IN THE UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

NATURAL RESOURCES DEFENSE COUNCIL, INC. ET AL,

Plaintiffs,

v.

GUTIERREZ ET AL,

Defendants.
_____/

No. C-07-04771 EDL

OPINION AND ORDER GRANTING IN PART PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION

INTRODUCTION

Plaintiffs, various environmental organizations and a concerned individual, seek a preliminary injunction against the Federal Defendants to limit the United States Navy's peacetime use of low frequency sonar, known as Surveillance Towed Array Sensor System ("SURTASS") Low Frequency Active ("LFA"), for training, testing and routine operations.[1] Plaintiffs allege that the Navy and the National Marine Fisheries Service ("NMFS") improperly approved the use of this sonar in as much as seventy-five percent of the world's oceans in violation of the Marine Mammal Protection Act ("MMPA"), 16 U.S.C. §§ 1361-1421, the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321-4370, and the Endangered Species Act ("ESA"), 16 U.S.C. §§ 1531-1544. They claim that these violations will cause irreparable injury to marine mammals and other

[1] Plaintiffs are: Natural Resources Defense Council, International Fund for Animal Welfare, The Humane Society of the United States, Cetacean Society International, League for Coastal Protection, Ocean Futures Society and Jean-Michel Cousteau. Defendants are: Carlos Guiterrez, Secretary of the Department of Commerce, the National Marine Fisheries Service, William Hogarth. Assistant Administrator for Fisheries of the National Oceanographic and Atmospheric Administration, Conrad Lautenbacher, Administrator of the National Oceanographic and Atmospheric Administration ("NOAA"), the Department of the Navy, Donald Winter, the Secretary of the Navy, and Admiral Mike Mullen, Chief of Naval Operations.

sea creatures, many of them rare and endangered, including whales, dolphins, seals, sea turtles and salmon. Defendants counter that they have fully complied with the applicable laws. Defendants argue further that enjoining the use of LFA sonar would harm national security, even though they would still be free to use it during wartime or periods of heightened threat, because training and testing is necessary for military readiness.

This is the second case before this Court involving the Navy's use of this type of low frequency sonar. In the prior case, the Court granted Plaintiffs' motion for preliminary injunction limiting the scope of its use, and later held on summary judgment that Defendants had violated the MMPA, NEPA and ESA. See NRDC v. Evans, 279 F. Supp. 2d 1129 (N.D. Cal. 2003) ("Evans"). The Court's prior opinions granting the preliminary and permanent injunctions set forth in considerable detail how LFA sonar operates to propagate low frequency sound waves over large distances in the ocean, and the scientific understanding as of that time of its potential effects on marine life, which will not be repeated here but provide additional background for this decision. The Court issued a stipulated permanent injunction setting forth the terms under which the Navy was to operate LFA sonar. See Oct. 8, 2003 Stipulated Permanent Inj. At least in part in response to Evans, Congress amended the MMPA with respect to military readiness activities, exempting such activities from the "small numbers" and "specified geographic region" requirements of the MMPA. See 16 U.S.C. §§ 1371(a)(5)(A)(ii), (a)(5)(F). The Court amended the judgment to reflect this change in the law. The Ninth Circuit dismissed Defendants' appeal of the ESA ruling for lack of standing.

On November 10, 2005, the Navy issued a draft Supplemental Environmental Impact Statement ("SEIS"), which was finalized in April 2007. In May 2006, the Navy applied to NMFS for a five-year authorization under the MMPA for the take of marine mammals incidental to testing, training and military operations. NMFS published a Proposed Rule on July 9, 2007 and, following public comment, issued the Final Rule reflecting the five-year authorization on August 16, 2007. See Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to the U.S. Navy Operations of Surveillance Towed Array Sensor System Low Frequency Active Sonar, 72 Fed. Reg. 46,846 (Aug. 21, 2007) ("Final Rule"). In the Final Rule, NMFS requires the Navy to use a three-

point monitoring scheme: visual monitoring for marine mammals and sea turtles from the vessel during daylight hours; use of passive SURTASS sonar to listen for sounds generated by marine mammals; and the use of high frequency active acoustic [HF/M3] sonar to detect, locate and track marine mammals that might be affected by LFA transmissions near the vessel. See 72 Fed. Reg. at 46,887-88. The Final Rule places geographic boundaries on the use of SURTASS LFA, including a restriction that the sonar sound field may not exceed 180 dB at a distance of more than 12 nautical miles ("nm") from the coast and/or within 1km seaward of the designated Offshore Biologically Important Areas ("OBIA"), and requires that data be collected during routine operations of LFA sonar. See 72 Fed. Reg. at 46,889-92. The Navy may apply for annual Letters of Authorization under the five-year Final Rule. The Navy did so and on August 15, 2007, NMFS issued a one year Letter of Authorization ("LOA") for each of two ships. Defs.' Ex. 2, 3.

Plaintiffs now seek a preliminary injunction against Defendants that continues the currently imposed mitigation measures negotiated by the parties in the wake of this Court's prior decision, pending resolution of this second lawsuit. As explained below, the Court recognizes the importance to national security and to the safety of our armed forces of the Navy conducting training and peacetime operations under a variety of conditions with this relatively new technology, which promises better detection of the new generation of very quiet submarines. Plaintiffs have shown, however, that they are likely to prevail on some of the issues they have raised, especially whether the Final Rule complies with the least practicable impact requirement of the MMPA.

In determining whether and if so what kind of preliminary injunction should issue, the Court must consider, among other factors, the public interests both in national security and in protecting marine mammals and endangered species. Accordingly, the Court concludes that a carefully tailored preliminary injunction should issue which affords the Navy considerable flexibility in the use of SURTASS LFA sonar for testing and training and detecting and tracking submarines in a wide variety of ocean conditions and locations, but provides some additional geographical safeguards to reduce the risk to marine mammals and endangered species.

LEGAL STANDARD

A party seeking a preliminary injunction must show either: (1) a combination of probable

success on the merits and the possibility of irreparable injury; or (2) that serious questions are raised and the balance of hardships tips in its favor. These two formulations represent two points on a sliding scale in which the required degree of irreparable harm increases as the probability of success decreases. Department of Parks & Rec. for State of Calif. v. Bazaar Del Mundo Inc., 448 F.3d 1118, 1123 (9th Cir. 2006); Roe v. Anderson, 134 F.3d 1400, 1402 (9th Cir. 1998) (citation omitted.). "In each case, a court must balance the competing claims of injury and must consider the effect on each party of the granting or withholding of the requested relief . . . ." Amoco Prod. Co. v. Village of Gambell, 480 U.S. 531, 542 (1987). A "serious question" is one as to which the moving party has "a fair chance of success on the merits." Sierra On-Line, Inc. v. Phoenix Software, Inc., 739 F.2d 1415, 1421 (9th Cir. 1984); see also Martin v. Int'l Olympic Comm., 740 F.2d 670, 674-75 (9th Cir. 1984) ("fair chance of success" on the merits is an "irreducible minimum").

Thus, to determine whether injunctive relief is appropriate, courts apply a "traditional balance of the harms analysis." National Parks & Conservation Ass'n v. Babbitt, 241 F.3d 722, 737 (9th Cir. 2001); Forest Conservation Council v. United States Forest Serv., 66 F.3d 1489, 1496 (9th Cir. 1995); Amoco Prod. Co. v. Village of Gambell, 480 U.S. 531, 541 (1987). "In each case, a court must balance the competing claims of injury and must consider the effect on each party of the granting or withholding of the requested relief . . . ." Amoco, 480 U.S. at 542. "Environmental injury, by its nature, can seldom be adequately remedied by money damages and is often permanent or at least of long duration, i.e., irreparable." Id. at 545; Sierra Club v. United States Forest Serv., 843 F.2d 1190, 1995 (9th Cir. 1988). "If such injury is sufficiently likely, therefore, the balance of the harms will usually favor the issuance of an injunction to protect the environment." Amoco, 480 U.S. at 545; Sierra Club, 843 F.2d at 1195; Singleton, 75 F. Supp. 2d at 1141.

In the NEPA context, irreparable injury flows from a failure to evaluate the environmental impact of a major federal action. See Thomas v. Peterson, 753 F.2d 754, 764 (9th Cir. 1985); American Motorcyclist Ass'n v. Watt, 714 F.2d 962, 966 (9th Cir. 1983) ("The premise for relaxing the equitable tests in NEPA cases is that irreparable damage may be implied from the failure of responsible authorities to evaluate thoroughly the environmental impact of a proposed federal action.") The harm at stake when the government fails to comply with the NEPA procedures "is a

harm to the *environment*, but the harms consists of the added *risk* to the environment that takes place when governmental decisionmakers make up their minds without having before them an analysis (with prior public comment) of the likely effects of their decision upon the environment." Sierra Club v. Marsh, 872 F.2d 497, 500 (1st Cir. 1989) (emphasis in original); National Parks & Conservation Ass'n, 241 F.3d at 73 n.8 (finding issuance of a preliminary injunction for a NEPA violation was justified under Marsh). Nonetheless, in "'unusual circumstances' an injunction may be withheld, or, more likely, limited in scope." National Parks & Conservation Ass'n, 241 F.3d at 737 n.18.

In determining whether to issue an injunction, courts must also consider the public interest. See Amoco, 480 U.S. at 542; Singleton, 75 F.Supp.2d at 1141. "[W]here an injunction is asked which will adversely affect a public interest for whose impairment, even temporarily, an injunction bond cannot compensate, the court may in the public interest withhold relief until a final determination of the rights of the parties, though postponement may be burdensome to the plaintiff." Weinberger v. Romero-Barcelo, 456 U.S. 305, 312-13 (1982) (quoting Yakus v. United States, 321 U.S. 414, 440 (1944)). In Weinberger, the Supreme Court upheld the denial of a preliminary injunction because the merely technical violations at issue were not harming the environment, whereas granting injunctive relief would seriously harm not only the Navy, but also the general welfare. Id. at 310; see also Natural Resources Defense Council v. Winter, 502 F.3d 859, 863-64 (9th Cir. 2007) (public interests in safety of whales, safety of military personnel and national security must all be weighed). Under ESA, unlike other environmental statutes, Congress has already determined that the balance of hardships and the public interest tips heavily in favor of protected species, so an injunction must issue if a future violation is likely. Amoco, 480 U.S. at 543 n.9 (citing Romero-Barcelo's distinction of TVA v. Hill, 437 U.S. 153 (1978)); National Wildlife Federation v. Burlington Northern Railroad, 23 F.3d 1508, 1510-11 (9th Cir. 1994) (citing Marsh, 816 F.2d at 1383).

LIKELIHOOD OF PREVAILING ON THE MERITS

The Court reviews challenges under the MMPA, ESA, NEPA, and APA to ensure that the agency has not acted in a manner that is "arbitrary, capricious, an abuse of discretion, or otherwise

not in accordance with law." Okanogan Highlands Alliance v. Williams, 236 F.3d 468, 471 (9th Cir., 2000); 5 U.S.C. § 706. "In exercising their sound discretion, courts of equity should pay particular regard for the public consequences in employing the extraordinary remedy of injunction." Weinberger v. Romero-Barcelo, 456 U.S. 305, 312-13 (1982) (citing Railroad Comm'n. v. Pullman Co., 312 U.S. 496, 500 (1941)).

A. Marine Mammal Protection Act

The Marine Mammal Protection Act ("MMPA") was enacted in 1972 to prevent the extinction or depletion of marine mammal stocks as a result of man's activities. See 16 U.S.C. § 1361(1). "[S]uch species and population stocks should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part, and, consistent with this major objective, they should not be permitted to diminish below their optimum sustainable population." 16 U.S.C. § 1362(2). The MMPA generally prohibits the taking of marine mammals, with certain statutory exceptions. See 16 U.S.C. § 1371(a)(3).

"Take" is defined as "to harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect or kill, any marine mammal." 50 C.F.R. § 216.3;16 U.S.C. § 1362(13). The definition of "take" includes any negligent or intentional act which results in disturbing or molesting a marine mammal. 50 C.F.R. § 216.3.

The MMPA generally defines "harassment" as "any act of pursuit, torment or annoyance" that:

> (i) has the potential to injure a marine mammal or marine mammal stock in the wild; or
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> (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

16 U.S.C. § 1362(18)(A). However, in 2003, the MMPA was amended to change the definition of "harassment" for purposes of military readiness activities such as those at issue here:

> (B) In the case of a military readiness activity . . . the term "harassment" means
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> . . . .
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> (ii) 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.

16 U.S.C. § 1362(18)(B).

In general, the MMPA permits citizens of the United States who engage in a specified activity other than commercial fishing within a specified geographical region to petition the Secretary to authorize the incidental, but not intentional, taking of small numbers of marine mammals within that region. 16 U.S.C. § 1371(a)(5)(A); 16 U.S.C. § 1362(12)(A) (for purposes of § 1371, the Secretary means the Secretary "of the department in which the National Oceanic and Atmospheric Administration is operating, as to all responsibility, authority, funding and duties under this chapter with respect to members of the order Cetacean and members, other than walruses, of the order Pinnipedia," or the "Secretary of the Interior as to all responsibility, authority, funding and duties under this chapter with respect to all other marine mammals covered by this chapter."). Such authorization is limited to a period of not more than five consecutive years. Id. As noted above, Congress amended the MMPA to exempt military readiness activities from the "specified geographic region" and "small numbers" requirements otherwise applicable to authorizations of incidental take. See 16 U.S.C. § 1371(a)(5)(F). Thus, with respect to military readiness activities, the Secretary shall authorize, for a period of not more than five years, the incidental, but not intentional, taking by any means, including harassment, of marine mammals if the Secretary finds that "the total of such taking during each five-year (or less) period concerned will have a negligible impact on such species or stock and will not have an unmitigable adverse impact on the availability of such species of stock for taking for subsistence uses . . . ." 16 U.S.C. § 1371(a)(5)(A), (D), (F).

If the Secretary allows the incidental taking, the Secretary must prescribe regulations setting forth: (i) "permissible methods of taking pursuant to such activity, and other *means of effecting the least practicable adverse impact on such species or stock and its habitat*, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for subsistence uses;" and (ii) "requirements pertaining to the monitoring and reporting of such taking." 16 U.S.C. § 1371(a)(5)(A) (emphasis added). The determination of means for achieving the "least practicable adverse impact" includes consideration of "personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness

activity" in consultation with the Department of Defense. 16 U.S.C. § 1371(a)(5)(A)(ii), (a)(5)(D)(vi).

There is no private right of action under the MMPA. See Hawaii County Green Party v. Clinton, 124 F. Supp. 2d 1173, 1190 (D. Haw. 2000) (citing Didrickson v. U.S. Dep't of Interior, 982 F.2d 1332, 1338 (9th Cir. 1992)). Citizens alleging violations of the MMPA must sue under the APA and show that the agency's actions were arbitrary and capricious.

Plaintiffs argue that NMFS's issuance of the Final Rule violated the MMPA in four ways: (1) that NMFS failed to prescribe sufficient mitigation and monitoring measures to effect the "least practicable impact" on marine mammals; (2) that NMFS failed to ensure that impacts will be "negligible;" (3) that NMFS failed to authorize the lethal take of marine mammals despite the potential for such effects; and (4) that NMFS failed to submit critical information for public review and comment.

1. Least Practicable Impact

As set forth above, the MMPA requires that when an incidental take permit is issued, NMFS must prescribe "permissible methods of taking . . . and other means of effecting the least practicable adverse impact" on marine mammals, and must set "requirements pertaining to the monitoring and reporting of such taking." 16 U.S.C. § 1371(a)(5)(A)(i)(II)(aa), (bb). Plaintiffs argue that the Final Rule violates this portion of the MMPA by failing to confine routine operations to areas of the ocean that have lower concentrations of marine mammals or, conversely, put off-limits areas known to be especially rich in marine mammal life, including endangered species. In particular, Plaintiffs challenge as arbitrary and capricious Defendants' designation of only ten offshore areas as OBIAs that must be avoided, all but two of which are in the United States and Canada, among all the vast expanse of ocean in which LFA may be deployed; Defendants' failure to extend the coastal exclusion zone beyond 12 nm; and Defendants' failure to require sufficient advance monitoring before deploying low frequency sonar to trigger shutdowns when marine mammals are nearby.

i. Offshore Biologically Important Areas

The SEIS defines OBIAs as: "areas of the world's oceans outside of the geographic stand off distance of a coastline where marine animals of concern . . . congregate in high densities to carry out

biologically important activities." SEIS at 2-14, n.1. As part of its mitigation effort with respect to the prior Final Rule issued in 2002, NMFS designated four OBIAs: the 200 meter isobath of the United States East Coast, the Antarctic Convergence Zone, the Costa Rica Zone, and the Penguin Bank (Hawaii). See 67 Fed. Reg. 46,712, 46,787. Although not technically designated as OBIAs, the earlier Final Rule also extended the same protection to three National Marine Sanctuaries: Monterey Bay National Marine Sanctuary (California), Gulf of the Farollones National Marine Sanctuary (California) and Cordell Bank National Marine Sanctuary (California). See id. In addition, the previous Final Rule restricted use of LFA sonar use within 23 nm off of the Olympic Coast National Marine Sanctuary (Washington) during some months. See id.

The 2007 Final Rule designates ten OBIAs, including the four listed in the 2002 Final Rule and the four National Marine Sanctuaries that were protected under the 2002 Final Rule. See 72 Fed. Reg. at 46,892. The two newly protected areas are the Flower Garden Banks National Marine Sanctuary (offshore from Texas and Louisiana) and The Gully (offshore from eastern Canada continuing north from the United States East Coast OBIA). See id.; Defs.' Graphics Ex. 1. Plaintiffs argue that it is arbitrary and capricious not to protect as OBIAs additional areas of the oceans known to have rich marine life.[2]

At the hearing, Plaintiffs pointed to three locations as examples of areas that they believe should have been designated as OBIAs: the Galapagos Islands (offshore from Ecuador), the Great Barrier Reef (off the Australian coast) and the Pelagos (in the Mediterranean Sea). The record includes many more areas that Plaintiffs and other commenters believe should have been examined

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[2] Defendants argue that, during the five years of operation under the 2002 Final Rule, Plaintiffs failed to raise the issue of additional OBIAs during the public comment period, and only raised the issue in a comment on the Proposed Rule in July 2007 without providing any substantive information about the proposed areas. See Pls.' Ex. 9. Defendants contend that the information provided in July 2007 was not sufficient to assist NMFS in assessing the merits of the proposed OBIAs. See Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 553-54 (1978) (stating that participants in the comment period must "structure their participation so that it is meaningful, so that it alerts the agency to the intervenors' position and contentions."). This case, however, unlike Vermont Yankee, does not involve "uncharted territory." To the contrary, the previous litigation, including the Court's prior opinion, involved insufficient designation of OBIAs. Further, NMFS has considerable sources of information of its own and through related government agencies regarding specially protected marine areas. See, e.g., infra the reference to NOAA's website content regarding the Galapagos Islands. Also, in Vermont Yankee, the defendants continually sought further clarification of the plaintiff's comments and were met with a virtual refusal to participate. Defendants have cited no authority to support an argument that comments coming late in the process may simply be disregarded.

as OBIAs. See, e.g., Pls.' Ex. 9 at 1112, n.3; Pls.' Ex. 89 at 55-56. These include the Emperor Seamount Chain as well as the southern portion of the Oyashio/Kuroshio area which, as the Court noted in its prior opinion, both Plaintiffs' and Defendants' experts previously agreed qualified for nomination as an OBIA during certain months. See Evans, 279 F. Supp. 2d at 1162-63.

Defendants argue as a threshold matter that the MMPA does not specifically require establishment of OBIAs to protect marine mammals. While Defendants are correct that the MMPA does not specifically mandate any particular mitigation measure, it expressly requires the Secretary to prescribe methods of ensuring the "least practicable adverse impact" on marine mammals after considering the safety of military personnel, practicality and the impact on military readiness activities. Defendants have rejected as impractical the alternative method of ensuring the least practical adverse impact noted by the Court in its prior opinion: limiting routine operations to areas of the ocean and/or seasons that are relatively devoid of marine mammals. See Evans, 279 F. Supp. 2d at 1163. Defendants have also rejected (except for the United States East Coast OBIA, which does extend to the 200m isobath) the approach of extending the coastal exclusion zone beyond 12 nm where warranted based on the additional criteria of the variable location of the continental shelf (i.e., using the isobath as well as a fixed offshore distance) -- a method employed during the five years that the injunction has been in effect -- despite evidence that the continental shelf break provides especially rich habitat for marine mammals. Instead, Defendants have chosen to rely on a limited 12 nm coastal exclusion zone, combined with avoiding areas of the ocean further from shore that are recognized as rich in concentrations of marine mammals through designating OBIAs.[3] Defendants have considerable discretion to make reasonable choices among alternatives. However, having chosen not to confine operations to relatively sterile areas of the ocean and seasons of the year and to reduce the coastal exclusion zone, the Secretary must make a serious effort to investigate plausible candidates for OBIAs and designate sufficient ones to practically minimize the adverse impact. Defendants respond that they have in fact done so, having considered the areas raised by

[3] As discussed below, and in the Court's prior opinion (see Evans 279 F. Supp. 2d at 1160-61), the other methods that Defendants rely on to ensure the least practicable adverse impact, the three part system which tries to detect nearby marine mammals when conducting operations with LFA sonar, have not been shown to reliably detect them and thus cannot achieve the least practicable impact.

Plaintiffs and other commenters, but reasonably concluded that no additional OBIAs should be designated. See, e.g., 72 Fed. Reg. at 46,879.

The Final Rule designates ten OBIAs and leaves 70-75% of the world's oceans available for operating LFA sonar. See SEIS at 46,849. Strikingly, the large majority of those ten (eight) are in waters off the United States or, in one case, Canada, after Canada made a specific request. Even off the United States coast, NMFS rejected the proposal by NOAA, its own parent agency, to include the Davidson Seamount adjacent to the Monterey Bay National Marine Sanctuary, on the grounds that the Davidson Seamount had adequate protections under the proposed regulations and the LOA process. See Defs.' Resp. to Ct.'s Order Requiring Further Information at 2. Defendants further stated that there was insufficient data to establish the Davidson Seamount as an OBIA or to distinguish it from the many other seamounts in the Pacific. Yet, as Plaintiffs point out, detailed information about sperm whale distribution is readily available from NOAA, which has issued a Proposed Rule to expand the Monterey Bay National Marine Sanctuary to include the Seamount. See Pls.' Resp. to the Ct.'s Order Requiring Further Information at ¶ 2, Ex. 1 at 4; Ex. 2 at 59,061.

Similarly, Defendants refused to designate as an OBIA the Northwestern Hawaiian Islands Marine National Monument, which was established by Presidential Proclamation in 2006, instead relying solely on the 12 nm coastal exclusion zone and the (at best) partially effective monitoring system. See SEIS at 10-124. Yet, according to NOAA's website, the Northwestern Hawaiian Islands Marine National Monument (renamed the Papahanaumokuakea Marine National Monument) consists of emergent and submerged lands and waters, which begin approximately 115 nautical miles northwest of the main Hawaiian Islands and include unusually pristine coral reefs and habitat for the endangered Hawaiian monk seal, as well as other threatened and endangered species. See http://hawaiireef.noaa.gov/about/faq/html (last visited Feb. 6, 2008).

Moreover, a number of other areas of the world known to be rich in marine mammals (and endangered species) such as the Galapagos Islands, the Great Barrier Reef and the Pelagos were not designated. When questioned at oral argument, Defendants could not point to any evidence in the record rebutting Plaintiffs' evidence that these three sites should have been designated as OBIAs. Nor is there any evidence in the record that North America has a near monopoly on the oceanic

zones important for marine mammal life as compared to the rest of the world. To the contrary, the publicly available information including from NOAA demonstrates that other areas of the world's oceans also provide particularly rich habitat for marine mammal activities such as mating and feeding. For example, according to NOAA's website, the Galapagos Islands consist of "highly productive coastal waters" that create "important feeding zones for marine mammals . . . . Dolphins, orcas, and blue and humpback whales are some of the 24 species of cetacean known to visit this refuge for feeding and mating." See http://effectivempa.noaa.gov/sites/galapagos.html (last visited Feb. 6, 2008). Thus, the limited and skewed selection of OBIAs demonstrates the arbitrariness of the decision not to designate more OBIAs, including outside the United States.[4]

NMFS argues that it did not receive other nominations from members of the public for additional OBIAs that contained the detailed information that it required the public to submit. See 72 Fed. Reg. at 46,879 ("During the past 5 years, NMFS has not received any nominations from the public for new OBIAs. It should be recognized that while NMFS may nominate areas as OBIAs, it does not believe that it should be the sole proponent for nominating areas and that was the reason for allowing it to be a public process following standard rulemaking practice."); SEIS at 10-124 ("NMFS required that the nominations for OBIA status including [sic] the following: geographic region, list of marine mammals within this geographic region, whether the proposed is year-round or seasonal, detailed information (population size, distribution, density, status and biologically important activities.)") However, as this Court previously ruled in the earlier case, it is improper for NMFS, the government agency tasked by the MMPA with requiring measures to ensure the least practicable impact on marine mammals when authorizing takes, to shift the burden to members of the public to prove that additional exclusion zones are warranted. See Evans, 279 F. Supp. 2d at 1163 ("Coastal waters are not the only areas of rich concentrations of marine mammals, as defendants recognized in creating the three OBIAs. Marine mammals (and other endangered

[4] At oral argument, Defendants argued that it is difficult to draw the line as to additional OBIAs and noted that different countries and organizations use different criteria for designating offshore areas for special protections. While these considerations are legitimate, they do not excuse limiting OBIAs to a handful and disregarding the rest of the world. Defendants have latitude as to precisely where to draw the line based on reasonable criteria, but they cannot do so arbitrarily and unreasonably narrowly.

species) migrate and feed in areas far from shore. Yet NMFS postponed adding other OBIAs indefinitely, despite their own experts' recognition that other areas probably should be designated. Instead, NMFS set up a process by which members of the public bear the burden of proving that additional exclusion zones are warranted . . . . Thus, despite NMFS' and the Navy's awareness of specific areas and seasons that are potentially sensitive, NMFS arbitrarily and capriciously refused to designate more OBIAs. Instead, NMFS delayed doing so and shifted the burden to members of the public to prove that additional exclusion zones are warranted.").

Indeed, by failing to designate even the Davidson Seamount as an OBIA as raised by NOAA, Defendants improperly shifted the burden to its own parent agency to provide detailed information regarding the marine life there. The failure to designate the Davidson Seamount demonstrates that here, as in the prior case, NMFS improperly failed to designate additional OBIAs despite knowing that certain areas constitute especially important habitat for marine mammals. See Evans, 279 F. Supp. 2d at 1163. Moreover, as the Court stated in Evans, the fact that the future LOA process, which takes place outside of the public eye, may consider effects on marine life in the Davidson Seamount and other important marine habitats does not absolve NMFS from its statutory duty to prescribe means of achieving the least practicable impact in the Final Rule.

In response to a commenter's question about possible OBIAs, NMFS explained very briefly its rationale for not designating some areas as OBIAs. See SEIS at 10-124 to -127. However, there is nothing in the record showing that the Navy seriously examined designating these areas or others. For example, Defendants state that some areas were not designated as OBIAs because NMFS "*assumed* that the MPA is in shallow waters and will not be affected by SURTASS LFA sonar operations (emphasis added)." See, e.g., SEIS at 10-127 ("The exact coordinates of this MPA [Xiamen Marine National Park and Conservation Area, China] are not listed. However, the two species of concern in this MPA are the finless porpoise and the humpback dolphin, both of which inhabit only shallow, coastal waters. It is therefore *assumed* that the MPA is in shallow waters and will not be affected by SURTASS LFA sonar operations.") (emphasis added); SEIS at 10-127 ("Exact coordinates of this MPA [Far Eastern Marine Nature Reserve (Zapovednik) in Peter the Gray Bay, Sea of Japan] are unavailable, however, Hoyt (2005) states that it protects marine shelf

ecosystems and bird colonies. It is therefore *assumed* that the MPA is in shallow waters and will not be affected by SURTASS LFA sonar operations.") (emphasis added). The failure to actually confirm that the proposed OBIAs are entirely in shallow waters was likely arbitrary and capricious.

Defendants also summarily dismiss the areas of the Emperor Seamount Chain and the southern portion of the Oyashio/Kuroshio areas on the grounds that they are "large ocean expanses." 72 Fed. Reg. at 46,878. While practicality is undoubtedly a proper concern, Defendants did not consider, even in the light of their own expert's prior acknowledgment of the area's suitability as a candidate for OBIA status during certain months, whether avoidance of some portion during a particular time of year would be practicable. Evans, 279 F. Supp. 2d at 1162-63.

Rather than designating more exclusion zones, Defendants would rely on the tripartite monitoring system as well as the LOA approval process as a substitute. See 50 C.F.R. §§ 216.184, 216.185; 72 Fed. Reg. at 46,877. As noted above, the monitoring system consists of visual monitoring for marine mammals and sea turtles from the SURTASS LFA vessel during daylight hours, use of passive SURTASS sonar to listen for sounds generated by marine mammals as an indicator of their presence, and use of high frequency active acoustic sonar to detect, locate and track marine mammals that might be affected by the low frequency transmissions near the vessel and the sound field produced by the sonar source array. See 72 Fed. Reg. at 46,887-88. However, as the Court previously observed with respect to the same provisions in the prior rule, while these mitigation measures are commendable as far as they go, their efficacy is limited. See Evans, 279 F. Supp. 2d at 1160 (". . . realistically they will not detect all marine mammals and endangered species within the two kilometer zone. Visual monitoring, particularly for smaller animals who spend long periods under water, is not very effective even in the best of conditions, much less in rough seas or in the dark. Passive sonar also misses quieter animals. While the active sonar is fairly effective in detecting large whales, it is much less effective in detecting smaller animals, such as fast moving dolphins and certain sea turtles. For example, in a test of bottlenose dolphins, only 55% were detected. EIS at 2-20-2-21. Smaller animals such as sea turtles are even more likely to escape detection. Furthermore, none of these measures are designed to detect marine mammals beyond two kilometers from the LFA source. Defendants claim that by collecting data, including ship position,

marine mammal observations, and times of transmission, NMFS and the Navy will be able to compile information about the effects of LFA beyond the two kilometer safety zone. Yet, by definition, animals that go undetected, even injured ones, will not be counted. Further, plaintiffs point out that this after-the-fact information, resulting in a report on the effects of current operations five years from now, is too little too late.").

With respect to the LOA process, the Final Rule states:

> [D]uring the annual LOA application process (Final EEIS Subchapter 4.4 and Figure 4.4-1), marine mammal habitats, seasonal activities, and behavioral activities are considered in the process of determining potential mission areas. Thus these areas [enclosed areas and coastal areas with complex, steep seabed topography] will be analyzed as part of the annual LOA application process. Therefore, NMFS believes that the Navy avoids planing and conducting LFA sonar operations in areas of known high marine animal densities or "hot spots."

72 Fed. Reg. at 46,877. However, the purpose of the MMPA and the publication of the Final Rule is to mandate the necessary protections at the outset and subject the analysis to public scrutiny. Thus, the MMPA requires that the agency only authorize projects involving marine mammals that employ means to achieve the least practicable impact, not defer that determination to the later annual LOA process, which is not subject to public scrutiny. See Evans, 279 F. Supp. 2d at 1164. ("However, the mere prospect that future LOAs will consider additional information on marine mammal distribution and the Navy may choose to avoid sensitive areas does not relieve NMFS of its specific statutory responsibility in the present to "prescribe regulations setting forth ... means of effecting the least practicable adverse impact on such species or stock and its habitat." 16 U.S.C. § 1371(a)(5)(A)(ii)(I). This responsibility is central to ensuring that . . . the impact is negligible, as required by the MMPA.").

Defendants also argue that it would be impractical to exclude huge swaths of oceans as OBIAs, and that they need flexibility to respond to global threats. See, e.g., 67 Fed. Reg. at 46,749 ("Since operational restrictions in these broad areas could seriously impact the Navy's ability to carry out its mission if these areas were established as OBIAs (since it would essentially prohibit LFA sonar from operating in extensive areas in the oceans), and since marine mammals (and sea turtles) would be similarly protected from receiving an SPL greater than 180 dB through utilization of the HF/M3 sonar in the vicinity of the SURTASS LFA vessel, based on practicality the

establishment of these extensive areas as OBIAs would be unlikely."). The Court fully recognizes and respects Defendants' legitimate concerns about practicality, the need for effective training and the need to respond to threats that may arise. But these concerns do not justify the failure to designate additional specific sensitive areas like the Northwestern Hawaiian Islands Marine National Monument, the Galapagos Islands, the Great Barrier Reef and the Pelagos,[5] which would not place excessive areas of the ocean off limits. Similarly, while Defendants stated at the hearing, without benefit of any evidence in the record, that designation of the Great Barrier Reef was impractical because it was continent-sized, this World Heritage Site designated by UNESCO does not surround all of Australia, but lies off its northeast coast, and extends beyond the coastal exclusion zone. According to UNESCO, it provides habitat for a wide variety of marine mammal and other species including the Dugong and large green sea turtle, both threatened with extinction. See http://whc.unesco.org/en/list/154 (last visited Feb. 6, 2008). Further, in assessing Defendants' argument that it is impractical to place large areas of the ocean off limits for training, it is important to keep in mind the context. While we think of the continents we live on as huge, in fact most of the world's surface is covered by its vast oceans. So it is practicable to safeguard marine mammals by carving out some additional areas even if they measure thousands of square miles when placed in the context of the 70-75% of the world's oceans which the Final Rule would open to LFA sonar, while still meeting the Navy's need for access to the enormous majority of the world's marine waters.

The Court fully accepts Defendants' argument that the Navy requires flexibility to conduct SURTASS LFA in any part of the world when routine testing and training turns into a military operation that requires use of this type of sonar to detect or continue to track a potentially hostile submarine that moves into a protected area. However, this interest could instead be fully addressed by an exception allowing such detecting or tracking in otherwise protected areas when an actual, specific need arises. Indeed, Defendants are currently operating under exactly such an exception under an amendment to the stipulated injunction:

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[5] According to UNESCO, the Pelagos Sanctuary is comprised of territorial waters of France, Monaco and Italy, as well as other countries which established an International Cetacean Sanctuary aimed "at strengthening environmental monitoring of the territory in order to improve prevention and better preserve the natural heritage" and banning the intentional capture of marine mammals. See http://whc.unesco.org/en/tentativelists/2032/ (last visited Feb. 6, 2008).

> Beginning immediately, and until the time that the Court issues its decision on a Preliminary Injunction, but no later than February 6, 2008, Defendants shall operate Surveillance Towed Array Sensor System ("SURTASS") Low Frequency Active Sonar ("LFA") under the constraints specified in the 2003 permanent injunction, as amended in 2005, *with the exception that they may operate the LFA sonar system within the coastal exclusion zones set forth in that injunction only when necessary to continue tracking an existing underwater contact detected outside the exclusion zone or when operationally necessary to detect a new underwater contact* that would place the LFA sonar system within the coastal exclusion zone to maximize opportunities for detection. This exception will not apply to any routine testing or training activities. Under no circumstances will Defendants operate the LFA sonar system closer than the 12 nm coastal exclusion zone specified in the new Final Rule.

See Stip. Extending Terms of Prior LFA Operation Agreement Pending Resolution of Pls.' Prel. Inj. Mot. at 2 (Dec. 19, 2007) (emphasis added). The Final Rule contains no explanation why a method that similarly carves out an operational exception for tracking or detection was not considered when evaluating OBIAs.

If Defendants are correct that in lieu of trying to identify areas relatively devoid of marine life, "[i]t is usually more feasible to identify areas of high marine life concentrations and avoid them when practicable" (SEIS 2-12; Opp'n at 26), then Defendants must make a reasonable effort to do so. Yet other than the ten OBIAs and the relatively narrow coastal exclusion zone, the Final Rule does not identify such areas of high concentrations but defers that task to the annual LOA process. While the latter process can function as a useful adjunct, it cannot substitute for carving out known sensitive areas recognized by UNESCO and other countries and reputable organizations as precious parts of the world's oceanic heritage and home to marine mammals, including endangered species. Accordingly, Plaintiffs have shown a likelihood of success on the merits with regard to Defendants' decision not to confine routine use of LFA sonar to areas and seasons relatively devoid of biologically important marine mammal activity, while at the same time to only designate ten OBIAs, mainly in North America, and limit the coastal exclusion zone to 12 nm.

ii. Coastal Exclusion Zone

In the Final Rule, Defendants established a coastal exclusion zone of 12 nautical miles from shore designed to prevent LFA sonar from exposing marine mammals to signals at 180 dB or above in such waters. In addition, Defendants set a maximum exposure of 145 dB within known human dive sites. See 72 Fed. Reg. at 46,891. Plaintiffs argue that it was arbitrary and capricious to impose only a 12 nm coastal exclusion zone, the same distance under which the Navy operated prior

to the Court's injunction in Evans, without considering other options such as the dual criteria used in the prior injunction that took into account the continental shelf break. See Evans, 279 F. Supp. 2d at 1161. Defendants respond that NMFS examined and reasonably rejected an alternative coastal exclusion zone of 25 nm because: "increasing the coastal standoff range does decrease exposure to higher received levels for the concentration of marine animals closest to the shore (shelf species [I]); but does so at the expense of increasing exposure levels for shelf break species (2) and pelagic species (3)." SEIS at 4-79. Defendants also point out that NMFS reasonably considered "the Navy's stated need to have flexibility to use the system closer to shore if training, testing or military operational demands required it." 72 Fed. Reg. 46,973.

In Evans, the Court noted that Defendants failed to explain why the coastal exclusion zone could not be extended to some distance between 12 nm and 43 nm-200 nm. See Evans, 279 F. Supp. 2d at 1162. The Court held that absent such an explanation, Defendants acted arbitrarily and capriciously by failing to extend the coastal exclusion zone in all areas except for those few coastal areas where close to shore training is necessary. See id. at 1164. NMFS has now considered the alternative of a 25 nm exclusion zone, which it chose as a distance just over twice the prior coastal exclusion restriction, and seaward of the hypothetical shelf break for all three shelf cases examined in the analysis. It concluded that increasing the exclusion zone to 25 nm decreased exposure to marine mammals close to the shore, but did so at the expense of exposing more mammals further away. See 72 Fed. Reg. at 46,872-73; SEIS at 4-78-79 (analyzing a 25 nm exclusion zone using a methodology that assessed impacts for nine possible combinations of three coastal shelf types and three marine mammal species, and concluding that a larger exclusion zone decreased potential impacts to marine species in only one out of nine case studies, and substantially increased potential impacts in six case studies); see also Decl. of Chris Clark ¶¶ 30-32 (although it is counter-intuitive, operating closer to shore has a lower potential risk; stating that when operated closer to shore, the volume of ocean exposed to a received level of 155 dB decreases by 21% because waters are shallower and the volume of ocean is smaller, and that analysis of the densities of animals and water depths shows a constant or lower biological impact). In addition, NMFS has provided evidence that increasing the range from 30 nm to even 60 nm would not make a significant difference to the

outcome. See 72 Fed. Reg. 42,872. The Final Rule concluded that the overall risk to marine mammals is lower when SURTASS LFA is operated at 12 nm than when it is operated at 25 nm. See 72 Fed. Reg. 46,872.

Whether the decision to limit the coastal exclusion zone to 12 nm was arbitrary and capricious presents a close question on the merits. On the one hand, although Defendants' analysis of nine scenarios did consider several different types of shelf break, Plaintiffs correctly point out that the analysis relied on questionable simplifying assumptions such as uniform average density of marine mammals over time and did not adequately account for the disproportionately high number of endangered marine mammal populations that tend to concentrate near the continental shelf break, whose distance from shore varies. Yet NMFS designated the United States eastern seaboard as an OBIA "[b]ecause of animal concentrations and migration routes out to 60-70 nm." 72 Fed. Reg. 46,878. Also, a NMFS employee suggested using a dual criteria. See Pls.' Ex. 96. And the Navy had used this dual criteria in a large part of its area of deployment of LFA sonar under the stipulated injunction, a regime under which -- in combination with Defendants' operations area selection process -- "much of the LFA operations [have taken place] in areas with fewer marine mammals." See Decl. of Joseph Johnson (LFA Program Manager) ¶ 33. On the other hand, Defendants' choice of scientific methodology is entitled to considerable deference, and they have shown the need for flexibility to deploy LFA sonar closer to shore at least in some places at some times.

On balance, while Plaintiffs have not shown at this stage that they are likely to prevail on this issue, they have raised a serious question on the merits as to whether Defendants acted arbitrarily and capriciously in not using a dual criteria that included the distance from the shelf break as well as the coast, at least in those parts of coastal areas where Defendants do not need to operate closer to shore, such as chokepoints. This question is rendered more serious because of the insufficient designation of OBIAs, which might otherwise have helped ensure the least practicable impact on particularly important marine mammal habitats in coastal waters more than 12 nm off shore.

iii. Mitigation and Monitoring Requirements

In addition to the geographical restrictions discussed above, the Final Rule contains the tripartite monitoring scheme described above. See 72 Fed. Reg. at 46,887-88. In addition, the SEIS

contains shutdown procedures if marine mammals are seen within 2 km of the vessel. Id. The Final Rule also requires the collection of data during routine SURTASS LFA operations, including data from visual and acoustic monitoring, ocean environmental measurements, and technical operational inputs, as well as the submission of quarterly classified reports and an annual report no later than 45 days after the expiration date of the LOA. Id. at 46, 892. The quarterly reports include the Navy's assessment of whether take of marine mammals has occurred and estimates of the percentage of marine mammal stock effected by sonar operations. Id.

These measures are laudable, as far as they go, but plainly limited in their efficacy. Visual monitoring is not very effective even under the best of conditions, particularly for smaller animals who spend long periods under water, much less in rough seas or in the dark. Passive sonar also misses quieter animals. While the active sonar is fairly effective in detecting large whales, it is much less effective in detecting smaller animals, such as fast moving dolphins. Furthermore, none of these measures are designed to detect marine mammals beyond 2 km (1.2 miles) from the LFA source. (Again, these limitations underscore the need for adequate designation of sensitive areas as OBIAs).

Plaintiffs urge additional monitoring measures through aerial surveys or observational vessels for SURTASS LFA missions close to shore. The Court previously held, in the absence of any explanation why these measures were not practical, that "for close to shore operations, pre-operation surveys by air or small craft were practicable and necessary to ensure that only small numbers of marine mammals are taken" and that the decision not to use them was arbitrary and capricious. Evans, 279 F. Supp. 2d at 1161. Plaintiffs concede that this time, Defendants have evaluated the use of small boats and aircraft for pre-operational surveys and explained practical difficulties with their use. See SEIS at 10-144, 145. Nonetheless, Plaintiffs argue that Defendants do not satisfactorily explain why such monitoring cannot be provided during missions that take place in optimal conditions.

However, the SEIS explains that SURTASS LFA vessels operate far from military airfields and ordinarily do not operate with other fleet assets, so naval aircraft would normally not be available. See SEIS at 5-6, 5-8. The SEIS reasonably concluded that: "small boat and pre-

operational aerial surveys for SURTASS LFA operations are not feasible because they are not practicable, may increase the harassment of marine mammals, and are not safe to the human performers." SEIS at 5-6 to 5-8. The Marine Mammal Commission agreed. Id. at 5-8.

Plaintiffs point out that the Defense Secretary required aerial monitoring for certain mid-frequency active sonar activities in all of the Navy's training ranges and operations areas. Pl.'s Ex. 79 at 3; Ex. 80 at 2 (Jan. 2007 memo: "Navy aircraft participating in exercises at sea will conduct and maintain, when operationally feasible and safe, surveillance of marine species."). However, Plaintiffs have not raised a serious question that the same requirement should be extended to LFA sonar operations. Among other differences, mid-frequency sonar is designed for use close to shore, while low frequency sonar is designed for deep water use which is often, although not always, further from shore. Therefore, any aerial monitoring would be less likely to be available over deep water and could not be easily dispatched from shore.

Plaintiffs also argue that NMFS improperly rejected Plaintiffs' suggestion for using passive acoustic monitoring using existing acoustic nodes and other external platforms (SOSUS system), including passive gliders.[6] See Pl.'s Ex. 9 at 16. NMFS, however, responded that the SOSUS arrays are no longer manned or maintained, so their operations are degraded and do not provide real-time analysis. See 72 Fed. Reg. at 46,877. Use of external platforms was impractical because of the limited communications with the LFA vessels and the time delay in relaying information. Id.

In conclusion, Plaintiffs have not raised a serious question that NMFS acted arbitrarily or capriciously in establishing its monitoring protocol. Id. at 46,886-87.

2. Negligible Impact

NMFS may issue a take permit only if it finds that the authorized taking will have a "negligible impact" on marine mammal species or populations. See 16 U.S.C. § 1371(a)(5)(A), (D). Plaintiffs contend that the new Final Rule, like the 2002 Final Rule, permits the Navy to deploy LFA in a vast portion of the Pacific ocean and could potentially affect 12% or more of particular marine mammal species or population stocks, which will have more than a negligible impact. Defendants

[6] Although Defendants argue that Plaintiffs failed to raise the passive glider issue in their comments to the Final Rule, they did in fact mention passive gliders. See Pls.' Ex. 9 at 16.

respond that take is capped at 12% regardless of how many SURTASS LFA sonar sources are operating in the area, and that most stocks are estimated to incur a lower percentage of take. See 72 Fed. Reg. at 46,851; 46886 ("As with the 2002 rule, Navy will limit operations of LFA sonar to ensure no stocks will be subject to more than 12 % of takes (by Level B harassment) annually, although most stocks are estimated to incur a lower percentage of takes.").

Plaintiffs point to the Court's prior order in which the Court expressed concern that the impact through harassment of 12% on small populations of marine mammals would not be merely negligible. See Evans, 279 F. Supp. 2d at 1159 ("Yet the Court remains concerned that, without more restrictions on deploying LFA in sensitive areas and during sensitive periods, there will be occasions where the impact on particular populations is not merely negligible."). However, in its prior decision, the Court did not find that the 12% cap violated the negligible impact requirement. Instead, the Court strengthened mitigation measures, while cautioning that: "And if it turns out that the annual take authorized by each year's LOA is exceeded and is not limited to harassment but involves actual injury and death, the negligible impact finding must be revisited." Evans, 279 F. Supp. 2d at 1159.

Defendants note that the Navy's Comprehensive Report for the 2002-2007 Final Rule shows that no more than 6% of most marine mammal stocks were harassed in any given year, and the SEIS contains tables showing annual estimates of potential effects on marine mammal stocks for sixteen mission sites, which generally show low levels of harassment. See SEIS at 4-43 to 4-51. Defendants also say that the Final Rule in general determined that the likelihood of injury to marine mammals was "virtually nil" due to the monitoring regime. See 72 Fed. Reg. at 42,853-71 (responding to comments about impacts to mammals).

Plaintiffs argue that the estimate of a "virtually nil" likelihood of injury is based on models, not on actual observation. The Navy's monitoring is limited to 2 km around the vessel, and the detection rates in that range are low. See Pls.' Ex. 20 at 19 (noting three visual detections and no passive acoustic detections since 2002)**;** Decl. of Robin William Baird ¶ 7 (finding it extraordinary that only three marine mammals were detected through visual observation and none through passive acoustic monitoring in over 471 operation hours). In fact, it is not possible to conclude that these

low detection levels reflect a successful monitoring and mitigation program, because it is equally possible that the monitoring systems failed to detect injured animals, that the LFA sonar displaced marine mammal populations or that the heightened protections under the prior permanent injunction prevented harm to mammals.

Plaintiffs also argue that the abundance data used by NMFS in estimating the potential for population effects do not correspond to the actual marine populations. Plaintiffs' experts point to various small populations of marine mammals. See, e.g., Decl. of Maria N. Vorontsova ¶ 8 (noting very small population of western grey whales); Decl. of John Wang ¶¶ 5-8 (stating concerns about small populations of Indo-Pacific humpback dolphins, including a population of less than 100 in the Eastern Taiwan Strait, as well as small populations of pygmy killer whales, finless porpoise and bottlenose dolphins). In particular, Plaintiffs argue that the method of aggregating species into broad groups, such as "pelagic dolphins," and then calculating abundance over a vast area without regard for localized populations violates the MMPA. See Pls.' Ex. 10 at 4.2-17 to 4.2-18 (chart of stock size and abundance data for pelagic dolphins). Plaintiffs point to the evidence that populations of dolphins around Hawaii are associated with particular islands and genetically isolated from others in the tropical Pacific, but the data that Defendants used for Hawaii do not reflect this. See Pls.' Ex. 10 at 4.2-42 to 43; 12 at D-3 to D-9; 102 at 38,713; 86; 93; 94. In particular, Plaintiffs point to the example of the Hawaiian bottlenose dolphin. Research indicates the presence of an island-associated population as small as 134 animals. See Baird Decl. ¶ 16. NMFS previously used an abundance estimate of 3,263 to calculate take in other authorizations. See Pl.'s Ex. 102 at 38,713. The current LFA estimate obscures the small population of Hawaiian bottlenose dolphins (whether 134 or even 3,263) by subsuming it within the stock of all pelagic dolphin around all of the Hawaiian islands, estimated at 10.7 million, and calculates the take of bottlenose dolphins on that basis. See Pls.' Ex. 94 (study of small population of bottlenose dolphins); 10 at 4.2-17 (very high estimates of pelagic dolphins, including bottlenose).

Defendants argue that the abundance data was properly "developed from the most recent NMFS stock assessment reports at the time and pertinent multinational scientific literature containing marine mammal distribution, abundance or density datasets." SEIS at 4-38; cf. Inland

Empire Public Lands v. Schultz, 992 F.2d 977, 981 (9th Cir. 1993) (holding that NEPA does not require that the Court determine that the best scientific data was used). NMFS data, however, was six years old. Moreover, Defendants do not dispute that the animals are aggregated into larger groupings in calculating abundance data. Defendants also note that the SEIS contains a case study of nine mission sites based on realistic choices for LFA operations that show minimal impacts. See SEIS at 4-43-4-51. Plaintiffs point out, however, that this case study does not include important regions covered by the new five-year plan such as the Eastern Pacific, the North Atlantic and the Mediterranean. See id. at ES-1. Therefore, the relevance of the case study is lessened.

Defendants argue that even if the data may have changed since the last NMFS assessment six years ago, the ultimate conclusions should not be invalidated. However, Plaintiffs have shown some evidence of a significant change in abundance data for the Hawaiian bottlenose dolphin. Thus, the impact on this stock (and other similar tiny localized stock) may be higher than Defendants' estimates. See Wang Decl. ¶ 10 (questioning data used to give abundance estimates in South China Sea region); Decl. of Edward C.M. Parsons ¶ 10 (Navy's analysis of abundance in the western Pacific region which appears to overlook population structuring); Baird Decl. ¶¶ 14-17 (population structures of marine mammals and in particular, the bottlenose dolphin). At the same time, Plaintiffs have not necessarily shown a likelihood of serious injury to them. In conclusion, Plaintiffs have not shown a likelihood of prevailing on this issue, but have raised a serious question about certain small localized population stocks.

3. Lethal Take

Plaintiffs argue that Defendants have only authorized the harassment, not lethal take, of marine mammals despite a foreseeable risk that LFA sonar will cause their death. See 72 Fed. Reg. 46,891; Pls.' Ex. 19 at ¶ 3[d] (stating: "(d) The taking of marine mammals by the Holder of this Authorization is limited to the incidental taking of marine mammal species identified in Condition 3(c) by Level A and level B harassment (as defined in the MMPA and 50 CFR 4 216.3) within those areas authorized under Condition 3(b). Taking of marine mammal species not listed under Condition 3(c) by harassment, injury, or mortality, or the taking by serious injury or mortality of any marine mammal species listed under Condition 3(c) is prohibited.").

Defendants argue that lethal take is not authorized because it is not a reasonably foreseeable impact resulting from use of SURTASS LFA. They argue that the best available science indicates that 180 dB is a conservative threshold for physical injury to marine mammals. See SEIS at 10-38 (citing research that 180 dB is conservative); 2001 FOEIS 1.4.2.1 ("180 dB received level is considered as the point above which some potentially serious problems in the hearing capability of marine mammals could start to occur."); 72 Fed. Reg. at 46,853-54 (explaining scientific research to back up the 180 dB level threshold); 67 Fed. Reg. 46,737-40 ("The determination of the 180-dB criterion for injury was developed from a combination of several scientific studies and analytical calculations including: (1) marine mammal hearing thresholds, (2) human hearing loss studies, (3) comparison of fish hearing loss studies, and (4) TTS studies."). The 180 dB zone extends approximately 1km from the LFA source. See Defs.' Ex. 19 at 2-14, 18. In particular, Defendants point to NMFS's study exposing baleen whales, which are sensitive to low frequency sounds, to LFA sonar at levels of 120 dB to 155 dB. (These levels were, of course, much less intense than 180 dB). The study detected only relatively short term behavioral responses. Defendants also contend that they can reliably detect marine mammals before they enter the 1km radius around the ship. See id. 2-21, 2-22. If they are detected in the 2 km area around the LFA source, sonar use is immediately suspended.

While Defendants overstate the effectiveness of their monitoring system, as noted above, Plaintiffs have not shown a probability of lethal take. Plaintiffs point to previous whale strandings involving mid-frequency sonar, but they have not shown a connection between those strandings and LFA sonar. Only one of the mass strandings raised by Plaintiffs, which occurred in Greece in 1996, involved a type of low frequency sonar. In that case, however, the sonar, although classified as low frequency, was nonetheless at a higher frequency than SURTASS LFA sonar, and it was operated in combination with mid-frequency sonar. Defendants point out that subsequent beaked whale strandings have implicated only mid-frequency sonar, in combination with certain oceanic conditions, suggesting that the low frequency component did not trigger the strandings in Greece. See 72 Fed. Reg. at 46,858; SEIS at 4-53. Defendants also note that other low frequency sound sources implicated in strandings were airguns, which give off impulsive acoustic sources with

predominant energy in the 300-3000 Hz band, unlike LFA sonar. See 72 Fed. Reg. at 46,866-67; Table 1 at 46,862 (comparison between SURTASS LFA, mid-frequency sonar and airgun array).

On the other hand, Plaintiffs point out that, to date, LFA sonar has only operated under the stipulated injunction's more stringent mitigation measures, so the extent of its effects are not known. See also Pls.' Ex. 89 at 142 ("Additional, unknown levels of injuries and mortalities of Baird's beaked whales may occur as a result of anthropogenic noise, such as military sonars (U.S. Dept. of Commerce and Secretary of the Navy 2001) or other commercial and scientific activities involving the use of air guns. Such injuries or mortalities would rarely be documented, due to the remote nature of many of these activities and the low probability that an injured or dead beaked whale would strand."); at 146 (same with respect to mesoplodont beaked whales); at 151 (same with respect to Cuvier's beaked whales); but see Decl. of Peter Tyack ¶¶ 18, 19 (deponent knows of no evidence in published scientific literature that SURTASS LFA causes serious injury, stress, stranding, hearing loss or behavioral changes in marine mammals); Decl. of Darlene Ketten ¶ 15 (stating that it was unjustified to assume that events correlating beaked whale strandings with mid-frequency sonar indicate any similar risk as a result of SURTASS LFA).

Thus, while Plaintiffs point to the possibility that whales exposed to LFA sonar could have died at sea and sunk without being seen or stranded without anyone finding them, that possibility, while real, does not render it likely that the failure to authorize lethal take was arbitrary and capricious. On balance, Plaintiffs have not shown probable success on the merits that Defendants acted arbitrarily and capriciously under the MMPA in authorizing take through harassment only, as opposed to lethal take.

4. Public Comment

Plaintiffs argue that NMFS failed to fully comply with MMPA's requirement that the Secretary permit incidental take only after notice and public comment. See 16 U.S.C. § 1371(a)(5)(A); see also H.R. Conf. Rep. No. 92-1488 (1972), 1972 U.S.C.C.A.N. 4187, 4187-88 (requiring public comment on general regulations of takings before permit issued). While Defendants did publish notice and seek comments, Plaintiffs object that the Navy did not include information in the notice about the Navy's choice of precise operating areas, which the Navy

apparently provided to NMFS when it sought an LOA for 2008. Pl.'s Ex. 19 at 3(b) ("This Authorization, combined with an Authorization for the R/V Cory Chouest is valid for an estimated total of 16 nominal active sonar missions between the two ships (or equivalent shorter missions not to exceed a total of 432 hours of transmit time per vessel during the period of effectiveness of this Authorization) in accordance with boundary conditions described in the Navy's March 30, 2007, mission intention letter (as modified July 11,2007, and August 15, 2007)."). Plaintiffs argue that they should have been able to comment on the specific information contained in the Navy's mission intent letter. Defendants respond that NMFS's implementing regulations do not require the agency to provide notice and comment on LOA applications. 50 C.F.R. § 216.106(a). While true, this response misses the larger point that relevant information must be reasonably disclosed to the public in connection with the Final Rule, not included only in the LOA process.

Defendants also claim that because military readiness activities are not subject to the "specified geographical region" requirement of the MMPA, Plaintiffs are not entitled to information about specific sites. But this argument also fails to address the real issue, which concerns the prophylactic process of public comment, rather than the substantive question of geographic scope.

Defendants further argue that the Navy's application does disclose to the public general information about where operations are likely to be located. See Defs.' Ex. 14.01 at 58 ("The Navy is now faced with growing numbers of quiet diesel submarines, particularly in Asia's key waterways. Thus, the operational tempo for the SURTASS LFA sonar platforms (up to four) could be expected to increase to counter these potential threats during the five-year period of the new LOAs. It can also be expected that these operations may be concentrated in the areas of highest threat, specifically the northwestern Pacific Ocean."). Further, the SEIS contains a case study of sixteen potential missions at nine mission sites in the western Pacific that Defendants state represent reasonable and realistic choices for SURTASS LFA. See SEIS at 4-41 to 4-51. Plaintiffs respond, however, that NMFS was selective in the LOA data that it released for public comment. For example, in March 2007, the Navy gave NMFS an estimate of potential adverse effects to fin whale stock for the Virginia Capes Operating Area in the North Atlantic Ocean of at least 3.49% (see Defs.' Ex. 32 at 1-1), much higher than the estimate in the FOEIS/EIS of 0.11% of fin whale stocks

in adjacent Onslow Bay, the only modeled site off the U.S. east coast and supposedly representative. See Defs.' Ex. 19.08 at 4.2-46.

On balance, although Plaintiffs have raised some legitimate questions, they have not shown a likelihood of prevailing on the issue of inadequate notice and comment taken in isolation. However, this issue underscores the problematic nature of Defendants' decision to designate only very limited OBIAs on the grounds that the choice of specific areas of operation that will achieve the least practicable impact can be deferred to the nonpublic LOA process. See, e.g., H.R. Conf. Rep. No. 92-1488 (1972), 1972 U.S.C.C.A.N. 4187, 4176-88 (NMFS may make regulations for taking of marine mammals "subject to the protective devices . . . involving public review and participation."); Half Moon Bay Fishermans' Mktg. Ass'n v. Carlucci, 857 F.2d 505, 508 (9th Cir. 1988) (NEPA's public comment procedures "'reflect the paramount Congressional desire to internalize opposing viewpoints into the decision making process to ensure that an agency is cognizant of all the environmental trade-offs that are implicit in a decision.'" [citation omitted]).

B. National Environmental Policy Act

The Court reviews claims of violations of NEPA under the APA to ensure that the agency has not acted in a manner that is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." Okanogan Highlands Alliance v. Williams, 236 F.3d 468, 471 (9th Cir. 2000); 5 U.S.C. § 706. "Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." Motor Vehicle Manufacturers Association of the United States, Inc. v. State Farm Mutual Automobile Ins. Co., 463 U.S. 29, 43 (1983). The Court's role is to: "consider whether the [agency's] decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment. [citations omitted]. Although this inquiry into the facts is to be searching and careful, the ultimate standard of review is a narrow one. The court is not empowered to substitute its judgment for that of the agency. The final inquiry is whether the Secretary's action followed the necessary procedural requirements." Citizens to Preserve Overton

Park v. Volpe, 401 U.S. 402, 416 (1971).

Courts apply a "rule of reason" standard, which assesses "whether an EIS contains a reasonably thorough discussion of the significant aspects of the probable environmental consequences." Churchill County v. Norton, 276 F.3d 1060, 1071 (9th Cir. 2001) (quoting Trout Unlimited v. Morton, 509 F.2d 1276, 1283 (9th Cir. 1974)); see also City of Carmel-by-the-Sea v. U.S. Dep't of Transp., 123 F.3d 1142, 1150-51 (9th Cir. 1997) ("the National Environmental Policy Act requires a 'reasonably thorough' discussion of the environmental consequences in question, not unanimity of opinion, expert or otherwise.") In making this determination, a court must make a "'pragmatic judgment whether the EIS's form, content, and preparation foster both informed decision-making and informed public participation.'" Churchill County, 276 F.3d at 1071; City of Carmel, 123 F. 3d at 1150-51. "'Once satisfied that a proposing agency has taken a "hard look" at a decision's environmental consequences, [our] review is at an end.'" City of Carmel, 123 F.3d at 1151 (quoting Idaho Conservation League v. Mumma, 956 F.2d 1508, 1519 (9th Cir. 1992)). The purpose of an EIS is to provide full and fair discussion of significant environmental impacts and to inform decision makers and the public of reasonable alternatives which would minimize adverse impact to the environment. See 40 C.F.R. §1502.1.

Here, Plaintiffs argue that Defendants violated NEPA by: (1) failing to consider all reasonable alternatives to the proposed deployment of SURTASS LFA; (2) failing to address or inappropriately rejecting mitigation measures; and (3) failing to consider all reasonably foreseeable individual and cumulative impacts of LFA.

1. Reasonable alternatives

An EIS must discuss "reasonable alternatives" to the proposed action. See 42 U.S.C. § 4332(2)(C)(iii); City of Carmel, 123 F.3d at 1155. Agencies must "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." 40 C.F.R. § 1502.14(a). The "rule of reason" guides the choice of alternatives and the extent to which the EIS must discuss each alternative. City of Carmel, 123 F.3d at 1155 (citing Citizens Against Burlington v. Busey, 938 F.2d 190, 195 (D.C. Cir. 1991)). "The [EIS] need not consider an infinite range of alternatives, only

reasonable and feasible ones." City of Carmel, 123 F.3d at 1155; see also Laguna Greenbelt, Inc. v. U.S. Dep't of Transportation, 42 F.3d 517, 524 (9th Cir. 1994); Seattle Audobon Society v. Moseley, 80 F.3d 1401, 1404 (9th Cir. 1996) ; 40 C.F.R. § 1502.14(a)-(c). The range of alternatives that is deemed reasonable depends upon "the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." 40 C.F.R. § 1502.13; see also City of Carmel, 123 F.3d at 1155 ("The stated goal of a project necessarily dictates the range of reasonable alternatives and an agency cannot define its objectives in unreasonably narrow terms"). A court should uphold "an agency's definition of objectives so long as the objectives that the agency chooses are reasonable, and we uphold its discussion of alternatives so long as the alternatives are reasonable and the agency discusses them in reasonable detail." Citizens Against Burlington, 938 F.2d at 195.

Plaintiffs argue that the SEIS fails to consider LFA sonar training in areas with low populations of marine mammals or to address why concentrating training in those areas would reduce the risk to marine mammals. Defendants argue that areas with low levels of marine mammal life are difficult to identify: "the reason that certain areas are believed to have minimal marine mammal activity could very well be because of gaps in animal distribution, abundance and density data there." SEIS at 2-12; see also Clark Decl. ¶ 34 ("The identification of an operating area for SURTASS LFA sonar that is particularly devoid of marine life is not a simple matter."). Instead, the SEIS provides for a four-step analysis to be performed during the annual LOA process to identify and avoid areas of high marine life. See SEIS at 2-8, 2-12, 4-42. Under that analysis, the Navy first identifies its need for SURTASS LFA training and proposes mission sites. Next, the Navy examines available published data with respect to marine mammals density and behavioral activities. If this examination reveals that marine mammal densities are high or if sensitive mammals are within the proposed sites, the Navy changes the mission areas and begins the process anew. Then standard acoustic modeling and risk assessment are performed, standard mitigation is applied and risk estimates for marine mammals stocks in the proposed mission sites are calculated. If the calculation reveals that the proposed sites fail to meet the restrictions on marine mammals impact as provided in the Final Rule, the entire process is re-initiated.

Although the Navy contends that it will avoid areas of high marine activity, the SEIS defers that analysis to the time of the issuance of the Letter of Authorization with its four step process. "Information on how the density and stock abundance estimates are derived for the selected mission sites are given in the LOA application." See SEIS at 4-42. The Court is mindful that the SEIS reasonably states that "because of uncertainties in the world's political climate, a detailed account of future operating locations and conditions cannot be delineated over the next five years." SEIS at 2-5. Yet Plaintiffs have shown a likelihood that the SEIS was arbitrary in not considering the alternative of designating a meaningful set of OBIAs, as discussed above with regard to the MMPA.

Plaintiffs also contend that Defendants should have considered a dual criteria coastal exclusion zone that took into account the continental shelf break as well as distance to shore, like that in the prior stipulated injunction. Defendants argue that such an alternative would not have served the purpose and need stated in the SEIS. See City of Carmel, 123 F.3d at 1155 ("The stated goal of a project necessarily dictates the range of reasonable alternatives and an agency cannot define its objectives in unreasonably narrow terms."); Citizens for a Better Henderson v. Hodel, 768 F.2d 1051, 1057 (9th Cir. 1985) (affirming district court's determination of the unreasonableness of an omitted alternative for a proposed path of a power line where the agency, which had considered ten alternatives in its EIS, had undisputed evidence that the omitted alternative was unreasonable because it was significantly more costly and more environmentally destructive than the proposed route).

Plaintiffs rely on Center for Biological Diversity v. Bureau of Land Management, 422 F. Supp. 2d 1115, 1159 (N.D. Cal. 2006) in support of their argument that an analysis of a dual criteria alternative was required. In Center for Biological Diversity, the Imperial Sand Dunes Recreation Area was subject to interim closures to off-highway vehicles as a result of prior litigation. Yet a subsequent EIS did not consider interim closures as an alternative. The court concluded that the purpose of the EIS was not unreasonable, and that the interim closures alternative was a reasonable alternative in light of the EIS's purpose. See id. at 1160. The court relied in part on the fact that the interim closures had been in effect for several years prior to the EIS, similar to the stipulated injunction here. But the court also relied on the fact that the BLM had justified the interim closures

on the ground that they were reasonable and necessary, whereas the Navy did not offer a similar justification for the injunction here.

There is no question in this case that the purpose and need of the SEIS, which is the same as in the 2001 FOEIS/EIS, is reasonable:

> The purpose of the proposed action is to meet U.S. need for improved capability to detect quieter and harder-to-find foreign submarines at long range. This capability would provide U.S. Forces with adequate time to react to, and defend against, potential submarine threats while remaining a safe distance beyond a submarine's effective weapons range.

SEIS at ES-4. The SEIS persuasively states that the purpose is even more compelling today because the Navy is "now faced with a large number of diesel-electric submarines with operations confined to a smaller littoral area rather than the open ocean nuclear submarine fleet. Maritime strategies rely heavily on quiet submarines to patrol the littorals, blockade strategic choke points and stalk aircraft carrier battle groups." SEIS at ES-5.

The issue, therefore, is whether in light of this purpose there was a viable but unexamined alternative that should have been considered. Defendants focus on the exact dual criteria set forth for the Philippine Sea in the Court's prior order, that is, 60 nm from the coast or 30 nm from the 200-meter isobath, and argue that confining all training to that distance would not meet the purpose and need of the SEIS. Given that the purpose of the SEIS is to improve sonar capability including in littoral areas and chokepoints, Plaintiffs have not shown a likelihood that it was arbitrary not to consider this precise alternative. See also Hells Canyon Alliance v. United States Forest Service, 227 F.3d 1170, 1181 (9th Cir. 2000) (holding that the agency acted reasonably in evaluating seven alternatives but not an alternative that would return jetboat use levels to the much lower levels that existed when the Hells Canyon Act was passed: "A 1970s alternative would have set levels too low to satisfy the agency's reasonable goal of striking an appropriate balance between recreational and ecological values; as such, the Forest Service had no obligation to consider this alternative in the FEIS.").

This analysis, however, does not necessarily excuse Defendants from evaluating a dual criteria alternative that would meet the stated purpose and need, such as a dual criteria alternative used in some areas, but not others, with an exception for non-routine military tracking operations.

As noted above, under the recently modified stipulated injunction, the Navy may operate within the coastal exclusion zones when necessary to track a submarine that was detected outside the exclusion zone or when "operationally necessary to detect a new underwater contact that would place the LFA sonar system within the coastal exclusion zone to maximize opportunities for detection." See Dec. 19, 2007 Stip. at 2 at ¶ 1. At the same time, Defendants are correct that agencies need not consider all possible alternatives, just a reasonable range. Cf. Westlands Water District v. US Dep't of Interior, 376 F.3d 853, 868 (9th Cir. 2004) (agencies not required to "undertake a separate analysis of alternatives which are not significantly distinguishable from alternatives actually considered, or which have substantially similar consequences."). Thus, Plaintiffs have raised a serious question on the merits as to whether the failure to consider any form of a dual criteria, in light of the importance of the location of the continental shelf to the environmental impact and the fact that the Navy has been operating under a dual criteria for five years, is a violation of NEPA's requirement to consider all reasonable alternatives. Cf. Center for Biological Diversity, 422 F. Supp. 2d at 1161 (". . . the IMA was a reasonable alternative because it has been the status quo since November 2000 when the closures were implemented."); Henderson, 768 F.2d at 1057 (existence of a viable but unexamined alternative makes an EIS inadequate); see California v. Block, 690 F.2d 753, 767 (9th Cir. 1982) (". . . the touchstone for our inquiry is whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation.").

Plaintiffs also argue that the Navy improperly failed to consider extending shutdown procedures to schools of fish. The SEIS contains a fairly extensive analysis of the impacts to fish that concludes that impacts would be minimal and that shutdown procedures for fish would be impracticable. See SEIS at 4-3 to 4-4-25. Visual monitoring cannot be relied on, passive acoustic detection is infeasible and active acoustics would give too many false alarms. See id. at 2-13. Defendants also conducted a study of the auditory systems of fish that concluded that LFA sonar would not physiologically harm fish. See id. at 4-11 to 4-16. While the study cannot be extrapolated to the behavioral impact of LFA sonar on fish in the wild, which might include harmful large-scale avoidance by fish stocks of areas with LFA sonar use, the study does provide some assurance that fish will not be directly harmed (e.g., through auditory injury) by LFA exposure.

Plaintiffs have not raised a serious question that the Navy violated NEPA by failing to consider shutting down for schools of fish.

2. Mitigation Measures

NEPA requires an EIS to address the extent to which mitigation measures can be taken to minimize adverse environmental impacts. See Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 351-52 (1989). NEPA does not require, however, that the mitigation plan be legally enforceable or in final form. See National Parks Conservation Ass'n v. U.S. Dep't of Transp., 222 F.3d 677, 681, n. 4 (9th Cir. 2000). Plaintiffs argue that Defendants failed to provide a reasonably complete discussion of possible mitigation measures, specifically, the failure to exclude any other marine protected areas on the grounds that "most" fall within 12 nm of the coast, the rejection of an extension of the coastal exclusion zone, and failing to adequately consider feasible monitoring measures.

Defendants argue that the mitigation plan, which is comprised of geographic restrictions (coastal exclusion zone, exclusion zone for divers and designation of OBIAs), the 2 km buffer zone around the LFA source and corresponding shut-down protocol, and the three-part monitoring system, combined with the LOA process are sufficient mitigation. However, as set forth above, these measures have serious inherent limitations. Plaintiffs have shown a likelihood of succeeding on the failure to adequately examine designation of additional OBIAs, such as the refusal to exclude sites like the Galapagos, the Great Barrier Reef, the Northwestern Hawaiian Islands Marine National Monument, or additional Marine Protected Areas because "most" fall within 12 nm of the coast. And Plaintiffs have raised a serious question on the merits regarding the size of the coastal exclusion zone.

Defendants also argue that the Navy adequately considered the use of aerial surveys. As described above with respect to the MMPA, Plaintiffs have not raised a serious question that aerial monitoring should apply to LFA sonar operations.

3. Individual and Cumulative Impacts

Plaintiffs argue that the Navy has failed to take a hard look at recent published studies showing that exposure to sonar can directly or indirectly induce severe internal injuries in deep-

diving whales, including decompression sickness, and ignored the potential for strandings. See Ex. 31; Ex. 32; Ex. 44; see also SEIS at 4-31. Defendants respond that the discussion of bubble growth satisfied the need for analysis of decompression sickness, see SEIS at 4-31 to 4-33; 10-77 to 10-79, and they have reasonably concluded that LFA sonar is not associated with strandings. Where, as here, qualified experts on both sides reach different conclusions, the Court defers to the agency experts. See Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 378 (1989).

Plaintiffs also complain that the Navy did not address cumulative impacts. The SEIS states:

> Even though there are scientific data gaps concerning stress and marine animals, there is enough known to make an informed decision regarding the proposed action. Because LFA transmissions will not significantly increase anthropogenic oceanic noise, cumulative impacts and synergistic effects from stress are not a reasonably foreseeable significant adverse impact on marine mammals from exposure to LFA.

SEIS at 4-64. Plaintiffs note that the Navy did not analyze the cumulative impact of additional LFA noise on a local or regional level. The cumulative impacts analysis in the SEIS, however, does address impacts from LFA sonar, bycatch, injuries and ship strikes, and the effects of stress on mammals, and concludes that SURTASS LFA will not add appreciably to the underwater sounds already existing. See SEIS at 4-67 to -68.

Plaintiffs also argue that the SEIS gives inadequate consideration of the synergistic effects of the proposed LFA sonar deployment in combination with other oceanic noises. See SEIS at 4-65 (finding that because there are major differences in signal characteristics between LFA, MFA, seismic air guns, there is negligible chance of producing a synergistic sound field, and finding that even if LFA sources were operated close to one another, they would not produce a sound field from which marine animals could not escape). Plaintiffs quarrel with Defendants' definition of synergistic as "exactly in phase (at the same time)" as too restrictive, but Plaintiffs have not raised a serious question that Defendants' analysis was arbitrary or capricious.

C. Endangered Species Act

The ESA prohibits any person from "taking" species listed as endangered and empowers the United States Fish and Wildlife Service ("FWS") and NMFS to promulgate regulations prohibiting the taking of any species listed as threatened. 16 U.S.C. §§ 1533, 1538(a)(1)(A)-(B), (G). Actions challenged under the ESA are also reviewed under the APA "arbitrary and capricious" standard.

See Village of False Pass v. Clark, 733 F.2d 605, 609-10 (9th Cir. 1984). Section 7 of the ESA requires each federal agency, through consultation with NMFS or FWS, to:

> insure that any action authorized, funded, or carried out by [the] agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary [of the Interior or of Commerce] . . . to be critical.

16 U.S.C. § 1536(a)(2).

To ensure compliance with this requirement, the ESA sets out a three-step consultation process in which the agency with jurisdiction over the species (here, NMFS) evaluates the nature and extent of jeopardy to the species. Under this process, the Navy, as the agency proposing to take an action, first inquires of NMFS whether any threatened or endangered species are present in the area of the proposed action. See Thomas v. Peterson, 753 F.2d 754, 763 (9th Cir. 1985); 16 U.S.C. § 1536(c)(1). Next, if the answer is affirmative, the Navy then prepares a biological assessment to determine whether the species is likely to be affected by the action. See Thomas, 753 F.2d at 763; 16 U.S.C. § 1536(c)(1). Third, if NMFS determines, based on the biological assessment, that the action the Navy proposes to take is likely to affect a threatened or endangered species, the two agencies must engage in formal consultation. Alternatively, if NMFS determines that the action the Navy proposed to take would not likely adversely affect a protected species, NMFS could attempt informal consultation.

Formal consultation results in a biological opinion from NMFS which states a conclusion as to whether the proposed action is likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification of critical habitat. 50 C.F.R. § 402.14. If the biological opinion concludes that the proposed action would jeopardize the species or adversely affect critical habitat, then the proposed action may not go forward unless NMFS can suggest an alternative to avoid the adverse impact. Id; 16 U.S.C. § 1536(b)(3)(A). If the biological opinion concludes that the proposed action will not violate the Act, NMFS may still require mitigation measures. See Thomas, 753 F.2d at 763; 16 U.S.C. § 1536(b)(4)(ii)-(iii).

Here, NMFS issued a biological opinion on August 14, 2007 BiOp ("2007 BiOp") (Pl. Ex. 15, Def. Ex. 5) along with an August 15, 2007 Incidental Take Statement for the BiOp ("ITS") (Pl.

Ex. 16, Def. Ex. 6). NMFS also supplemented the BiOP on August 17, 2007 ("Supplemental BiOp") (Pl. Ex. 17, Def. Ex. 7). Plaintiffs argue that the 2007 BiOp fails to include a legally valid ITS. Plaintiffs also maintain that the 2007 BiOp findings are unsupported by the record and are arbitrary and capricious for may of the same reasons that the Final Rule and SEIS are flawed.

The government agency is required to specify whether any "incidental taking" of protected species will occur as a result of the agency action. See Center for Biological Diversity, 422 F. Supp. 2d at 1137 (citing 16 U.S.C. § 1536(b)(4)). A take includes harming, harassing, trapping, pursuing, collecting, shooting, capturing, wounding, or killing a protected species. Id. (citing 16 U.S.C. § 1532(19)). The regulations promulgated under the ESA require that when NMFS concludes that an action and the resultant incidental take of listed species will not violate section 7(a)(2) of the ESA, and, in the case of marine mammals, where the taking is authorized pursuant to section 101(a)(5) of the MMPA, NMFS "will provide with the biological opinion a statement concerning incidental take that: (i) specifies the impact, i.e., the amount or extent, or such incidental taking on the species[.]" 50 C.F.R. § 402.14(i). If the amount or extent of taking specified in this incidental take statement is exceeded, reinitiation of formal consultation is required. See 50 C.F.R. § 402.16.

The ITS must fulfill certain requirements. "In general, Incidental Take Statements set forth a 'trigger' that, when reached, results in an unacceptable level of incidental take, invalidating the safe harbor provision, and requiring the parties to reinitiate consultation." Arizona Cattle Growers' Ass'n v. United States Fish and Wildlife, 273 F.3d 1229, 1249 (9th Cir. 2001). "Ideally, this 'trigger' should be a specific number." Id. A numerical limit is not required where infeasible, however, and the Ninth Circuit has upheld an ITS that used a combination of numbers and estimates. Id. Congress itself, in the legislative history, only required that "[w]here possible, the impact should be specified in terms of a numerical limitation." Id. at 1250 (quoting H.R. Rep. No. 97-567 at 27 (1982), reprinted in 1982 U.S.C.C.A.N. at 2827)). In the absence of a specific numerical value, however, a defendant must establish that no such numerical value could be practically obtained. Id. See also Oregon Natural Resources Council v. Allen, 476 F.3d 1031, 1037 (9th Cir. 2007) ("Incidental Take Statement that utilizes a surrogate instead of a numerical cap on take must explain

why it was impracticable to express a numerical measure of take.").

Where no numerical value can be obtained, however, the agency must set forth some surrogate for defining the amount or extent of incidental take. Arizona Cattle Growers, 272 F.3d at 1350. "[T]he use of ecological conditions as a surrogate for defining the amount or extent of incidental take is reasonable so long as these conditions are linked to the take of the protected species." Id. The surrogate cannot be tautological, and the Ninth Circuit has rejected an ITS that defined the limit and level of take using the parameters of the project and therefore failed to set forth a trigger that would reinitiate the consultation process. See Oregon Natural Resources Council, 476 F.3d at 1039. Nor can the surrogate be "so indeterminate as to prevent the Take Statement from contributing to the monitoring of incidental take by eliminating its trigger function." Id. at 1041.

Here, Plaintiffs argue that neither the 2007 BiOp nor the corresponding ITS provides specific numerical values for listed species of sea turtles, salmon in the Atlantic and Pacific, or establish why such values are impractical. Plaintiffs also argue that the ITS does not supply a valid surrogate for these species.

1. Impracticality of Providing Numerical Values

Previously, the Court found that NMFS failed to show that no numerical value could be practically obtained. Evans, 364 F. Supp. 2d at 1138. When the Court decided this issue in Evans, however, NMFS did not cite any evidence in the administrative record showing that it was impractical to obtain estimates of the incidental take for Hawaiian monk seals, Pacific gray whales, sea turtles or salmon. There, the only explanation given for failing to provide such estimates was that the Navy did not conduct acoustic integration model simulations for these species. Id. at 1137. Here, however, the BiOp includes a table with estimates of the number of whales (including gray whales) in different mission areas, and both the BiOp and ITS explain the impracticality of providing numerical values for take of salmon and sea turtles. See Defs.' Ex. 5 at 139.

The ITS explains that a numerical value estimating the amount of take is impractical for sea turtles and salmon, given the universe of potential operating areas:

> This programmatic consultation only considers the universe of *potential* operating areas, not the areas where the Navy will actually operate. Given this uncertainty, NMFS cannot estimate the *amount* of take (the number of individuals) of any particular species from the proposed SURTASS LFA

> sonar system because such an estimate necessarily depends on factors such as location and season of operation. However, we do know that for marine mammals, the figure will not exceed 12% annually for any particular population of endangered or threatened species. In fact, depending on the operating areas and seasons, some endangered or threatened species might not be exposed to SURTASS LFA sonar at any time between 2007 and 2012. Def. Ex. 6 at SLF0159897.

Second, the ITS explains that estimating such numbers would be impossible in any event. Specifically, the ITS cites the 2007 BiOp, noting that estimates of the number of sea turtles, Atlantic salmon, or Pacific salmon that might be taken are "impossible to produce with current levels of knowledge." Id. Regarding sea turtles, the BiOp states that it is "virtually impossible to estimate the number of sea turtles that might occur in the water column in any particular area of the ocean" as sea turtles "associate with oceanographic fronts, eddies, upwelling areas, and convergence zones whose locations move and whose intensities change over time." Defs.' Ex. 5 at 137. Leatherback turtles, for instance, can cover more than 10,000 km of ocean each year. Id. at 138. "Patchy distribution and migratory habitat" make it "impossible to estimate the number of sea turtles that might occur in a specific area of the ocean." Id. In response to the Court's comments in Evans, the BiOp also states that domestic fishery capture estimates are based on capture rates over time and do not reflect the relative abundance of sea turtles in the water column, so they cannot be used to estimate the number of sea turtles in any particular area of the open ocean. Id. The Supplemental BiOp states that sea turtle computer simulations were not available due to lack of data necessary to run such models. See Defs.' Ex. 7 at 51 (explaining that there are no population estimates for most populations of sea turtles and that estimates of turtles that interact with fisheries are based solely on capture numbers and that there is no way to estimate number of sea turtles in water column at any particular time in any particular area), 68 (data necessary to develop computer models were not available).

As to Atlantic and Pacific Salmon, the BiOp states that salmon travel in schools composed of listed and unlisted species. The BiOp also states that current levels of knowledge about the salmon make it virtually impossible to estimate the number of salmon schools or number of salmon in a school that might occur in the water column in any particular area of the North Pacific or North Atlantic. See Defs.' Ex. 5 at 140.

The BiOp, therefore, explains that it is difficult to estimate takes for sea turtles because they are migratory species with patchy distributions. While the BiOp refers to numbers for sea turtles captured by domestic fisheries, the BiOp and ITS adequately explain why meaningful estimates cannot be extrapolated from these numbers. See Defs.' Ex. 5 at 138. Unlike the agency in Center for Biological Diversity, 422 F. Supp. 2d at 1137-39, NMFS has stated that it is impossible to estimate the amount of take. While Plaintiffs argue that NMFS's claim is undercut by NMFS's prior use of sea turtle interactions with fishing gear as a proxy for turtle presence, NMFS is correct in that there is no inconsistency between the ability to establish a take rate for a fishery and the inability to do so under the circumstances here. One biological opinion's analysis cannot necessarily be transplanted into another, because each must be geared to the specific activity at issue. The fishery capture rates only detect turtles captured by the fishery and do not reflect how many sea turtles are in the larger water areas at issue here. Thus, Plaintiffs have not raised a serious question that Defendants can provide a numerical estimate of how many sea turtles would be harmed by LFA sonar.

Similarly, NMFS notes that salmon travel in schools of listed and unlisted species and that current levels of knowledge about salmon make it virtually impossible to estimate the number of salmon schools or number of salmon in the water columns. While Plaintiffs point out that NMFS's own guidance documents recommend using non-listed species to estimate impacts on listed species in instances of co-occurrence of species under certain circumstances, that does not show that this method could be applied successfully here. See Supp. Pls.' Ex. 4 at 4-47 ("the relative occurrence of the species in the local community may be sufficiently predictable that impact on the community . . . serve as a measure of take, e.g., impacts to listed mussels may be measured by an index or other censusing technique that is based on surveys of non-listed mussels"). While the BiOp presents some data regarding the range for Atlantic salmon and details of Pacific salmon, such information is not sufficient data from which to derive a numerical value. See Defs.' Ex. 5 at 140 (noting areas in ocean where salmon are at risk of being exposed to deployments, listing depths at which most salmon occur, noting deeper depths of certain other species of salmon). Considering the vast geographic scope of the project, NMFS's ability and efforts to estimate take for numerous other

species, and their explanations for their inability to do so for salmon and sea turtles, Plaintiffs have not raised a serious question as to the practicability of specifying a numerical take value for those species.

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2. Adequacy of Surrogate

The BiOp provides as a surrogate for the lack of a numerical estimate that the extent of take of listed salmon and sea turtles will be limited to harassment. See Defs.' Ex. 6 at SLF0159897. The Supplemental BiOp further provides that adult and sub-adult turtles may be taken in the LFA mitigation zone and additional buffer zone, Defs.' Ex. 7 at 68, but if any sea turtle is detected that has been harmed, injured, or killed, renewed consultation is triggered. Id. This surrogate is not as broad as the parameters of the project. See Oregon Natural Resources Council, 476 F.3d at 1039. Plaintiffs argue that this surrogate is improper. The Court has expressed concern previously that the trigger would be illusory due to the very limited ability, at best, of the monitoring system to detect harm to difficult to observe smaller animals like sea turtles (as compared, for example, to humpback whales). At the same time, Plaintiffs have not pointed to any practical alternative, either in their papers or when questioned at the hearing. And at least as to salmon traveling in large schools in the vicinity of the LFA vessels, the active sonar may be able to detect them and trigger shutdowns. Further, the Court notes that the ITS will be supplemented by further ITSs in connection with the issuance of annual LOAs, which will be subject to scrutiny by the public. See Defs.' Ex. 6 at 0159896. Thus, while the Court remains concerned, it does not conclude that Plaintiffs are likely to prevail on this issue; they have at most raised a serious question on the merits.

Finally, Plaintiffs argue, briefly and conclusorily, that the 2007 BiOp findings are unsupported by the record and are arbitrary and capricious for some of the same reasons that they contend that the Final Rule is flawed, in that both assume that the LFA will not cause mortal injuries to marine life and rely on the Navy's outdated models to determine impact. As discussed above, Plaintiffs did not show a likelihood of prevailing on the issues of lethal take or negligible impact to marine mammal species, and at most raised a serious question about certain small localized population stocks.

INJUNCTIVE RELIEF

Applying the legal standard governing preliminary injunctions set forth above, the Court concludes that Plaintiffs have shown that they are likely to prevail on establishing certain violations of the MMPA, NEPA and the APA. (Plaintiffs have also raised serious questions on the merits as to other violations, but Court does not predicate any injunctive relief upon those issues.) Further, Plaintiffs have shown the possibility, indeed probability, of irreparable injury, particularly under the relatively liberal standard applicable under these statutes. As set forth above, environmental injury by its nature can rarely be remedied by money and is likely to be long lasting. See, e.g. Amoco, 480 U.S. at 545. Furthermore, the failure to adequately evaluate the environmental impact of government action in violation of NEPA leads to irreparable injury because of the added risk to the environment. See, e.g., American Motorcyclist Ass'n v. Watt, 714 F.2d at 966; Sierra Club v. Marsh, 872 F.2d at 500. The parties' experts present conflicting evidence as to whether marine mammals and endangered species will suffer serious injury or death due to LFA sonar, with Plaintiffs presenting numerous credible expert declarations that raise serious concerns about harm and Defendants presenting many credible expert declarations in rebuttal. Compare, e.g., Decl. of John Calambokidis ¶ 10 (deployment of LFA sonar presents substantial risk of imminent harm to endangered populations of humpback and blue whales), and Decl. of Hal Whitehead ¶ 5 (deployment of LFA sonar as proposed constitutes a substantial and serious risk to marine life), with Johnson Decl. ¶¶ 9-11 (concluding that use of LFA sonar did not cause widespread impacts on marine mammals), and Clark Decl. ¶ 20 (responding to Plaintiffs' experts opinions regarding humpback whales and stating that no long term adverse impacts on humpback whales were observed during SURTASS LFA Scientific Research Program testing). Regardless of whether lethal injury will occur, it is clear that marine mammals, many of whom depend on sensitive hearing for essential activities like finding food and mates and avoiding predators, will at a minimum be harassed by the extremely loud and far traveling LFA sonar. Further, Plaintiffs have shown that some marine mammal stocks are small, localized populations, leaving little if any margin for error, and a number are endangered. Special marine sanctuaries like the Northwestern Hawaiian Islands Marine National Monument and the Great Barrier Reef provide refuge for some of these increasingly rare marine

mammals, as well as other marine life in danger of extinction, yet are currently unprotected from use of LFA sonar.

As this Court stated in Evans, "[w]hile Defendants argue that harassment cannot be presumed to constitute irreparable injury because it is permissible under the MMPA subject to appropriate conditions, these conditions have not been met . . . . In enacting the MMPA, Congress clearly expressed its concern about the harm caused by harassment of marine mammals." Evans, 279 F. Supp. 2d at 1188. While Congress amended the MMPA to specify that the requirement of achieving the "least practicable adverse impact" on marine mammals must be viewed in light of the important military need for personnel safety, practicality and effectiveness (factors that the Court must also weigh when exercising its equitable powers), Congress did not exempt the Navy from this requirement where both needs can be met.

The Court has also considered the balance of hardships and the public interest. Plaintiffs do not seek cessation of the SURTASS LFA program, but do seek a continuation of the more protective mitigation measures that have been in place under the stipulated injunction over the last five years. The public interest in the survival and flourishing of marine mammals, as well as a healthy marine environment, is extremely strong. Indeed, Congress enacted the MMPA in recognition of this compelling public interest, not only to the American public but to the international community, and not only to present generations but to future generations to come. For example, Congress found that "marine mammals have proven themselves to be resources of great international significance, esthetic and recreational as well as economic. . . ." 16 U.S.C. § 1361. Further, some of the marine mammals are endangered and highly vulnerable. Stewardship of the world's precious oceans and the marine life within them is undoubtedly of utmost importance. See NRDC v. Winter, 508 F.3d 885, 886 (9th Cir. 2007) ("The public interest would be advanced by an injunction" that required adequate mitigation measures).

At the same time, the Navy has shown that it faces an increased need to train and operate in the littoral areas where many future naval operations involving submarines will take place, such as entrances to straights, channels and canals, and that overly strict limits on operations in those areas would pose a hardship both to the Navy and to the public at large. See SEIS at 2-7; Decl. of Rear

Admiral John Bird ¶¶ 24-25. Training and testing with LFA sonar in a variety of conditions and with fleet units and against actual submarines is necessary to maintain military readiness. See Bird Decl. ¶¶ 20, 27. Further, at oral argument, the Navy stressed the need for flexibility to deploy LFA sonar when and where needed to track potentially threatening submarines. More broadly, the public has a compelling interest in protecting national security by ensuring military preparedness and a strong defensive capability, as well as protecting those serving in the military from attacks by hostile submarines. See NRDC v. Winter, 502 F.3d 859, 863-64 (9th Cir. 2007) (staying as overbroad a preliminary injunction banning all use of medium frequency sonar in training exercises off California coast, while not reaching the issue whether a more tailored injunction allowing the exercises but requiring mitigation measures would be valid, explaining: "The public does indeed have a very considerable interest in preserving our natural environment and especially relatively scarce whales. But it also has an interest in national defense. We are currently engaged in war, in two countries. There are no guarantees extending from 2007 to 2009 or at any other time against other countries deciding to engage us, or our determining that it is necessary to engage other countries. The safety of the whales must be weighed, and so must the safety of our warriors. And of our country.").

Balancing the harms and weighing the public interest, the Court concludes that a preliminary injunction should issue that is carefully tailored to reduce the risk to marine mammals by restricting LFA sonar's use in some additional areas of the ocean that are especially important habitat but are not currently protected under the Final Rule, while providing the Navy greater flexibility to operate in more areas than currently allowed under the stipulated injunction. See NRDC v. Winter, 508 F.3d at 886 (while overbroad injunction invalid, balance of hardships and the public interest tips in favor of more narrowly tailored injunction). The preliminary injunction will place certain additional areas such as the Davidson Seamount, the Northwestern Hawaiian Islands Marine National Monument, the Galapagos Islands, the Great Barrier Reef and the Pelagos off limits to routine operations, and may provide a wider coastal exclusion zone than 12 nm in a limited number of areas of particularly important habitat that are not necessary for routine naval operations, taking into account the continental shelf break. However, the Navy may still be allowed to deploy LFA sonar in some or

most of these otherwise excluded areas where necessary for detection and tracking of submarines, as in the current stipulated injunction.

Accordingly, the parties are ordered to meet and confer on the precise terms of a preliminary injunction consistent with this opinion. In the brief interim period pending finalization of the preliminary injunction, the current stipulated injunction shall remain in place, absent either an agreement by the parties or further order of the Court permitting an exception if necessary. The Court will hold a case management conference on February 19, 2008 at 2:00 p.m. to address the process of finalizing the preliminary injunction. The parties are directed to file a joint statement no later than February 14, 2008 at noon.

IT IS SO ORDERED.

Dated: February 6, 2008

Elizabeth D. Laporte

ELIZABETH D. LAPORTE
United States Magistrate Judge