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**MARINE MAMMAL MONITORING PLAN  
FOR BRAVO WHARF RECAPITALIZATION  
YEAR 2  
AT NAVSTA MAYPORT, JACKSONVILLE, FLORIDA  
NAVY REGION SOUTHEAST**

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**Submitted to:**

Office of Protected Resources,  
National Marine Fisheries Service,  
National Oceanographic and Atmospheric Administration

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## **ACRONYMS AND ABBREVIATIONS**

|         |                                      |
|---------|--------------------------------------|
| C-1     | Charlie One (Wharf)                  |
| dB      | decibel                              |
| EA      | Environmental Assessment             |
| ft.     | foot / feet                          |
| IHA     | Incidental Harassment Authorization  |
| μPa     | microPascal                          |
| m       | meter                                |
| MMPA    | Marine Mammal Protection Act         |
| NAVSTA  | Naval Station                        |
| NEPA    | National Environmental Policy Act    |
| NMFS    | National Marine Fisheries Service    |
| POC     | point of contact                     |
| Project | Bravo Wharf Recapitalization Project |
| PTS     | Permanent Threshold Shift            |
| TTS     | Temporary Threshold Shift            |
| USFWS   | U.S. Fish and Wildlife Service       |
| ZOI     | Zone of Influence                    |

## **1.0 INTRODUCTION**

### **1.1 Purpose of the Monitoring Plan**

The purpose of this Monitoring Plan is to provide protocols for marine mammal monitoring during Year 2 of the proposed recapitalization of Bravo Wharf (berths B-1, B-2, and B-3) at Naval Station (NAVSTA) Mayport, Florida (Figures 1-1 and 1-2). Recapitalization includes demolishing and replacing the existing concrete pile cap, wharf deck, and utilities and installation of a new steel sheet pile bulkhead around the existing wharf. This plan was developed to support the National Marine Fisheries (NMFS) Incidental Harassment Authorization (IHA) Application (U.S. Department of the Navy 2015).

Marine mammal monitoring will be conducted before, during, and after pile driving activities within the zones detailed in Section 2.3, and will represent an important minimization measure to reduce the likelihood of potential injury to marine mammals.

### **1.2 Scope and Timing**

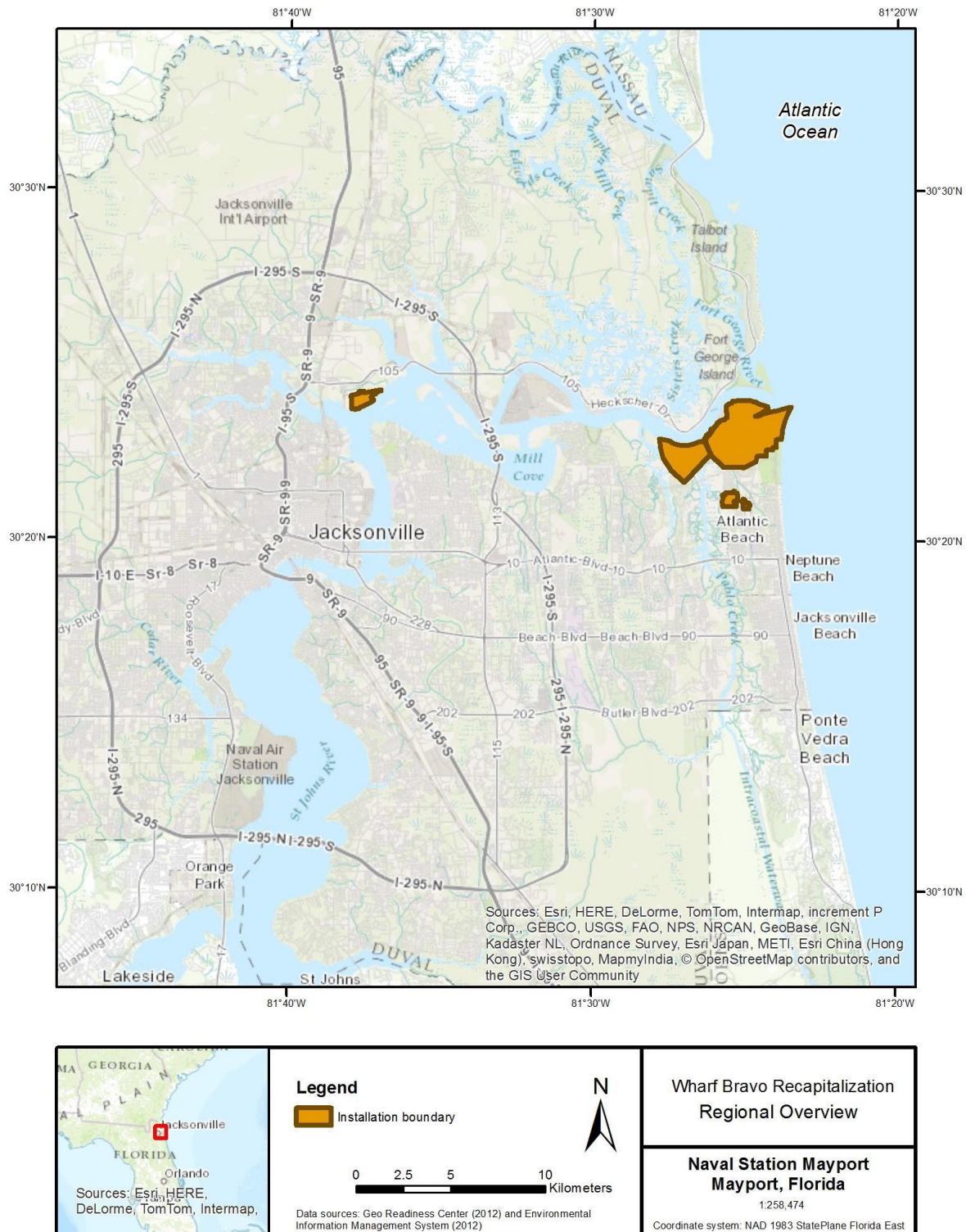
The scope of this Monitoring Plan includes pile driving activities that are necessary for the Bravo Wharf recapitalization project (Project). Sea turtles and smalltooth sawfish (as practicable) will be included in monitoring efforts. However, for the purposes of this submittal to NMFS in support of compliance with the Marine Mammal Protection Act (MMPA), the scope of monitoring in this document is limited to marine mammals under NMFS' purview. Marine mammal monitoring would be integrated with other marine environmental monitoring if it is required as a result of the Navy's National Environmental Policy Act (NEPA) project review or as a condition of approval by other regulatory agencies.

This Monitoring Plan will be implemented when pile driving is taking place during the period of the requested IHA (13 March 2018 to 12 March 2019) for the Project.

### **1.3 Management**

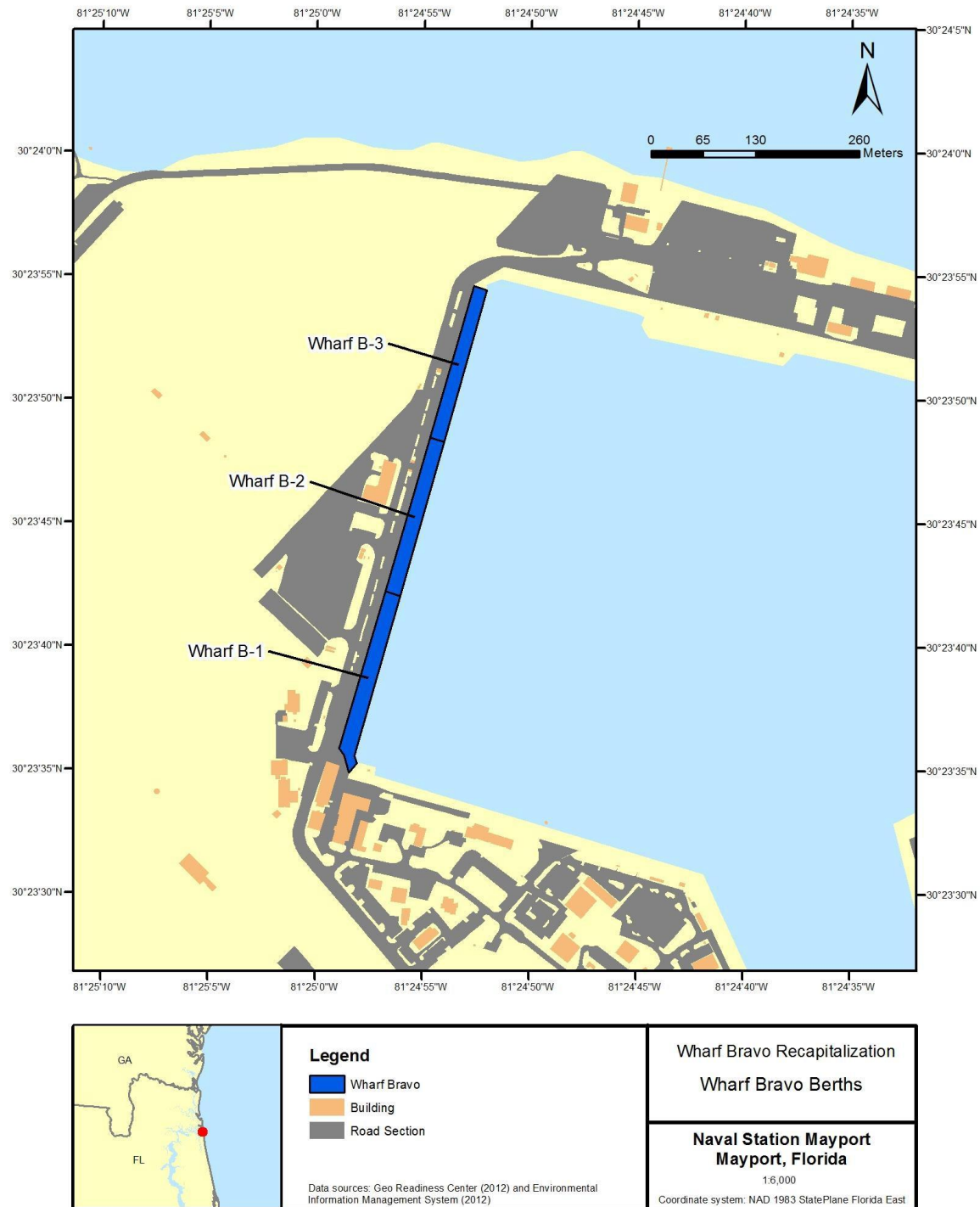
The Monitoring Plan will be managed by Naval Facilities Engineering Command (NAVFAC) Southeast. Marine mammal monitoring will be carried out by private contractors supported by local technical staff from NAVFAC Southeast and NAVSTA Mayport. NAVFAC Southeast will also be responsible for preparation of the Monitoring Report for the IHA.

**Figure 1-1. Regional Location – Naval Station Mayport, Mayport, Florida**





**Figure 1-2. Bravo Wharf berths B-1, B-2, and B-3 – Naval Station Mayport, Mayport, Florida**



## **2.0 BRAVO WHARF RECAPITALIZATION PROJECT**

Refer to the Environmental Assessment (EA) (U.S. Department of the Navy 2015) and current IHA Application (U.S. Department of the Navy 2015) for a full description of the Project.

### **2.1 Project Area**

The project area is along the Atlantic coast of northern Florida, and includes the NAVSTA Mayport turning basin out to the limit of the most distant of the acoustic thresholds for all protected species being addressed for the Project (Figure 2-1). The lesser acoustic threshold distances are displayed in Figure 2-2. The Navy used the updated criteria and thresholds issued by the National Marine Fisheries Service in July 2016 (81 FR 51693) for assessing the potential for hearing loss (including level A harassment in the form of PTS) from pile driving; behavioral criteria were not impacted by the updated thresholds, and so the methodology for assessing behavioral impacts (outlined in Chapter 6) has not changed (National Marine Fisheries Service 2005b, 2009).

### **2.2 Activities to be Monitored**

Activities which would be subject to marine mammal monitoring include the following:

- Vibratory pile driving of steel sheet piles necessary to construct a new steel sheet pile wall outside the existing bulkhead. Approximately 234 steel sheet piles (117 pile pairs) will be installed with a vibratory driver.
- Contingency-only impact installation of steel sheet piles. Impact driving will only be used if vibratory driving is inadequate or an obstruction that prevents vibratory installation of is encountered.

Marine mammal monitoring will be performed to ensure that in-water activities are stopped if animals occur within the zone of influence (ZOI) for potential injury or a standard 15 m (50 ft.) buffer from pile driving activities (Figure 2-3). Monitoring methods are described in Section 3 of this document.

### **2.3 Construction Conditions**

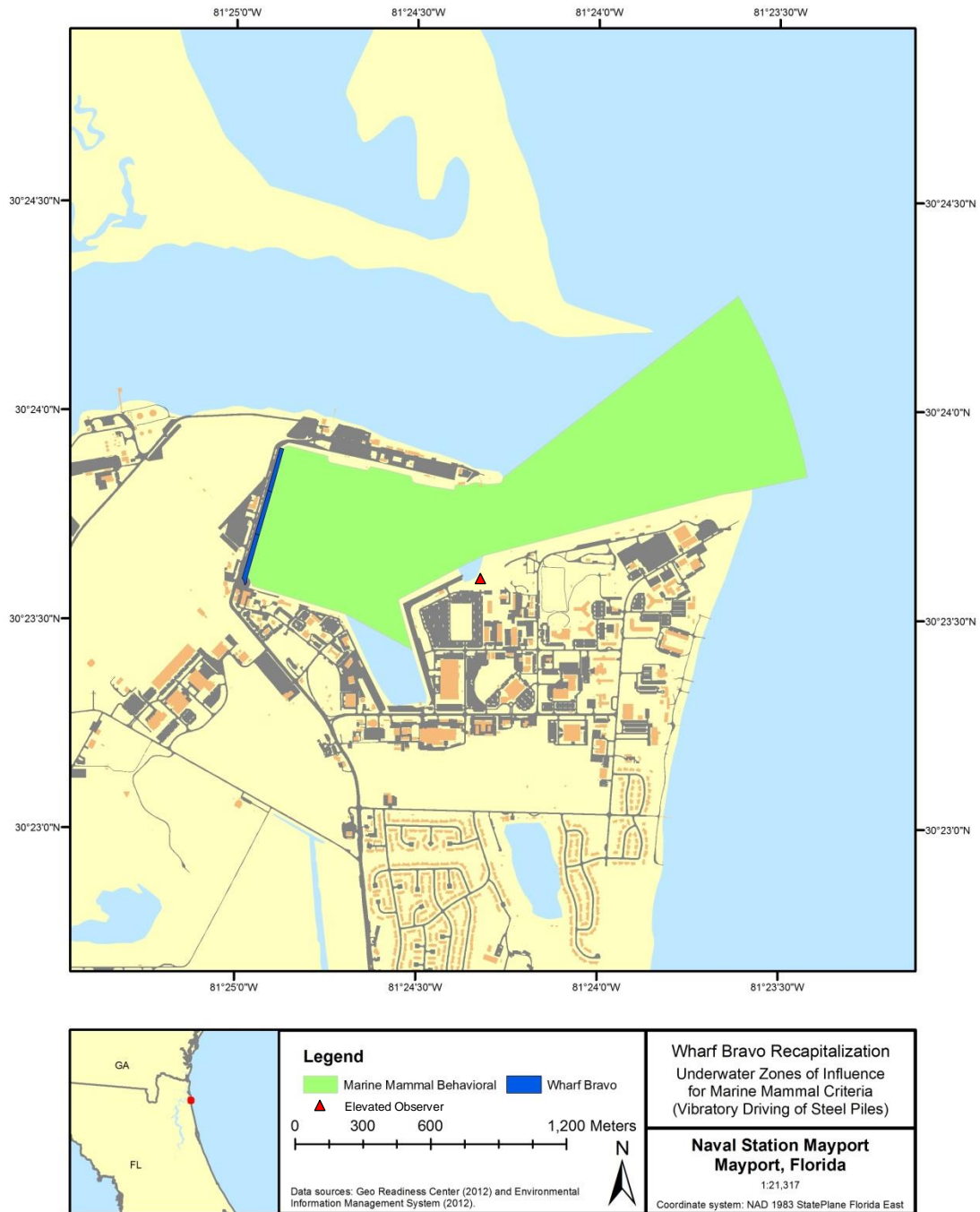
A complete description of construction conditions, best management practices, and additional measures to minimize marine mammal exposure during construction is included in Chapter 11 of the Incidental Harassment Authorization (IHA) Application (U.S. Department of the Navy 2015).

#### *Soft Start*

The objective of a soft-start is to provide a warning and / or give animals in close proximity to pile driving a chance to leave the area prior to an impact driver operating at full capacity; thereby, exposing fewer animals to loud underwater and airborne sounds. For impact driving only, a soft start procedure shall be used at the beginning of each day's in-water pile driving or if pile driving has ceased for more than 30 minutes.

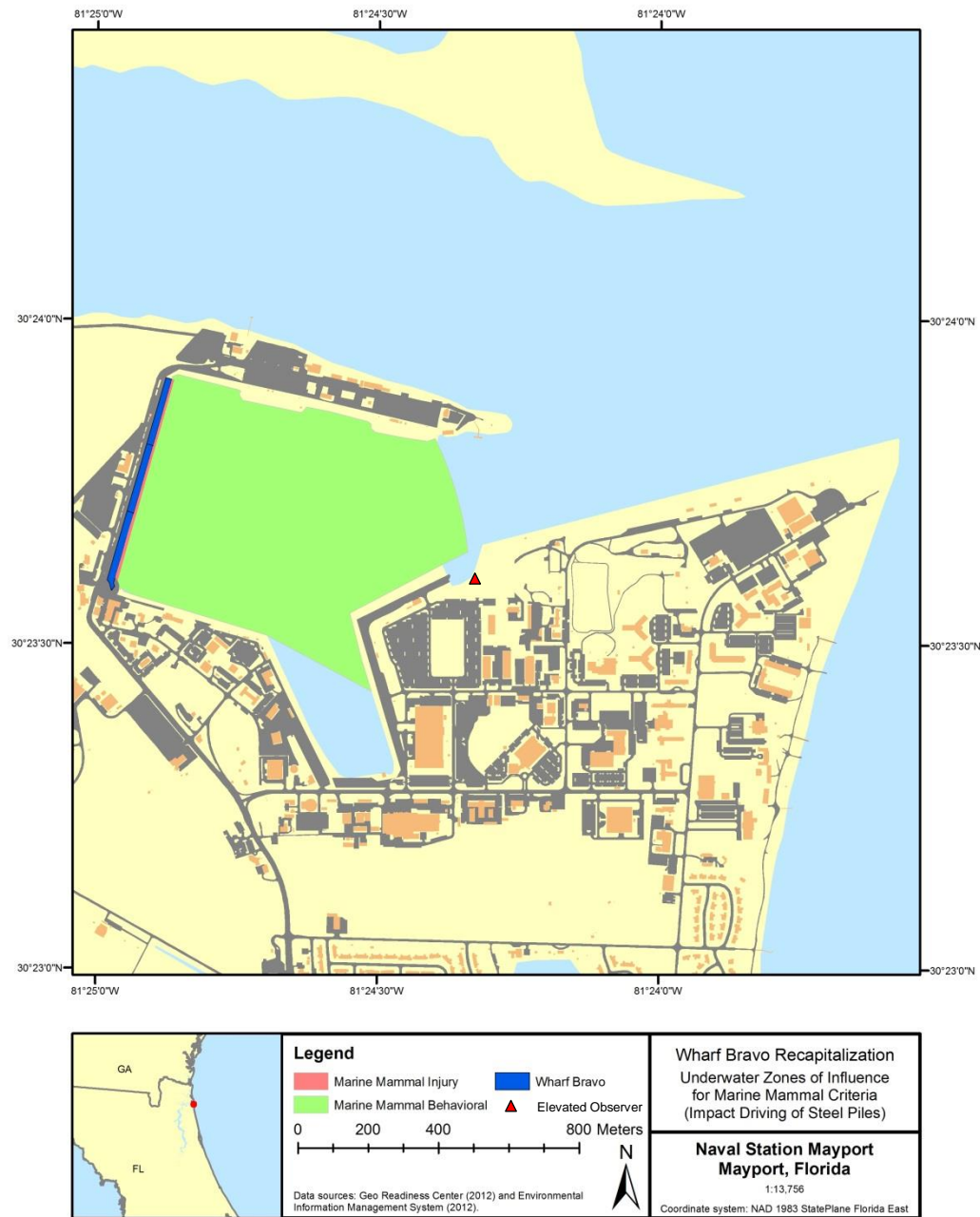
1  
2 The contractor shall provide an initial set of strikes from the impact hammer at reduced energy,  
3 followed by a 30-second waiting period, then two subsequent sets. (The reduced energy of an  
4 individual hammer cannot be quantified because they vary by individual drivers. Also, the  
5 number of strikes will vary at reduced energy because raising the hammer at less than full power  
6 and then releasing it results in the hammer “bouncing” as it strikes the pile resulting in multiple  
7 “strikes”).

**Figure 2-1. Injury and Behavioral Zones of Influence for Marine Mammals<sup>2</sup> – Vibratory Driving of Steel Sheet Piles**



<sup>2</sup> Official criteria have not been established for West Indian manatees. The Navy's IHA application, Appendix C – Standards Manatee Conditions for In-Water Work, cover standards of practice promulgated by The U.S. Fish and Wildlife Service (USFWS) for manatees.

**Figure 2-2. Injury and Behavioral Zones of Influence for Marine Mammals<sup>3</sup> – Impact Driving of Steel Sheet Piles (Contingency Only)**



<sup>3</sup> Official criteria have not been established for West Indian manatees; marine mammal injury zone of influence is given for mid-frequency cetaceans

## Pile Installation

The acoustic analysis for vibratory pile driving used the assumption a maximum of 12 sheet pile pairs would be driven each day. Each pile is anticipated to require no more than 60 seconds to drive by vibratory methods. Impact pile driving would only be used as a contingency in cases when vibratory driving is insufficient (a similar project that has been completed at adjacent Wharf C-1 required impact pile driving on only seven piles).

## 2.4 Monitoring and Shutdown Zones

Table 2-1 lists the monitoring and shutdown zones, and measures associated with the occurrence of a marine mammal in each zone. For all in-water construction and demolition activities, a minimum protective shutdown zone of 15 m (50 ft.) is proposed. Sound-generating activities with larger shutdown zones follow, based on the maximum modeled distance to the Level A (injury) threshold:

- During vibratory pile driving, the shutdown distance will initially be 15 m.
- If impact driving of steel piles is needed, the shutdown distance for cetaceans will be 40 m during the brief duration of such activities.

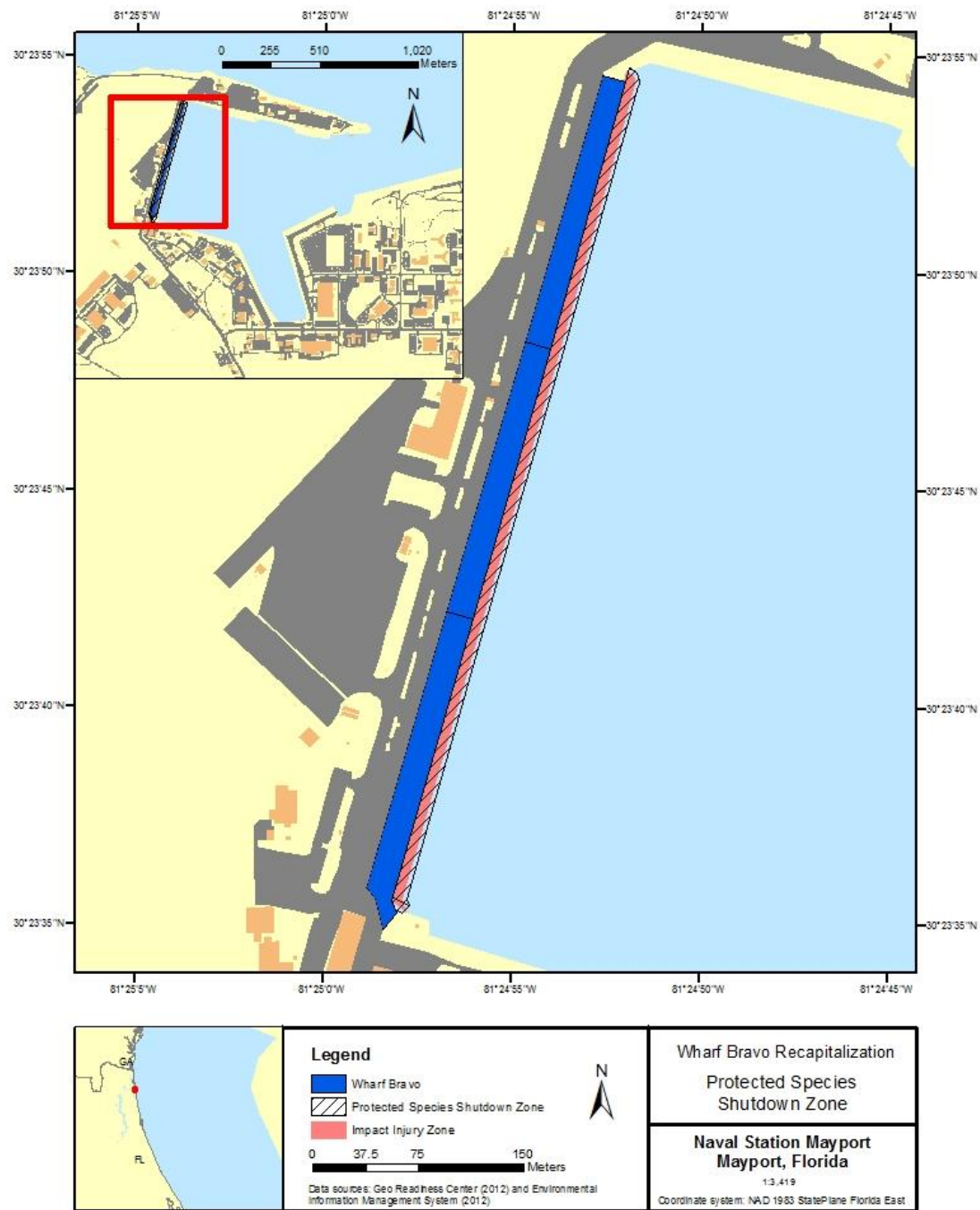
**Table 2-1. Monitoring and Shutdown Zones**

| Type of Activity               | Distance from Pile Being Driven and Active In-water Equipment (any direction in water) | Measure   |
|--------------------------------|--|---|
| All in-water work <sup>1</sup> | 50 ft.<br>(15 m)   | Shut down all in-water work if a marine mammal, sea turtle, or smalltooth sawfish (surface) is observed in the zone |

<sup>1</sup> In-water work is defined as any activity where personnel or equipment are working in the water column. Vessel movement does not constitute in-water work.

The Navy has committed to avoiding any incidental takes (Level A or Level B) of North Atlantic right whales during this project. While the model predicts two Level B right whale exposures, the projected Zone of Influence extends only slightly beyond the mouth of the St. Johns River. Only a single case of a right whale entering the St Johns River has been documented to date (Gibbons, 2011; Cravey 2016), and this case caused a disruption to all traffic at the mouth of the river and in the NS Mayport turning basin. In the highly unlikely event that a right whale enters the mouth of the river during pile driving activities, pile driving would shut down and not resume until the whale is confirmed to be outside the zone of influence. Therefore, no Level B takes of North Atlantic right whales are anticipated.

**Figure 2-3. Monitoring / Shutdown Zone**



## 3.0 MARINE MAMMAL MONITORING

### 3.1 Observers and Procedures

The Navy shall conduct a pre-construction briefing with the contractor. During the briefing, all contractor personnel working in the Project area will watch the Navy's Marine Species Awareness Training presentation.

Marine mammal observers ("observers") designated by the contractor will be placed at the best vantage points practicable to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. The observers will have no other construction related tasks while conducting monitoring. Potential locations for two marine mammal observers include the construction barge and elevated building on Naval Station Mayport with a view of the turning basin.

Observer qualifications for construction actions are as follows:

1. At least one observer must have prior experience working as an observer.
2. Other observers may substitute education (undergraduate degree in biological science or related field) or training for experience.
3. Where a team of three or more observers are required, one observer should be designated as lead observer or monitoring coordinator. The lead observer must have prior experience working as an observer.

Other standard qualifications are:

1. Ability to conduct field observations and collect data according to assigned protocols.
2. Experience or training in the field identification of marine mammals, including the identification of behaviors.
3. Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations.
4. Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior.
5. Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

The contractor will adhere to all requirements of the following:

- U.S. Fish and Wildlife Services (USFWS) 2011 Standard Manatee Conditions for In-Water Work (Attachment 1)
- National Marine Fisheries Service 2006 Sea Turtle and Smalltooth Sawfish Construction Conditions (Attachment 2)
- National Marine Fisheries Services 2012 Southeast Region Marine Mammal and Sea Turtle Viewing Guidelines (Attachment 3)
- Requirements of IHA upon issuance by NMFS.



### 3.2 Methods

Two observers will monitor the shutdown zone before, during, and after pile driving and removal.

The observers will be placed at the best vantage point practicable (e.g. from a small boat, construction barges, on shore, or any other suitable location) to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the equipment operator(s). Elevated positions are preferable; it shall be the contractor's responsibility to ensure that appropriate safety measures are implemented to protect observers on elevated observation points. If a boat is used for monitoring, the boat will maintain minimum distances from species (should they occur) as described in National Marine Fisheries Services' 2012 Southeast Region Marine Mammal and Sea Turtle Viewing Guidelines (Attachment 3).

- During all observation periods, observers would use binoculars and the naked eye to search continuously for marine mammals;
- If the shutdown zone is obscured by fog or poor lighting conditions, pile driving will not be initiated, and will cease if already in progress, until the entire shutdown zone is visible.
- The shutdown zone will be monitored for the presence of marine mammals before, during, and after any pile driving or removal activity.

Should any marine mammal not authorized for Level B harassment in this IHA enter the ensonified area, pile driving will cease until the animal(s) leaves the area. Pile driving would resume only after the observer has determined through re-sighting or by waiting 15 minutes that the animal(s) has moved outside the ensonified area.

If a large whale is spotted within or approaching the ensonified area, all in-water construction activity will cease until the animal has been observed outside the zone of influence or until 30 minutes has elapsed without re-sighting the animal.

#### Pre-Activity Monitoring:

The shutdown zone will be monitored for 15 minutes prior to in-water construction/demolition activities. If a marine mammal is present within or approaching the edge of the shutdown zone, the activity would be delayed until the animal(s) leave the shutdown zone. Activity would resume only after the observer has determined, through re-sighting or by waiting 15 minutes (30 minutes in the case of a large whale) with no further sightings that the animal(s) has moved outside the shutdown zone. The observer will notify the monitoring coordinator/construction foreman / POC when construction activities can commence.

#### During Activity Monitoring:

The shutdown zone shall include all areas where the underwater sound pressure levels are anticipated to equal or exceed the Level A (injury) criteria for marine mammals (180 dB re 1  $\mu$ Pa

isopleth for cetaceans). The shutdown zone will always be a minimum of 15 meters (m) (50 ft.) to prevent injury from physical interaction of marine mammals with construction equipment (Figure 2-3).

If a marine mammal, sea turtle, or smalltooth sawfish enters a shutdown zone during any in-water work, activity will be halted and delayed until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or 15 minutes (30 minutes in the case of a large whale) have passed without re-detection of the animal.

#### Post-Activity Monitoring:

Monitoring of the shutdown zone will continue for 30 minutes following the completion of the activity.

### 3.3 Data Collection

The following information will be collected on sighting forms used by observers:

- Date and time that pile driving or removal begins or ends
- Construction activities occurring during each observation period
- Weather parameters identified in the acoustic monitoring (e.g., wind, temperature, percent cloud cover, and visibility)
- Tide state and water currents
- If a protected species enters the relevant ZOIs and/or a manatee, sea turtle, or smalltooth sawfish enters the shutdown zone, the following information will be recorded once shutdown procedures have been implemented:
  - Species, numbers, and if possible sex and age class of marine mammals
  - Behavior patterns observed, including bearing and direction of travel
  - Location of the observer and distance from the animal(s) to the observer

If possible, photographs of the animal(s) will be taken and forwarded to the Naval Facilities Engineering Command Southeast Environmental point of contact.

Data collection forms shall be furnished to the Environmental point of contact within a mutually agreeable timeframe.

### 3.4 Equipment

The observer(s) shall be equipped with the following:

- binoculars (7 x 50 power or greater) to ensure sufficient visual acuity while investigating sightings
- portable radios or cellular phone(s) to rapidly communicate with the appropriate construction personnel to initiate shutdown of pile driving activity if required

- a digital camera for photographing any marine species sighted
- data collection forms
- Compass/GPS

### **3.5 Observer Monitoring Locations**

In order to effectively monitor the shutdown zones, marine mammal observers will be positioned at the best practicable vantage point(s), taking into consideration the behavior of marine mammal species likely to enter the area, security, safety, and space limitations at the waterfront, in order to properly monitor these zones. Observers may be stationed in small vessels or on the wharf at a location that will provide adequate visual coverage for the marine mammal shutdown zone.

### **3.6 Interagency Notification**

If the Navy encounters an injured, sick, or dead marine mammal, NMFS will be notified immediately. Such sightings will be called into the NMFS Stranding Coordinator for the Southeast:

Erin Fougères, Ph.D.  
Marine Mammal Stranding Program Administrator  
NOAA Fisheries  
Southeast Regional Office  
263 13th Avenue South  
St. Petersburg, FL 33701  
e-mail: [erin.fougeres@noaa.gov](mailto:erin.fougeres@noaa.gov)  
office: 727-824-5323  
fax: 727-824-5309

The Navy will provide NMFS with the species or description of the animal(s), the condition of the animal (including carcass condition if the animal is dead), location, the date and time of first discovery, observed behaviors (if alive), and photo or video (if available).

Care should be taken in handling dead specimens to preserve biological materials in the best possible state for later analysis of cause of death, if that occurs. In preservation of biological materials from a dead animal, the finder (i.e. marine mammal observer) has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed.

## **4.0 REPORTING**

A draft report of any incidents of marine mammals entering the shutdown zone will be submitted to NMFS / USFWS within ninety days of the completion of marine mammal monitoring, or sixty days prior to the issuance of any subsequent IHA for projects at NSM, whichever comes first. A final report shall be prepared and submitted within thirty days following resolution of comments on the draft report from NMFS.

**5.0 REFERENCES**

Hannigan, P. (2011). Pile Driving Equipment. 2011 PDCA Professor Pile Institute. Produced by GRL Engineers, Inc. Retrieved from <http://www.piledrivers.org/pdpi-pat-hannigan.htm>. Accessed on 04 November 2012

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