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**By Email to: [ITP.Goldstein@noaa.gov](mailto:ITP.Goldstein@noaa.gov)**

P. Michael Payne  
Chief, Permits and Conservation Division  
Office of Protected Resources  
National Marine Fisheries Service  
1315 East-West Highway  
Silver Spring, MD 20910

Re: Comments on Application Fed. Reg. 71,517 (November 18, 2011) (FR Notice)

Dear Mr. Payne:

The Sierra Club Miami Group, Biscayne Bay Waterkeeper, and Kent Harrison Robbins as a private citizen submit the following in response to the National Marine Fisheries Service's (NMFS) request for comments on the NMFS proposal to issue an incidental harassment authorization (IHA) to the U.S. Army Corps of Engineers (ACOE), pursuant to the Marine Mammal Protection Act (MMPA). The ACOE's application requests to take marine mammals, by Level B only, incidental to blasting operations in the Port of Miami in Miami, Florida. *Takes of Marine Mammals During Specified Activities; Blasting Operations by the U.S. Army Corps of Engineers During the Port of Miami Construction Project in Miami, FL*. 76 Fed. Reg. 71,517 (November 18, 2011) (FR Notice).

## **INTRODUCTION**

On its face, ACOE's request for an IHA does not comply with the regulatory and legal standards for issuance of an IHA because the Deep Dredge project proposes 600 days of confined blasting with an average of 1 to 2 ("usually no more than 2") blasting periods per day. To authorize an IHA for a project longer than a 1-year period undermines the purpose of the authorization because the cumulative and continued effects of the confined blasts on the resident and transient bottlenose dolphin populations known to both the Biscayne Bay and Atlantic Shelf areas cannot be properly assessed by the limited scope of an IHA analysis which can consider impact not to exceed one year.

Secondly, relative to the 2005/2006 Port of Miami safety zone calculations, the current 2012 application does not reflect the significant blasting area and duration of the project as well as the

high maximum weight which will be employed in this project. In addition, the ACOE has not addressed how it will ensure that stemming the blast hole will be more effective in this round of blasting, especially when considering the specific nature of the blast area which is in a channel which may carry sound and pressure farther and/or in a more concentrated route. The blast area is also in an extremely sensitive part of Biscayne Bay, sharing a boundary with a critical wildlife area frequented by bottlenose dolphin and the West Indian manatee.

Third, as there is no evidence presented that drilling and dredging activities themselves do not increase harassment, these activities should be further tested. The only construction activity restricted to day light hours is the blasting and all other work is permissible through the night when there will be no watch plan in place or possible, so it is unclear the amount of harm that these activities will cause. The extended nature of this project will also adversely impact the habitat of the bottlenose dolphin, sea turtles and other marine mammals because the project is dredging approximately 415 acres of bay bottom, coral reef and sea grass beds (and not including damage to outer shelf reef systems from barge anchoring chains) and FDEP is only requiring a total of 14 acres of seagrass mitigation and 9.78 of artificial reef mitigation.

Further, ACOE studies remain inconclusive and insufficient regarding total numbers of fish kills as their past surveys have only counted those deceased fish that floated to the water surface and not nay therefore it is unknown the true impact of the blasting on effected fish populations and the dolphin food source.

The applicant, ACOE, is seeking, and NMFS has noticed, a legally-defective IHA by authorizing harassment of marine mammal species arising from activities expected to last for more than one year. In addition, the proposed safety zone surrounding the blasting operations is sufficient and detrimental to several marine mammals covered by the IHA.

As discussed in these comments, NMFS cannot issue an IHA for the proposed blasting operations. The blasting operations are part of the overall Port of Miami blasting and dredging project, and the substantial number of takes that will occur over the period of many years involved in the project can only be authorized through LOA regulations under section 101(a)(5)(A)(i). 16 U.S.C. §1371(a)(5)(A)(i). For this reason, NMFS must deny the IHA application.

## **DISCUSSION**

### **I. Biscayne Bay Estuary Has a Distinct Population of Bottlenose Dolphins at Risk**

The NMFS notice acknowledges that the Biscayne Bay stock of bottlenose dolphins is genetically distinct. Figure 12 of the Application, which denotes the location and density of dolphins photo-identified throughout Biscayne Bay, shows that the bottlenose dolphins are located in both the northern and southern portions of Biscayne Bay. See <http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications>. The NMFS notice establishes that these bay estuarine dolphins are genetically distinct from the coastal dolphins. See *FR Notice* at 71,522-3. Further, it acknowledges that there is limited estuarine habitat along the coastline north of the Biscayne Bay. Thus, the estuarine population of the dolphins' habitat is likely

physically defined by the northern limits of Biscayne Bay. The Florida Bay, which is the other estuarine habitat most proximate to the Biscayne Bay resident dolphin population are genetically distinct. See *FR Notice* at 71,522-3. Therefore, the estuarine population of the Biscayne Bay bottlenose dolphins are admittedly a “demographically distinct population stock.” See *FR Notice* at 71,532. The project area is Biscayne Bay. Only 69 individual bottlenose dolphins have been identified in the northern part of Biscayne Bay, and only 229 individuals total in both the northern and southern parts of Biscayne Bay. See *FR Notice* at 71,523. Indeed, the NMFS notice acknowledges that in Biscayne Bay, there is a “community of bottlenose dolphins with evidence of year-round residents.” The Notice acknowledges in its analysis that “bottlenose dolphins inhabiting primarily estuarine habitats are considered distinct from those inhabiting coastal habitats.” See *FR Notice* at 71,523. Thus, we have a population of animals in Biscayne Bay that are apparently isolated within the Biscayne Bay community and are isolated from any other dolphin populations. Thus, Biscayne Bay is a distinct habitat of bottlenose dolphins.

**A. Northern Biscayne Bay which is Geographically Distinct from the South Biscayne Bay is No Longer Polluted Contrary to the Allegations in the Application and Notice**

The corridor for the proposed 600 days of twice-a-day explosive blasting is located along the east-west Government Cut and Miami Harbor Channel bay corridor which is the geographical divide between the northern and southern portions of Biscayne Bay. While there may have been a time decades ago when there were serious problems of industrial and municipal pollution of the northern portion of the Biscayne Bay as has been erroneously alleged in the ACOE Application and the NMFS notice, that is not the current condition of northern Biscayne Bay. Strict code enforcement during the period of Janet Reno’s term as the Miami-Dade County State Attorney, and, thereafter, eliminated industrial effluent into Biscayne Bay and its tributaries in prior decades. Nearly all municipal pollution has also been eliminated except for storm water overflow which overflow is also being diminished by deep well storage filtration systems presently being constructed pursuant to comprehensive plans adopted by the localities. Seagrass on the bay bottom, a substantial pelican population feeding on the fish, and other indicia of biologically healthy environment is apparent. It is a healthy estuarine habitat for dolphins and other sea mammals in the northern bay. Not noted in the ACOE Application and the NMFS notice is the enhancement of the northern Bay estuary by the replanting of mangroves and the creation of Oleta River Florida State Park. The health of the northern bay has been so enhanced that the fishing, canoeing and swimming are activities at Oleta Park. See <http://www.floridastateparks.org/oletariver/>. The flushing of the northern Bay takes about a day after a major storm event, but the quality of the Bay is such that swimming prohibitions have known to have occurred in the past decade only when underwater sewer lines were broken. Thus, the suggestion that northern Biscayne Bay is unhealthy due to municipal and industrial pollution is not true. The northern bay constitutes a wildlife habitat that supports marine mammals and other wildlife and its significance is established below.

**B. Proposed Level of Take Analysis is Faulty**

The ACOE requests incidental harassment limited to Level B acoustic harassment. It is not in dispute that the proposed blasting, without monitoring and mitigation, would result in death and maiming of dolphins. Travelling shock waves from explosive detonation may also

cause non-lethal injury, including lung hemorrhage and rupture of the tympanic membrane, which injury is defined as Level A harassment. Secondly, what is called Level B harassment is blasting that causes “minimal” auditory trauma, TTS and associated behavioral disruption.<sup>1</sup> See *FR Notice* at 71,525. Admittedly, the NMFS notice acknowledges that, with monitoring and mitigation, there may be Level B harassment incidental to noise generated by explosives. See *FR Notice* at 71,525. While Level A harassment causing TM rupture with correlated permanent hearing impairment is intended to be avoided, the NMFS notice admits that it “unknown at this time” as to the farthest distance at which a dolphin would be exposed to an energy flux density (EFD) from an explosive which would cause Level A harassment. See *FR Notice* at 71,525. What this means is that the explosive detonations proposed may result in permanent hearing impairment and Level A harassment. Nonetheless, without this knowledge, the ACOE proposes allowing detonations. Without rational basis, the Notice addresses Level B harassment without discussing why the dolphins should be permitted to be exposed to possible Level A harassment including permanent hearing loss.

Admitting that the blasting may result in harassment, the ACOE requests an “incidental” harassment authorization. While not eliminating whether Level A harassment may also occur, the blasting proposal suggests creation of an exclusion zone to avoid dolphin mortality. Admitting that Level B harassment may occur, the Notice proposes an “exclusion zone” purportedly intended to minimize Level B harassment. Level B harassment include temporary (auditory) threshold shift (TTS), that is a “slight recoverable loss of hearing sensitivity.” See *FR Notice* at 71,532. The Notice also acknowledges that Level B harassment definition also includes noise exposures below TTS that may result in behavioral modifications to resident animals. Without any scientific basis, the NMFS notice concludes that the behavioral modification criteria would not apply “because there will be only two blasting events a day” and each blast event will be multiple (440 in a matrix) within a few microseconds.

The Application and NMFS notice do not correctly consider the impact of the blasting twice a day for 600 days on the behavior of the dolphins. Indeed, under the criteria for Level B harassment, “behavioral disruption” must be considered when TTS occurs. Under the harassment criteria of NMFS, Level B harassment includes behavioral disruption associated with TTS. As a result of a misconstruction of the dual criteria for harassment, the Application and NMFS notice do not consider the behavioral impact of the explosives and the proposed 600 days of twice-a-day explosive blasting. Instead, it conclusively determines that twice a day blasting is not “multiple detonations” and, therefore, does not consider the third criteria of Level B harassment, sub-TTS impact with behavioral disruption, and utterly ignores the dual criteria of Level B harassment with TTS, which requires consideration of associated behavioral modification.

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<sup>1</sup> In addition, Level B harassment is also defined as Sub-TTS impact with behavioral disruption. See *Miami Harbor IHA Application* at 32.

### **C. Blasting and Resulting Behavioral Modification May Sever the Distinct Biscayne Bay Bottlenose Dolphin Stock between the Northern and Southern Parts of the Bay**

The issue of behavioral modification is significant and, without any scientific analysis, is not considered by the Application and Notice. Biscayne Bay is a single identified habitat for distinct genetic stock of bottlenose porpoises. It is transected by a corridor of about four miles. Half that corridor constitutes the blasting area. That corridor physically divides the northern and southern half of the Bay. The northern Bay, which is substantially a shallow grass covered environment where 69 of the 229 resident bottlenose dolphins have been found to reside, is unlike the southern Bay, which is a wide gulf of substantial width and breadth. Access to the narrow northern Bay is limited to passages below two bridges, one immediately adjacent to the blasting corridor. The only other means of egress from the northern Bay is below a bridge at Bakers Haulover, cut approximately 9 miles north, which provides access to the coastal waters adjacent to beaches without surrounding mangrove or other estuarine conditions in which the distinct Biscayne Bay porpoise community has been found to reside. These Bay dolphins, genetically distinct from the coastal dolphins, do not breed with the dolphins along the coast. Essentially, the blasting may create a significant acoustical barrier between the northern Bay and southern Bay. The southern Bay is massive, where thousands of nearly pristine acres comprise the Biscayne Bay National Park.

In essence, it has not been studied or determined whether the current bottlenose dolphins that reside in the northern section of the Bay would be stressed by their isolation from the remainder of their resident community or would alternatively abandon their northern Bay habitat where 30% of the identified individuals currently reside.<sup>2</sup> Level B Harassment is defined under Section 3(18)(B)(ii) of the MMPA to include:

Any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered.

Section 3(18)(B)(ii) of the MMPA.

There is no consideration of data or presentation of scientific analysis that establishes that the 600 days of blasting would not disrupt the behavioral patterns of the community of dolphins which reside in both the northern and southern areas of the Bay. Given the known intelligence of the dolphins, and their sensitive hearing, it is necessary for the applicant to establish with data and analysis that the blasting would not disrupt the natural behavioral patterns of the community of Biscayne Bay bottlenose dolphins. No such analysis was presented in the Application or in the NMFS notice. How the blasting would disturb the stock by causing the disruption of their traversing across the blasting area as well as their breeding and feeding and related activities needs to be studied thoroughly before any incidental take from blasting is considered. Indeed, the

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<sup>2</sup>While the proposal is not physically as obvious as the splitting of the Miami Overtown community by means of an overhead interstate highway, its impact may be as detrimental on the porpoise community as the interstate was on that thriving African-American community.

ACOE and NMFS admit that they are “unable to determine how the temporary modification of the action area by the proposed construction and blasting will impact the two stocks of dolphins expected to be present in the Port of Miami.” See FR Notice at 71,526. That statement suggests that the NMFS notice does not recognize a significant distinction of the geographical location of the blasting that will impact the two different stocks (estuarine bay v. coastal) in different ways. The impact to the coastal stock may very well be occasional because the blast area merely juts into the ocean coastal area, but the impact on the estuarine bay stock will be ongoing and will not be temporary. The disruption of the Biscayne Bay stock will be during the entire term of the 600 days of blasting and, if long term behavioral modification has occurred, for perhaps years thereafter. The NMFS notice’s use of the word “temporary” is disingenuous given the 600 days of blasting and many more days of construction. The NMFS notice acknowledges that the proposed construction and blasting “may delay or detour their movements” (see FR Notice at 71,526), but does not consider that as to traversing from north to south or vice-versa, an acoustical barrier will be created and dolphins, especially cows with nursing and young calves, may avoid the dangers of the area rather than place their young at risk. The effectual trapping of the dolphins in the northern part of the Bay will not cause their slaughter, but may their change their natural behavior.

#### **D. History of Blasting at Miami Port Indicates Substantial Impact on Dolphins**

What makes the lack of data and analysis so much more disturbing is that during the prior blasting in 2005 at the Miami Port, which lasted only 40 days, dolphin in the “exclusion zone” were spotted twelve times involving a total of 30 dolphins identified, in the “exclusion zone” when those prior blasts were scheduled. See FR Notice at 71,532. In other words, 30% of the dates in which blasting were scheduled, dolphin were spotted in the exclusion zones. Thus, given the radius, an even greater would have been immediately adjacent and subject to sub-TTS impact. Once the number of blasting events increases from 40 to 1200, it is likely that a much greater number of dolphins will be adversely affected. The 30 multiple (from 40 to 1200) of increased blasting events may likely result in 360 incidents of dolphin groups in the exclusion zone and many times that amount within the immediate area affected by sub-TTS noise. Using the same number of individual per group as in 2005, results in a total of 900 individual dolphins traversing the exclusion zone during the 1200 blasting events. Of course, these high numbers assume that the dolphin will not be avoiding the area after the repetitive blasting which is an assumption that the undersigned do not accept because behavioral modification may result in dolphin avoiding the area during the course of the blasting.

#### **E. Take Estimates in ACOE Application are Faulty**

Applicant assumes no behavioral modification in which the bottlenose dolphin avoids the blast area. By the applicant’s admission contained in Table 4 of the NMFS notice at 71,352, the estimated take of bottlenose dolphins stock could be 0.162 per blasting event, and applying the 1200 blasting events (2 per day for 600 days), at total of 194 takes of bottlenose dolphin of Biscayne Bay stock will occur. That means that 194 dolphins (assuming that a single dolphin is subject to a take only once), then 84% of the Biscayne Bay stock will be subject to harassment. The analysis of the number of takes is faulty at page 71,534. Because the application is for only one year and does not consider the entire course of 600 blasts, nor does it consider the worst case

in its own charts, it minimizes the impact, claiming only 12 of the Biscayne Bay dolphins will be taken. See FR Notice at 71,534. It is a disingenuous analysis and the percentages impacted are intentionally misleading. The NMFS notice claims that “at worst [one year of blasting] may result, at worst in a temporary modification in behavior and/or low physiological effects (Level B harassment) of a small number of Atlantic bottlenose dolphins.” See FR Notice at 71,534. This conclusion is false and without the data and analysis to support it. Then, in the next sentence the Notice acknowledges that there may be “behavioral modifications” (see FR Notice at 71,534), but then claims that will be just “temporary,” vacating the area immediately after the blasting “to avoid underwater acoustic disturbances”; there is no data and analysis to show that after days, weeks and months of blasting, an intelligent mammal like a dolphin will not learn to avoid the area in its entirety, resulting in the splitting of the stock between the northern and southern Bay. By its own admission, at 71,534, “[b]ehavioral reactions to noise exposure (such as disruption of critical life functions, displacement, or avoidance of important habitat) are more likely to be significant if they last more than one diet cycle or recur on subsequent days.” See FR Notice at 71,534. Does that not describe what is being proposed? Furthermore, the NMFS claims that the activities “will result in the incidental take of small numbers of marine mammals, by Level B harassment only, and that the total taking from the blasting activities will have a negligible impact on the affected species or stocks of marine mammals.” See FR Notice at 71,534. This is utterly without support. As many as 84% of the Biscayne Bay stock of bottlenose dolphins would be impacted. Moreover, the functional severing of its habitat may affect behaviors from breeding to feeding to territorial behavior that have not been considered or analyzed.

#### **F. Blasting is Adjacent to Critical Wildlife Area**

While the ACOE and NMFS acknowledge that they are unable to “determine if resident bottlenose dolphins in the proposed area utilize the inner and outer channels, walls and substrate of the Port of Miami as habitat for feeding, resting, mating or other biologically significant functions” (see FR Notice at 71,526), the blasting area is immediately north and adjacent to the Bill Sadowski Critical Wildlife Area. Just north of this Critical Wildlife Area, adjacent to Fisherman’s Channel is an area which is a prime area to watch surfacing dolphins with their calves feeding during the hour before sunset. The proposed time of the blasts is one hour before sunset. Indeed, the NMFS notice admits that a “high number of manatees [are] documented in the vicinity of the Port of Miami, particularly utilizing the Bill Sadowski Wildlife Areas directly south of the port and north of Virginia Key.” See FR Notice at 71,528. Dolphins also feed and surface in the area. The NMFS analysis of the incidental take does not consider the concentration of marine mammals adjacent to and in the Critical Wildlife Area. See FR Notice at 71,532

## **II. ACOE Cannot Obtain an IHA on the Basis of its Application**

### **A. MMPA Incidental Take Authority**

The MMPA provides two ways to authorize the take of small numbers of marine mammals incidental to otherwise lawful activities that are not commercial fishing. Both sources

of authority are limited to a “specified activity” that occurs within a “specified geographic area.” 16 U.S.C. § 1371(a)(5)(A),(D).

Activities that meet these criteria can be subject to either a one-year IHA, 50 C.F.R. § 216.107, or to five-year regulations under which LOAs would be issued. *Id.* § at 216.106. An IHA may only be used for takes by harassment. *Id.* at § 216.107(a). If the specified activity would only involve take by harassment, but last for longer than one year, LOA regulations must be developed. *Id.*; 16 U.S.C. § 1371(5)(D).

To obtain an IHA or an LOA under the regulations, the applicant for the specified activity must establish, and NMFS must find, that the authorized take will have a “negligible impact on such species or stock ....” 16 U.S.C. § 1371(a)(5)(A)(i)(I).

IHA and LOA rules must also include requirements for monitoring and reporting the impacts of the specified activity on marine mammals. 50 C.F.R. §§ 216.105(b)(3), 216.108. In addition, they must state the (1) permissible methods of take, (2) means of effecting the least practicable adverse impact on the species and its habitat and availability for subsistence use, and (3) monitoring and reporting requirements. *Id.* at §§ 216.105(b), 216.107(a).

The choice of incidental take authorization is very important. An IHA will consider only the takes that occur over the course of one year to determine whether the impacts of the “specified activity” on marine mammals are negligible. Of course, an activity like the Port of Miami blasting and dredging operations that will occur continuously over several years will have greater impacts when considered in its entirety than it will for just a component of the activity conducted during a single year. To determine if there is a “negligible impact,” it is therefore necessary to consider the entire activity, not just a subset of the activity defined by one-year increments.

In addition, an IHA is subject to an expedited procedure that provides for limited public involvement. An IHA allows only a 30-day comment period, 50 C.F.R. § 216.107(a), and is subject to an overall deadline of 120 days from the date of a complete application. *Id.* at § 216.108(f)(1); 16 U.S.C. § 1371(5)(D)(iii). LOA regulations, by contrast, are not subject to a decision deadline and must go through notice and comment rulemaking, which invariably results in more detailed public review. 50 C.F.R. § 216.104. The method of take authorization used, therefore, has very important consequences for the protection provided to marine mammals and the level of public involvement.

## **B. The Port of Miami Project is Expected to Take 24 Months and Therefore Requires Development of LOA Regulations**

As noted above, MMPA incidental take authority applies to a “specified activity.” In this case, the specified activity is the entire Port of Miami blasting and dredging project. That project has now been authorized in its entirety by the federal and state governments (except for MMPA incidental take authorization).



Importantly, the NMFS notice states that dredging and blasting could begin in June 2012, and are expected to last up to 24 months. See *FR Notice* at 71,518. Despite clear statutory language, ACOE and NMFS appear to take the position that marine mammal incidental take during the lengthy blasting and dredging phase could be covered under successive one-year IHAs. To the contrary, the specified activity of the Port of Miami project can be considered for MMPA purposes *only* under LOA regulations. Section 101(a)(5)(D) of the MMPA specifies that an IHA can be issued for “periods not more than one year.” 16 U.S.C. § 1371(5)(D).

The legislative history of the MMPA, case law, and NMFS’s own practice in issuing IHAs and LOAs all point to the need for ACOE to apply for a full LOA rule in this context.

When Congress created the MMPA, it developed two innovative legal features. First, it included a conservative presumption in favor of species protection; in cases of doubt or ambiguity, decisions would favor marine mammal species. Second, it assigned the burden of proof to the party seeking an authorization to take or import the species, such that activities that disturb, capture, injure, or kill marine mammals will be authorized only if the requesting party sufficiently demonstrates that its activities will not disadvantage the species, harm the marine ecosystem, or result in avoidable pain to the animal. H.R. Rep. No. 92-707, at 18, 24 (1971); 118 Cong. Rec. S. 15680 (daily ed. Oct 4, 1971) (statement of Sen. Packwood). The Act’s mandate is “to proceed knowledgeably and cautiously.” *Comm. for Humane Legislation v. Richardson*, 414 F. Supp. 297, 307 n.24 (D.D.C. 1976) (quoting a House Committee Report on H.R. 10420), *aff’d*, 540 F.2d 1141, 1148 (D.C. Cir. 1976).

NMFS must administer the MMPA for the “benefit of the protected species rather than for the benefit of commercial exploitation.” *Committee for Humane Legislation v. Richardson*, 540 F.2d 1141, 1148 (1976) (citing H.R. Rep. No. 92-707). And any decision “must be consistent with the MMPA ‘immediate goal’” of reducing incidental take or serious injury to marine mammals to “insignificant levels approaching zero mortality and serious injury rate.” *Kokechik Fishermen’s Ass’n. v. Sec’y of Commerce*, 839 F.2d 795, 801 (1988) (citing 16 U.S.C. § 1371(a)(2)). Congress’ intent was to “insist that the management of the animal populations be carried out with the interests of the animals as the prime consideration.” H.R. Rep. No. 92-707, at 18. Therefore, the Secretary of Commerce must first look at the “interest in maintaining healthy populations of marine mammals” when balancing competing interests. *Id.* at 802; *Committee for Humane Legislation, v. Richardson*, 540 F. 2d at 1151 n.39; see H.R. Rep. No.92-707, at 24 (1971) (The House Merchant Marine and Fisheries Committee intended to “build such a conservative bias into the [MMPA]”); 118 Cong. Rec. S. 15680 (daily ed. Oct 4, 1971) (statement of Sen. Packwood) (“Scientists generally will state that our level of knowledge of marine mammals is very low. . . . Barring better and more information, it would therefore appear to be wise to adopt a cautious attitude toward the exploitation of marine mammals.”).

When these principles are applied, NMFS must adopt an interpretation of its section 101(a)(5) incidental take authority that recognizes the one-year limitation applied to IHAs and apply LOA regulation requirements. Any other approach will fail to give sufficient protection to the many marine mammals that will be subjected to take and harassment in favor of expediting the development of the Port of Miami blasting and dredging project. NMFS cannot allow for such a result and must deny the application.

### **III. Mitigation Efforts are Insufficient and Detrimental to the Bottlenose Dolphin**

According to the ACOE, the Port of Miami approached the Jacksonville District, U.S. ACOE in 2000 to complete the deepening and expansion of Miami Harbor (*Jordan, et al. 2007*). The District, at that time, determined that blasting would be required as a construction technique (*Jordan, et al. 2007*). The issue of necessity for blasting and the amount of blasting involved in this project does not appear to have been revisited. Technological advances in dredging equipment that would reduce the amount of blasting needed would greatly minimize the adverse effects on all marine life in and around the project footprint. As this project takes place within an Aquatic Preserve, classified as an Outstanding Florida Water, adjacent to a critical wildlife area, and is considered habitat for over 12 endangered or threatened species of marine life, it is imperative the most updated and least impactful best management practices be employed, including the most recent machinery, scientific studies and mitigation practices.

#### **A. NMFS Should Require Improvement for Zone and Monitoring Program**

- i. Zone calculations should use the latest studies and incorporate all findings from prior blasting event and account for bathymetric data and nature of blast area, i.e. channels.*

The ACOE has stated that it will “develop and implement four zones as protective measures that are based on the use of an unconfined blast...” The four zones will consist of the “danger zone”: inner-most zone located closest to the blast, the “exclusion zone”: the danger zone plus 500 feet, the “safety zone”: described as the “third” zone and the “watch zone”: the outermost zone. The ACOE also acknowledges that it does not have a blast plan in place since a contractor is yet to be selected, however lists certain measures that it will require. The danger zone radius, which is the zone in which a marine mammal will suffer at least Level B harassment, is calculated as 260 times the cube root of the weight of the explosive charge. ACOE cites a study (Goertner, 1982) to develop this formula as well as observations of sea turtle injury and mortality associated with unconfined blasts in the Gulf of Mexico (Young, 1991; Young and O’Keefe, 1994) which were adopted by the State of Florida.

A report entitled “Blast emission criteria and detection methods for the safeguarding of marine mammals in a blast environment” by R.A. Godson, published in 2010, states the following criteria:

In order to provide an objective and quantitative assessment of the range and severity of any environmental effect from underwater blasting, it is necessary to be able to estimate the following parameters:

- The source level (i.e. level of sound) generated by the explosives
- The transmission loss, that is, the rate at which sound from the source is attenuated as it propagates underwater
- The effect threshold, that is, the level of sound at which a particular effect, such as death, injury or avoidance of a species, occurs

Godson, p. 684.

The Safety Zone is the zone beyond which peak pressure levels from blasting are predicted to be lower than the 83kPa criterion, creating no adverse effects on marine mammals.<sup>3</sup>... This criterion was originally established for estimating the impacts of large unconfined explosions and was introduced in order to provide a more conservative range....when the explosive or the marine animal approaches the sea surface (for which cases the explosive energy is reduced but the peak pressure is not).

Godson, p. 686.

The report further specifies the determination of the safety zone radius:

The Safety Zone is the zone beyond which peak pressure levels from blasting are predicted to be lower than the 83kPa criterion, creating no adverse effects.<sup>4</sup>...The propagation of the peak pressure is very much dependent on the hydrography specific to the site, the water depth and the sound propagation underwater.

Godson, p. 686.

In its application, the ACOE frequently cites its 2005 blasting activities as a point of reference for the proposed blasting project in 2012. These projects do not warrant the comparison, especially for incidental takings of dolphin and sea turtles as ACOE contends. The project footprint is far larger in the present project than in 2005. The maximum weight of explosives has increased from 376 pounds (*FR Notice* at 71,519) to 450 pounds with averages of 2 blasts per day for an estimated 600 days of blasting. Although, in its proposed calculations, ACOE has increased the danger zone for dolphin and sea turtles by 500 feet, this is insufficient accommodation relative to the large increase in blast pressure due to increased weight and frequency of blasting. Further, the safety zone calculation has not changed from the past blasting event in the current application. As detailed above, the safety zone is a critical component to ensure marine mammal safety.

Despite an incident in the 2005 blast reported in the “Protected Marine Species Watch Program Miami Harbor Deepening Project” by ECOES Consulting, Inc for the ACOE, ACOE has not altered its mitigation program based on these findings. As stated in the report, two dolphins located in the channel west of the blasting, stationary at approximately **2400 feet**, “were

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<sup>3</sup> “Marine mammals may be harassed due to noise involving high explosive detonations for which there are two different impact assessment criteria. One criterion used in previous projects for non-injurious harassment is the temporary threshold shifts. A second criterion used for estimating the temporary threshold shift threshold is 83kPa (12 psi) cited by Ketten, et al. (1995) as a safe upper limit for minimal, recoverable auditory trauma (i.e., temporary threshold shift). Godson, p. 685.

<sup>4</sup> “Typically, underwater construction blasting involving charges of less than 75 kg...would attract the 83kPa peak pressure criterion.” Godson, p. 686.

feeding and cavorting.” The exclusion zone calculation was **1600 feet** for the lower weight of explosives used that day (the exact weight used is not recorded in this report). The report continues to describe the channel area (where much of the proposed blasting will also occur):

The topography of the bottom of that area is very shallow to the south, then an exceptionally steep drop off into the channel at 40+ feet ending at the bulkhead wall to the north. Westward, the channel continues and has a more gradual upward slope. At the time of the blast, one of the dolphins was at the surface in the shallows, which the other dolphin was underwater within the channel. The dolphin that was underwater showed a strong reaction to the blast. The animal jumped fully out of the water in a “breaching” fashion; behavior that had not been exhibited prior to the blast.

ECOES, p. 18.

It is critical to note that based on the ACOE formula (which is proposed to remain the same in the current application), the harassed dolphin was located **800 feet outside** of the exclusion zone and still exhibited a strong adverse reaction to the blast described as “lower weight.” Considering the significant increase in weight maximum in the current project and the much increased frequency and duration of this project, it is clear that the mitigation and zone calculations are insufficient as proposed. In the ECOES report conclusion, the author also notes that the shallow channel and bathymetry of the project site, which remains the same (only expanded) in the current project has a great effect on the pressure and sound effect of the blasting agents. “This observation may be important to consider when formulating blast/watch plans for marine mammals in the future. It may be prudent to extend or contract the exclusion zone **based on the bathymetry of the project site.**” (ECOES, p. 18).

*ii. Improved methods for stemming the blast holes*

In the process of confined blasting, “the hole in which the explosive material is placed is capped with an inert material, such as crushed rock”, also described as “stemming the hole.” (Jordan 2007). Studies have shown this practice to significantly reduce the pressure wave released as compared to open water discharges. (Jordan 2007).

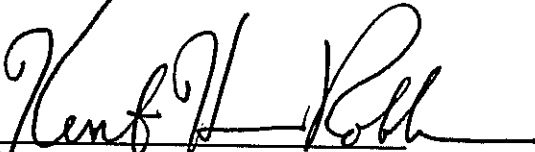
In a study done from August 6 – 12, 2005, during the most recent Port of Miami harbor deepening and blasting, pressure data was measured and recorded comparing confined and open water blasts. The study states: “This Miami Harbor location shows that many holes were not as completely confined as desirable. Yet, every hole recorded in these confined shots had lower pressures than would have been recorded as an open-water shot of the same charge weight.” (Hempen & Keevin, 2007) It is clear from the data and past studies that, as mentioned above, confined blasts significantly reduce the harm inflicted by their open water counterparts. However, if the protocol of stemming the holes to benefit the marine community is not properly executed, these mitigation methods are not creating the positive changes that are so critical to reducing the take number of dolphin, fish, sea turtles and manatees.

## CONCLUSION

For the foregoing reasons, the incidental harassment authorization should be denied and a comprehensive analysis and due process required under rule making, consistent with a request for a Letter of Authorization, should be required.

Sincerely,

Sierra Club Miami Group

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