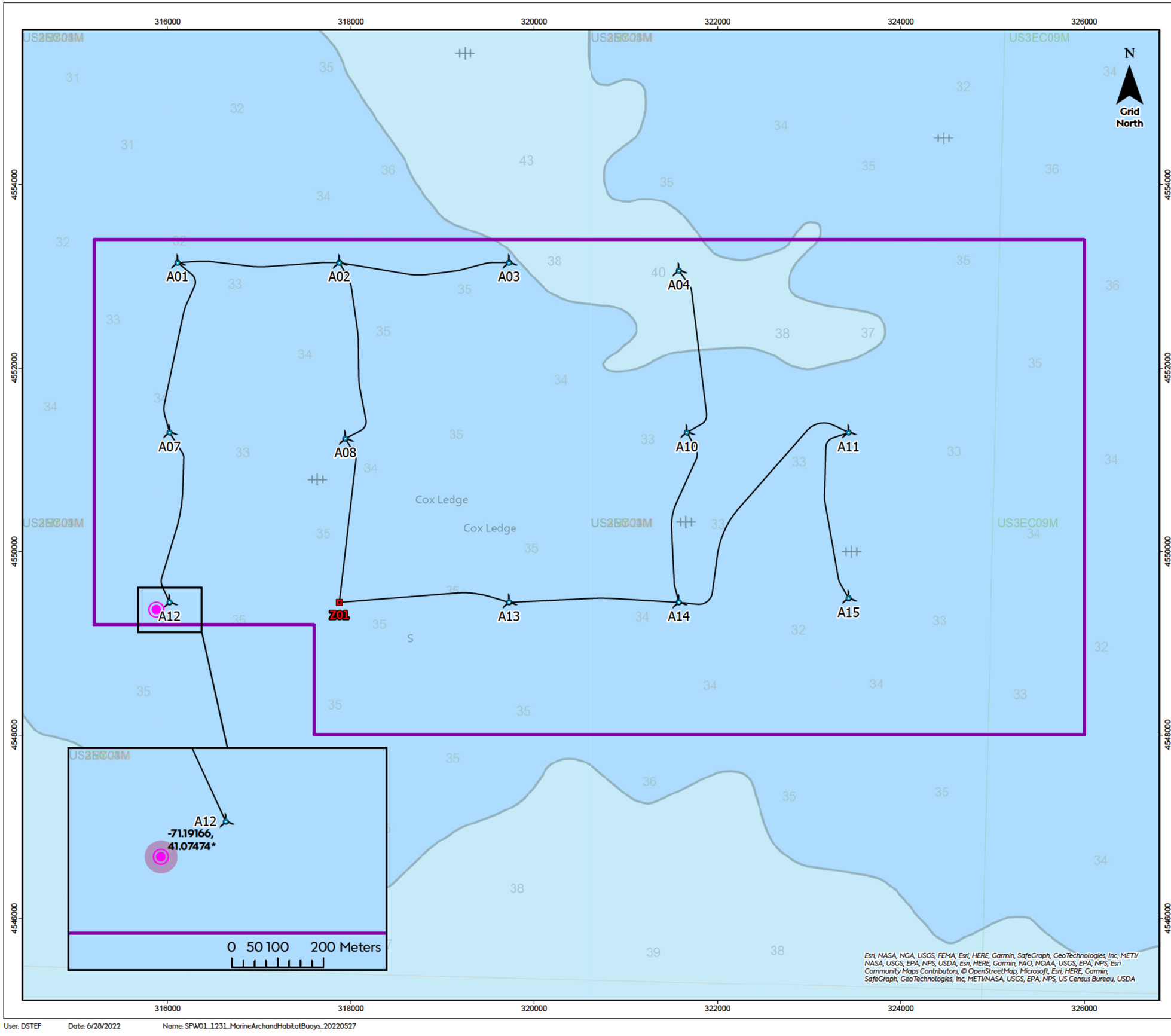
Table 1 Summary of Impacts of Proposed Change

Resource Category	Resource	Summary of Impacts of Proposed Change
Physical Resources	Air Quality	The buoy will not have any associated emissions. No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
	Water Quality	No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
Biological Resources	Bats	No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
	Benthic Habitat, Essential Fish Habitat, Invertebrates, and Finfish	The nearshore buoy and wind farm buoy are both located within areas previously evaluated for the COP. The nearshore is located in sand and muddy sand, not designated as complex. The wind farm buoy is located in an area mapped as not complex. No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
	Birds	No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
	Other Terrestrial and Coastal Habitats and Fauna	No change to analysis in Chapter 3 of FEIS; proposed change is only relevant offshore in federal waters.
	Marine Mammals	No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated. In accordance with the BMPs in PDC 6 of the *Project Design Criteria and Best Management Practices for Protected Species Associated with Offshore Wind Data Collection (Latest Revision: 11/22/2021)* risk of entanglement has been reduced to discountable levels as described below: BMP 6.1: The buoy mooring system utilizes both chains and jacketed wire rope to prevent potential entanglement of protected species and ensure the integrity of the buoy. BMP 6.2: The mooring system includes both chains and jacketed wire rope to prevent lines from looping, wrapping, or entrapping protected species. BMP 6.3: The buoys will be moored by jacketed wire rope for rigidity. The length of chain and jacketed wire rope is the shortest length necessary to achieve the purpose of the buoy installation. BMP 6.4: During the deployment and retrieval, the buoys will be lowered and raised slowly reduce impacts to protected species and benthic habitat. Trained lookouts will be aboard the vessel to monitor for listed species in the area prior to and during deployment and retrieval and work will be stopped if listed species are observed within 500 meters of the vessel to minimize entanglement risk.

Resource Category	Resource	Summary of Impacts of Proposed Change
		BMP 6.5: If a live or dead marine protected species becomes entangled, operators will immediately contact the applicable stranding network coordinator using the reporting contact details, as outlined in the Reporting Requirements section, and provide any on-water assistance requested. BMP 6.6: The buoys will be properly labeled with owner and contact information.
	Sea Turtles	No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated. See information for Marine Mammals, above.
	Wetlands and other Waters of the United States	No change to analysis in Chapter 3 of FEIS; proposed change is only relevant offshore in federal waters.
Socioeconomic and Cultural Resources	Commercial Fisheries and For-Hire Recreational Fishing	No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
	Cultural Resources	The nearshore buoy and wind farm buoy are both located within the APE for the Project and are not located near shipwrecks or archaeological avoidance areas. No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
	Demographics, Employment, and Economics	No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
	Environmental Justice	No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
	Land Use and Coastal Infrastructure	No change to analysis in Chapter 3 of FEIS; proposed change is only relevant offshore in federal waters.
	Navigation and Vessel Traffic	Prior to installation and retrieval, SFW will distribute relevant PATON and Notice to Mariners. No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
	Other uses (marine, military use, aviation, offshore energy)	No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
	Recreation and Tourism	No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.
	Visual Resources	No change to analysis in Chapter 3 of FEIS; proposed change is consistent with the impacts evaluated.

Attachment 1:
Locations for Temporary Wave Buoys

South Fork Wind
Buoy Location

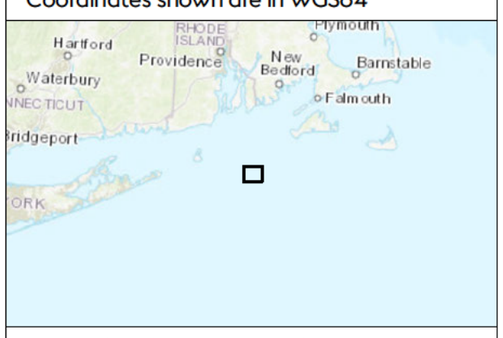


- BOEM Lease OCS 0517 (SFW01)
- Offshore Substation (v4)
- Measurement Buoy
- WTG Layout L021

Proposed IAC Routes

- Proposed IAC Routes
- Buoy 50m Radius Buffer

*Coordinates shown are in WGS84



Reference system: NAD838 (2011)
Projection: UTM Zone 19N
Vertical Datum : MLLW

Scale at A3: 1:40,000

0 0.5 1 2 Kilometers

0 0.38 0.75 1.5 Miles

Rev	Description	Date
00	DRAFT	05/27/2022
01	First Issue	06/28/2022
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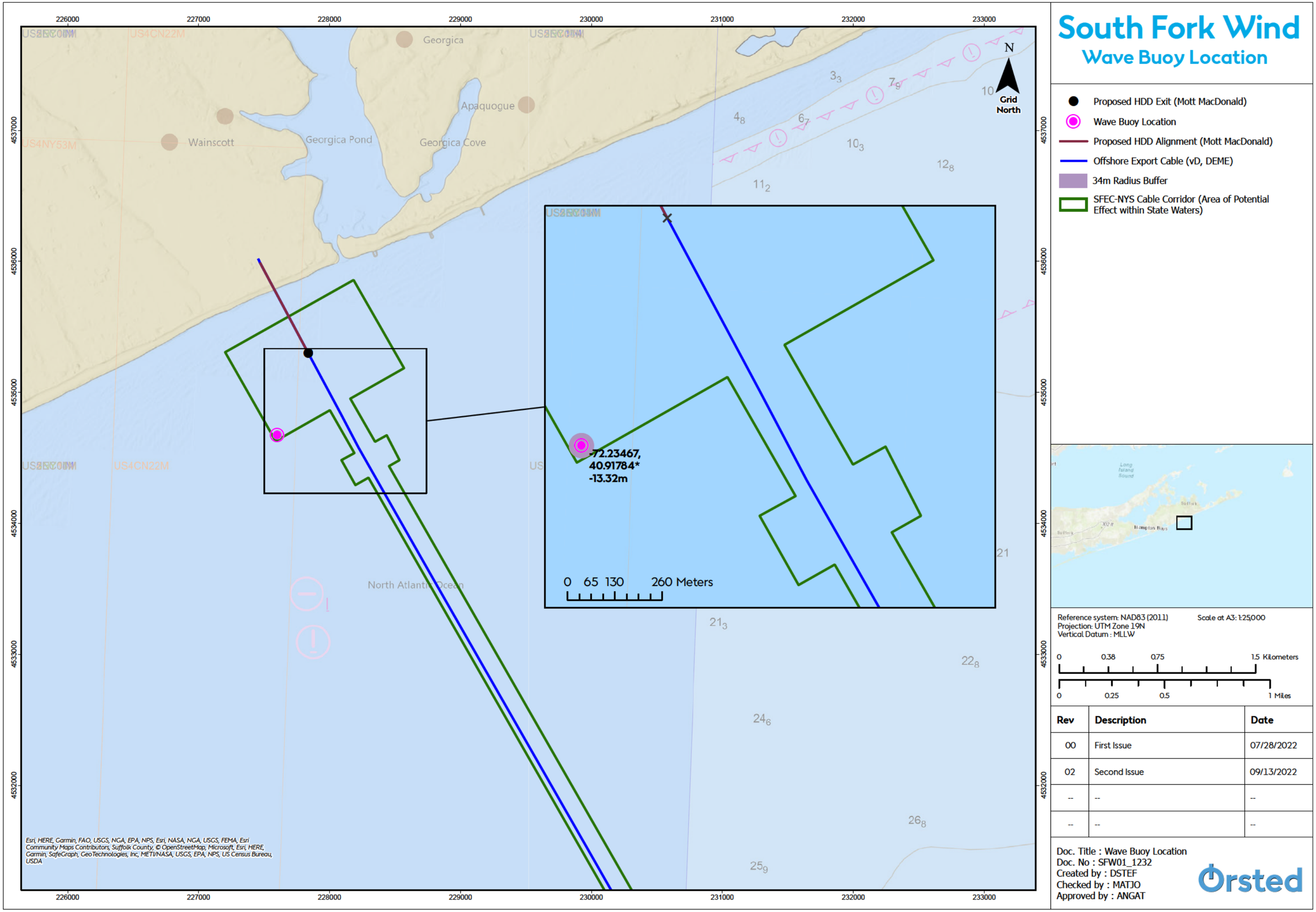
Doc. Title : SFW01 Buoy Location
Doc. No : SFW01_1231
Created by : DSTEF
Checked by : NIPWB
Approved by : ROSOD

Ørsted

User: DSTEF Date: 6/28/2022 Name: SFW01_1231_MarineArchandHabitatBuoys_20220527

South Fork Wind

Wave Buoy Location



- Proposed HDD Exit (Mott MacDonald)
- Wave Buoy Location
- Proposed HDD Alignment (Mott MacDonald)
- Offshore Export Cable (vD, DEME)
- 34m Radius Buffer
- SFEC-NYS Cable Corridor (Area of Potential Effect within State Waters)

Reference system: NAD83 (2011)
Projection: UTM Zone 19N
Vertical Datum : MLLW

Scale at A3: 1:25,000

0 0.38 0.75 1.5 Kilometers

0 0.25 0.5 1 Miles

Rev	Description	Date
00	First Issue	07/28/2022
02	Second Issue	09/13/2022
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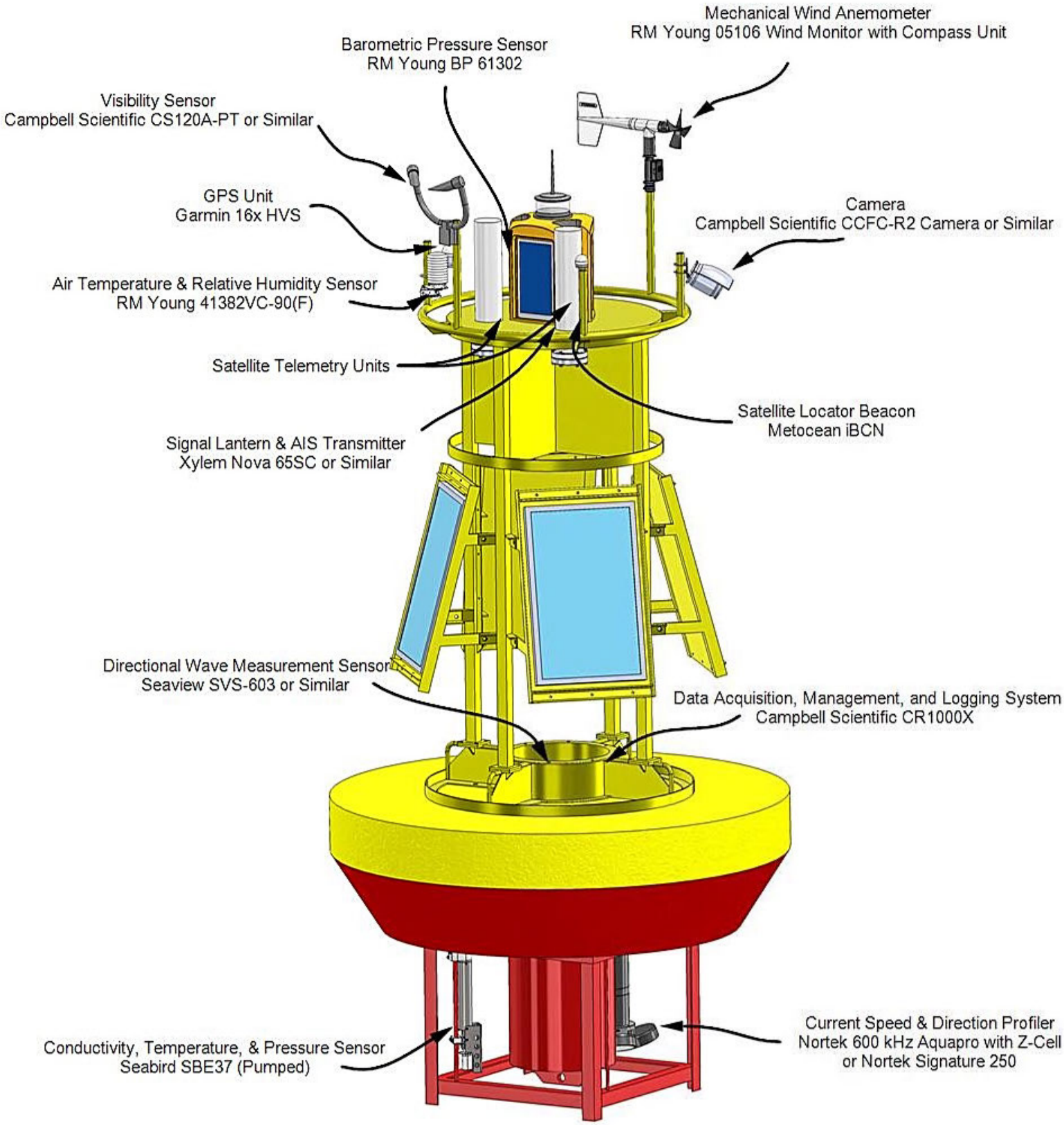
Doc. Title : Wave Buoy Location
Doc. No : SFW01_1232
Created by : DSTEF
Checked by : MATJO
Approved by : ANGAT

Ørsted

User: DSTEF Date: 9/13/2022 Name: SFW01_1232_USACE_AnchoringPlan_V1_20220913

Attachment 2:
Specifications for Temporary Wave Buoys

Orsted
Real-Time Metocean Monitoring Buoy
MSI G3000



Orsted
Shallow Water Metocean Mooring
(30-100m estimated depth range)

Surface Buoy
MSI Guardian Buoy

Includes:
- Wave Sensor
- Current Speed & Direction ADCP
- Visibility Sensor
- Meteorological Sensor Suite
- AIS Beacon
- Camera
- Real-Time Data Aquisition System
- Satellite Telemetry unit

Sea Surface - 0m

3/4" Chain
10m Length

5/16" Jacketed Wire Rope
15 / 55 / 85m Length

3/4" Chain Catenary
35 / 50 / 70m Length

Sea Floor
30 / 70 / 100m depth

Ballast
(2600 lb / 1180 kg Clump Weight)

SURFACE BUOY SYSTEMS
The Guardian Series

Mooring Systems, Inc. manufactures a wide range of surface buoys designed for use as meteorological and oceanographic instrumentation platforms. Our Guardian design incorporates durable self fendering hulls made of Surlyn foam. Surlyn foam is closed cell, extremely tough, and requires little maintenance. A steel frame and footed base provides a reliable construction that places the buoy system in compression while moored. A lightweight aluminum tower will support a host of instrumentation, solar panels, and navigation lights. The central well has a water tight compartment available for mounting batteries or electronics, and a removable topside end-cap allowing access while moored. Our versatile design approach allows for custom designed towers and instrument mounting for many inshore and offshore applications.

Model G-3000 Buoy

Water Tight Compartment End-Cap

Integral Radar Reflector

Steel Well and Base

Features:
* Rugged Self-fendering Surlyn Foam Hull
* Lightweight Aluminum Tower (Removable)
* Integral Radar Reflector
* Water Tight Battery/Electronics Compartment
* Steel Frame, Well, and Base
* Lifting and Handling Bails
* Self-Standing Base

Options:
* Marine Solar Powered Light
* Instrumentation Mounting Brackets
* Bi-moor Attachment Bail

Specifications:

MODEL	NET BUOYANCY (lbs)	SURLYN HULL DIAMETER	SURLYN HULL HEIGHT	TOWER HEIGHT	WELL DEPTH	WELL INSIDE DIAMETER	BASE HEIGHT	OVERALL HEIGHT w/o LIGHT	AIR WEIGHT (lbs) estimate
G-1000	1000 (454 kg)	61" (1549 mm)	16" (406 mm)	72" (1829 mm)	46" (1168 mm)	12" (305 mm)	32" (813 mm)	10' (3.1 m)	775 (350 kg)
G-2000	2000 (907 kg)	61" (1549 mm)	24" (610 mm)	82" (2083 mm)	54" (1372 mm)	12" (305 mm)	32" (813 mm)	11.5' (3.5 m)	850 (380 kg)
G-3000	3000 (1360 kg)	82" (2082 mm)	24" (610 mm)	82" (2083 mm)	54" (1372 mm)	12" (305 mm)	32" (813 mm)	11.5' (3.5 m)	1200 (545 kg)
G-4000	4000 (1814 kg)	82" (2082 mm)	30" (762 mm)	82" (2083 mm)	68" (1727 mm)	12" (305 mm)	32" (813 mm)	12.6' (4.1 m)	1500 (680 kg)
G-5000	5000 (2268 kg)	82" (2082 mm)	42" (1067 mm)	94" (2388 mm)	88" (2235 mm)	12" (305 mm)	48" (1219 mm)	15.3' (4.7 m)	2000 (907 kg)

Construction:

Buoyancy Hull:	Surlyn Foam
Well / Frame:	Steel, zinc protected
Tower:	6061-T6 Aluminum
Hardware:	316 Stainless Steel
Isolation Bushings:	Nylon
Top-Side Paint:	Yellow Epoxy with Polyurethane Clear Coat
Bottom Paint:	Anti-fouling Below Waterline
Mooring Attachment:	Bail on Well Bottom for Single Point Mooring

1227 Rt.28A, PO Box 413
Cataumet, MA 02534 USA
Tel: 508-564-4770, Fax: 4773

MOORING SYSTEMS

www.mooringsystems.com

Attachment 3:
Additional Information on Benthic Habitat and Marine Archaeological Resources

Figure 2 is CONFIDENTIAL, due to depiction of sensitive cultural resources