COMMENT SHEET

Environmental Impact Statement and Overseas Environmental Impact Statement Guam and CNMI Military Relocation

Website Comment Number: 70 Received: 12/27/2009 10:02:17 PM

Hafa Adai,

B-001-001

On behalf of the Academic Vice President for Guam Communtiy College, Dr. R. Ray D. Somera, I would like to extend an invitation to Mrs. Jean Chabonne or Captain Neil Ruggiero to come and meet with the college to discuss how we can work together to prepare the workforce to meet the demands of the military.

Please cantact me via email or telephone.

Thank you,
Patrick Clymer

B-001-001

Thank you for your comment. This comment was previously forwarded to the requested individuals for follow up.

OUTRIGGER OHANA

0050

Charlene Goo

Toll-free Reservations
USA, Guam & Canada

Internet Website

January 9, 2010

JGPO c/o NAVFAC Pacific
258 Makalapa Drive, Suite 108
Pearl Harbor, HI 96860-3134
Attention: GPMO

Dear Sirs,

On behalf of the Outrigger Guam Resort, OHANA Bayview Guam and OHANA Oceanview Guam representing a combined total of 939 rooms and almost 350 employees, I hereby submit testimony in support of relocating the Marines from Okinawa, Japan to Guam, constructing visiting Aircraft Carrier berthing facilities, and establishing a U.S. Army Air and Missle Defense Task Force on Guam.

B-002-001 The buildup will offer our industry an increase in the number of visitors and additional customer diversity. This will increase the tax base creating additional tax revenues to provide much needed human services for the people in our community.

More people traveling will also give the airline industry an opportunity to expand routes and look at affordable pricing.

It will give our community an opportunity to improve and upgrade our infrastructure with assistance from the Federal Government.

In the long run, with proper leadership in our local government, the economic growth from the military buildup will improve the quality of life for everyone in the community.

Sincerely,

Charlene Goo

B-002-001

Thank you for your comments indicating your hotel's position and comments how the proposed buildup would impact your hotel business in Guam.

Calvo Enterprises, Inc.
138 Martyr Street • Hagatna, Guam 96910
TEL: (671) 472-6852 • FAX: (671) 472-6853
EMAIL: cei@ite.net

February 1, 2010

Mr. John Jackson
Director, JGPO Fwd
Joint Guam Program Office
PSC 455 Box 152
FPO, AO 96540-1000

Dear Mr. Jackson:

B-003-001 Calvo Enterprises, Inc. is a registered owner of 35,788 square meters of land in the Sasajan Valley, also known as Marbo Cave.

It has come to our attention that this area has been designated by the military as a possible firing range for the U.S. Marine Corps in the course of the military build-up. If not this specific region, it is our understanding that adjacent properties may be the object of condemnation for the same purpose.

B-003-002 It matters not which properties are taken for the aforesaid purpose. The danger and peril that such a plan pose for the residents of this sector should be sufficient reason to completely abandon this proposal.

B-003-003 For the record, Calvo Enterprises, Inc. vehemently objects to this planned project. The United States Government and the U.S. Military possess areas of land on this island which should be able to accommodate the specific firing range needed by the Marine Corps.

Firing ranges are by their very nature quite dangerous and should be situated in places away from human habitat. If military land is not available to accommodate a firing range, then perhaps certain mountainous areas which are quite isolated should be considered. The next best thing if Guam cannot provide the facility for the firing range is for the U.S. Military to seriously consider using Tinian for this purpose. While it is not within the immediate vicinity, it should still be quite useful because firing ranges are not utilized that frequently. The Marine Corps should have adequate budget to fund transporting its soldiers to and from Tinian for target training.

Sincerely,

Paul M. Calvo
President & Chairman of the Board

Cc: Governor Felix Camacho
Congresswoman Madeline Z. Bordallo
Senators, 30th Guam Legislature
Chamorro Land Trust

B-003-001

Thank you for your comment. DoD was required to determine whether military relocation requirements could be met by excess, underutilized or otherwise available property held by DoD on Guam. Early development plans attempted to keep all activities on existing DoD lands. However, as discussed in the FEIS (Volume 2, Chapter 2), after applying operational and environmental screening criteria, no contiguous DoD area on Guam was identified that could support all the land use and operational requirements of the action.

Should DoD determine that additional land is necessary to meet its requirements, DoD policy requires that it negotiate with affected public and private land owners in good faith, seek agreements to acquire desired lands interests and pay fair market value. Where circumstances exist that require resolution of issues such as ownership or value, procedures exist under eminent domain authority to resolve those questions. Eminent domain requires reimbursement at fair market value.

B-003-002

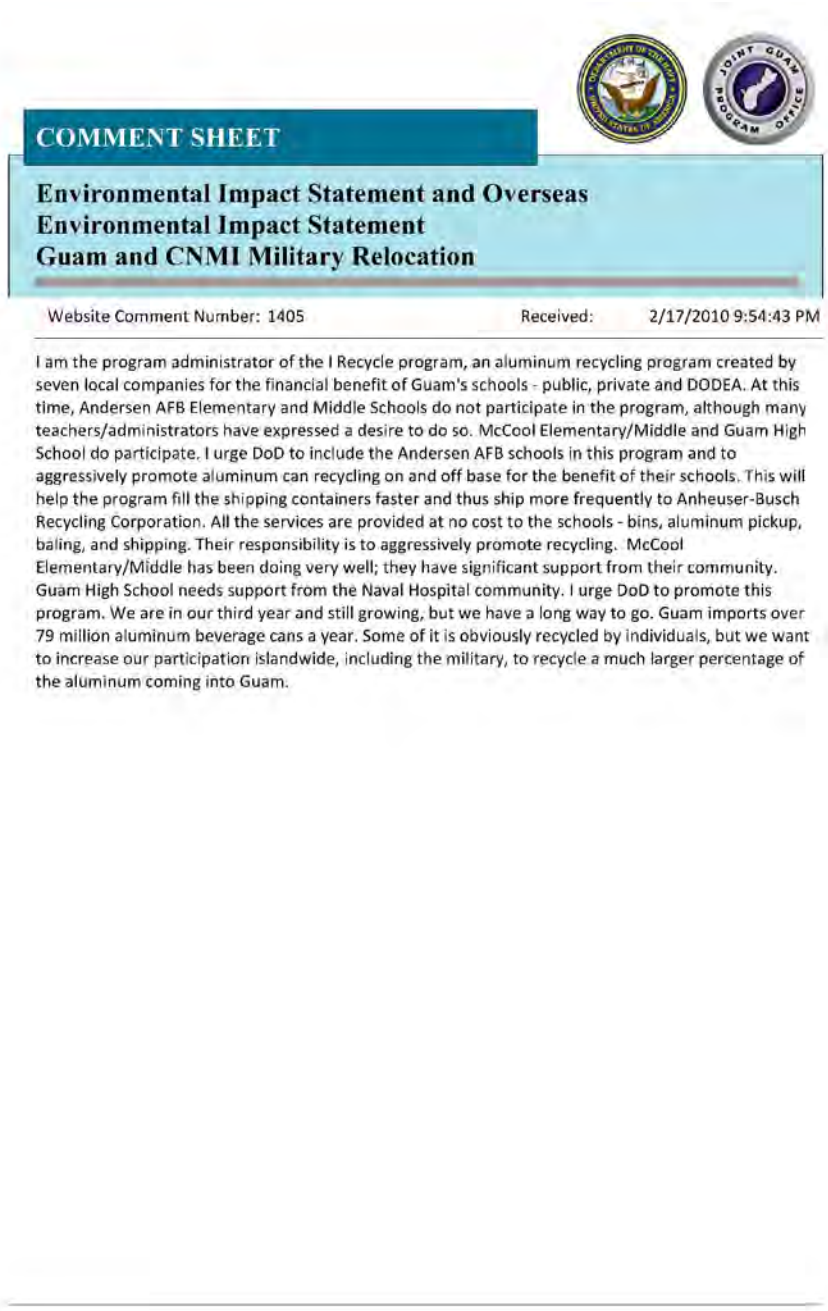
Thank you for your comment. To ensure the safety of the public during small arms and hand grenade training, criteria from Marine Corps Order 3570.1B would define the Safety Distance Zones (SDZs) for the ranges based on the weapon and munitions characteristics to be used on the ranges. The range designs and associated SDZs would be certified in accordance with Marine Corps Order 3550.9, Marine Corps Ground Range Certification and Recertification Program.

B-003-003

Thank you for your comment. Marines stationed on Guam require annual qualification or requalification on individual and crew –served weapons to maintain their combat readiness. Every Marine on Guam will require this type of training. This high volume can only be met with ranges located in close proximity to cantonment areas. It would be cost

prohibitive to move every Marine to an off island location to meet these reoccurring training requirements.

DoD also recognizes the importance of reducing adverse effects on the people of Guam, its natural resources, and infrastructure. The EIS process identifies ways to implement the proposed relocation while minimizing adverse impacts. DoD will continue to ensure that the short-term impacts of construction are managed effectively and that the long-term effects of the military relocation reflect DoD policies to be good neighbors and responsible citizens on Guam.



COMMENT SHEET

Environmental Impact Statement and Overseas Environmental Impact Statement Guam and CNMI Military Relocation

Website Comment Number: 1405 Received: 2/17/2010 9:54:43 PM

B-004-001

I am the program administrator of the I Recycle program, an aluminum recycling program created by seven local companies for the financial benefit of Guam's schools - public, private and DODEA. At this time, Andersen AFB Elementary and Middle Schools do not participate in the program, although many teachers/administrators have expressed a desire to do so. McCool Elementary/Middle and Guam High School do participate. I urge DoD to include the Andersen AFB schools in this program and to aggressively promote aluminum can recycling on and off base for the benefit of their schools. This will help the program fill the shipping containers faster and thus ship more frequently to Anheuser-Busch Recycling Corporation. All the services are provided at no cost to the schools - bins, aluminum pickup, baling, and shipping. Their responsibility is to aggressively promote recycling. McCool Elementary/Middle has been doing very well; they have significant support from their community. Guam High School needs support from the Naval Hospital community. I urge DoD to promote this program. We are in our third year and still growing, but we have a long way to go. Guam imports over 79 million aluminum beverage cans a year. Some of it is obviously recycled by individuals, but we want to increase our participation islandwide, including the military, to recycle a much larger percentage of the aluminum coming into Guam.

B-004-001

Thank you for your comment.

The Navy is preparing a Recycling and Solid Waste Diversion Study for DoD Bases, Guam that has established a diversion goal of 50 percent, not including construction and demolition debris. The Study is considering the following alternatives: 1) DoD would construct two refuse transfer facilities, one in northern Guam and one in Southern Guam; 2) DoD would implement a source separation recycling program at all facilities; 3) DoD would construct recycling center(s); and 4) DoD would construct a materials resource recovery facility.

COMMENT SHEET

Environmental Impact Statement and Overseas Environmental Impact Statement
Guam and CNMI Military Relocation

Website Comment Number: 1455 Received: 2/17/2010 11:14:04 PM

B-005-001

The DEIS does not include any economic impact for the firing range proposals, yet there will be a huge economic impact to the company I work for, USES, Inc. Over 57% of our tour guests in the last six months have requested Pagat Cave as their destination, generating 63% of the company's tour revenue and 37% of it's total revenue. There is no comparable tour available on island that meets the unique highlights of the Pagat point, ancient Chamorro village, and Pagat cave experience. The loss of access to these sites will result in loss of revenue for this company, eventually resulting in lower pay and layoffs for our local workers. Other tour companies will similarly be affected. The DEIS does not list any economic impact for this proposal, nor does it offer mitigation for those affected. One must, therefore, conclude that the DEIS, at the very least for this proposal, is flawed, and all findings are subsequently unacceptable. It also calls into question all statements in the entire DEIS.

Also, the reasons for rejecting the West coast firing range alternatives all exist equally for the Route 15 site: environmental concerns, political/public concerns, presence of historical/cultural sites/artifacts/burial sites. The Route 15 Alternatives must therefore also be eliminated. The only proper and acceptable locations for the live fire ranges are Tarague and Naval Magazine. The best alternative is NO ACTION.

B-005-001

Thank you for your comment. It is the intent of DoD to maintain public access to the cultural and historic sites at Pagat and Marbo consistent with safety and operational requirements. Restricting access to certain DoD areas at certain times is required to maintain public safety. Final plans concerning access to sites potentially impacted by the proposed action have not been developed. DoD looks forward to working with stakeholders to develop plans for cultural stewardship and access that balances operational needs, public safety concerns, and the continuing public use and enjoyment of these sites.

Please the Socioeconomic Impact Assessment Study, Appendix F, Volume 9 of the DEIS, Section 4.3.7 for discussion of impacts on tourism; and, in particular, the subsection titled "Loss of Possible Tourism Attractions from DoD Acquisition of New Land."

COMMENT SHEET

Environmental Impact Statement and Overseas Environmental Impact Statement
Guam and CNMI Military Relocation

Website Comment Number: 1707 Received: 2/18/2010 4:08:50 AM

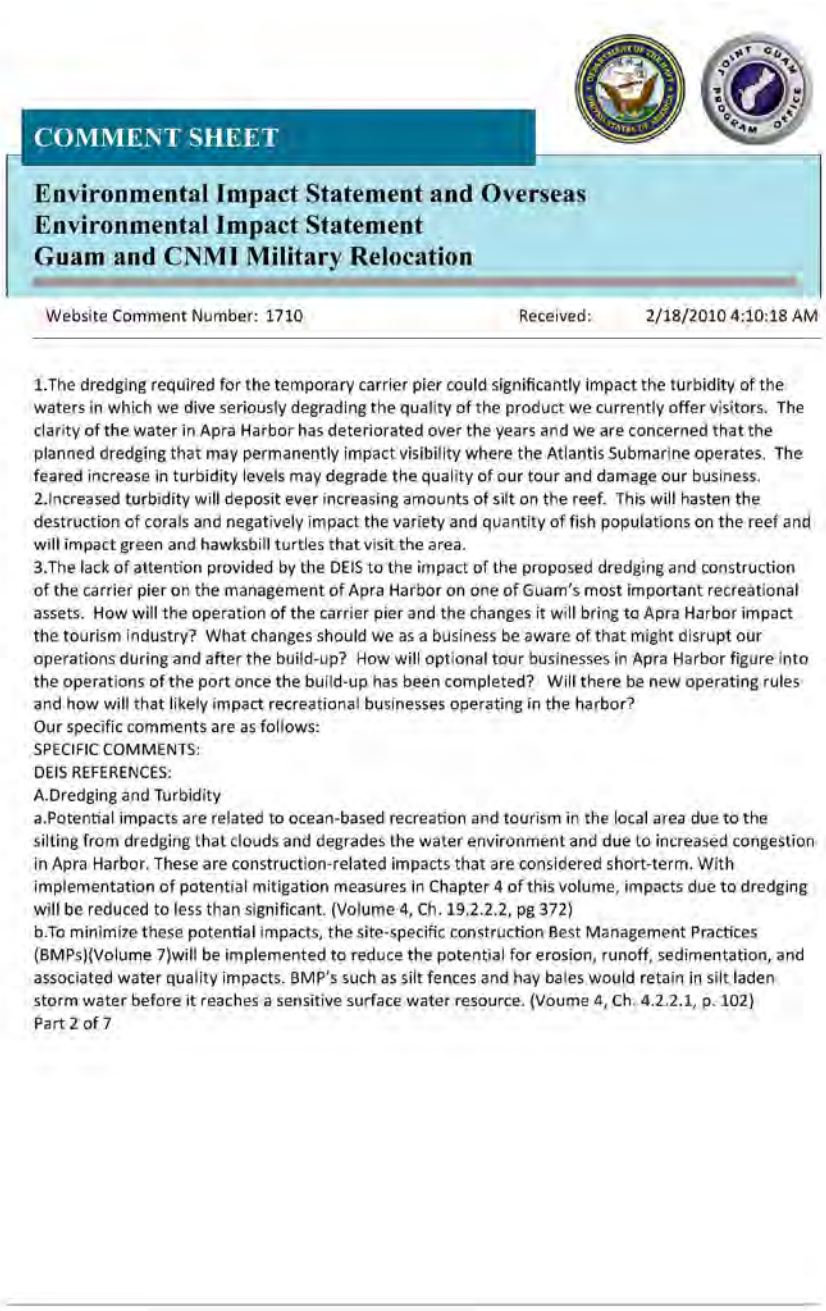
We Are Guahan supports the concerns and comments of the Baba Corporation/Atlantis Submarine Draft Environmental Impact Statement (DEIS) /
Overseas Environmental Impact Statement (OEIS)
GUAM AND CNMI MILITARY RELOCATION
Comment Sheet
NAME:Hideharu BabaTEL:(671) 646-5050
ORGANIZATION:Baba Corporation/Atlantis SubmarineEMAIL:bo@babacorp.net
MAILING ADDRESS:756 S. Marine Corps Dr., Ste. 201
Tamuning, GU 96913

B-006-001

Atlantis Submarine is a member of the Baba Corporation group of businesses. Having operated on Guam since 1968, Baba Corporation is considered a pioneer in the visitor industry. The company currently employs one hundred and seventy five people whose livelihood is dependent on a healthy visitor industry. Atlantis Submarines has dedicated its presentation to the education and celebration of Guam's ecosystem. The flagship operation of the company is the Atlantis Submarine, which has been in operation for more than twenty years, is working in conjunction with the University of Guam's Sea Grant program and the Coastal Zone Management division of the Bureau of Statistics and Plans to provide information about Guam's fragile ecosystem and provide a way for visitors and local residents to become immersed in the island's unique environment. Our optional tour involves taking passengers underwater in an electric powered self sustaining submarine to depths of 150 feet to allow a unique perspective of Guam's underwater habitat. The Atlantis Submarine seats 48 passengers and offers a 35 minute educational tour of Gab Gab reef a pristine representative of the coral habitat in Apra Harbor. The reef supports a rich diversity of corals, sponges, and fish. Sea Turtles are frequently sighted swimming in the area. Our passengers are treated to viewing undisturbed tropical sea life in a largely undisturbed undersea tropical environment. The dive on Guam is known throughout Asia as offering one of the finest undersea viewing experiences available.
The recently released DEIS is quite daunting as a document to comprehend. We have read the document as thoroughly as we believe we could in attempting to understand how what is proposed will affect our business. There are three areas that we are specifically concerned about with regard to the proposed construction of a temporary carrier berthing in Apra Harbor:
Part 1 of 7

B-006-001

Thank you for your comment.



COMMENT SHEET

Environmental Impact Statement and Overseas Environmental Impact Statement Guam and CNMI Military Relocation

Website Comment Number: 1710 Received: 2/18/2010 4:10:18 AM

B-007-001 1.The dredging required for the temporary carrier pier could significantly impact the turbidity of the waters in which we dive seriously degrading the quality of the product we currently offer visitors. The clarity of the water in Apra Harbor has deteriorated over the years and we are concerned that the planned dredging that may permanently impact visibility where the Atlantis Submarine operates. The feared increase in turbidity levels may degrade the quality of our tour and damage our business.

B-007-002 2.Increased turbidity will deposit ever increasing amounts of silt on the reef. This will hasten the destruction of corals and negatively impact the variety and quantity of fish populations on the reef and will impact green and hawksbill turtles that visit the area.

B-007-003 3.The lack of attention provided by the DEIS to the impact of the proposed dredging and construction of the carrier pier on the management of Apra Harbor on one of Guam's most important recreational assets. How will the operation of the carrier pier and the changes it will bring to Apra Harbor impact the tourism industry? What changes should we as a business be aware of that might disrupt our operations during and after the build-up? How will optional tour businesses in Apra Harbor figure into the operations of the port once the build-up has been completed? Will there be new operating rules and how will that likely impact recreational businesses operating in the harbor?

B-007-004 Our specific comments are as follows:

SPECIFIC COMMENTS:

DEIS REFERENCES:

A.Dredging and Turbidity

B-007-005 a.Potential impacts are related to ocean-based recreation and tourism in the local area due to the silting from dredging that clouds and degrades the water environment and due to increased congestion in Apra Harbor. These are construction-related impacts that are considered short-term. With implementation of potential mitigation measures in Chapter 4 of this volume, impacts due to dredging will be reduced to less than significant. (Volume 4, Ch. 19.2.2.2, pg 372)

B-007-006 b.To minimize these potential impacts, the site-specific construction Best Management Practices (BMPs)(Volume 7)will be implemented to reduce the potential for erosion, runoff, sedimentation, and associated water quality impacts. BMP's such as silt fences and hay bales would retain in silt laden storm water before it reaches a sensitive surface water resource. (Voume 4, Ch. 4.2.2.1, p. 102)

Part 2 of 7

B-007-001

Thank you for your comment. The primary goal of the USACE regulatory program is to protect the nation's aquatic resources. This is accomplished through the issuance of permits for projects that have undergone careful evaluation in light of applicable laws, regulations and policy to insure that no action authorized by the USACE program will have an adverse impact on the overall public welfare. It is their mission to provide strong protection of the Nation's aquatic environment, including wetlands and coral reefs; to enhance the efficiency of the USACE administration of its regulatory program; and, to ensure that the USACE provides the regulated public with fair and reasonable decisions. USACE permits will likely contain requirements for silt curtains, biological monitoring, restrictions in dredging activities during potential coral spawning months, and compensatory mitigation projects.

To compensate for the loss in ecological service provided by coral reef ecosystem, upland reforestation (to improve nearshore water quality), artificial reefs (to provide increased fish habitat) or a combination of these and other compensatory mitigation alternatives will be considered by the Navy to comply with federal laws that protect coral resources. In addition, land-based construction BMPs will be implemented to reduce run-off/sedimentation to the ocean, thus protecting the reefs and associated marine resources in the long-term.

B-007-002

Thank you for your comment. The EIS acknowledges that dredging would result in short-term, localized impacts to water quality as discussed in Section 4.2.2.2, Volume 4. As noted in this Section, there would be short-term increases in turbidity, short-term decreases in dissolved oxygen, and resuspension of sediments possibly containing metals. Wharf construction and dredging activities in Apra Harbor have shown that there has only been short term, localized impacts to water quality with the use of BMPs. There have been no violations of water

quality standards reported. It is anticipated that construction and dredging activities associated with the proposed transient CVN wharf would be consistent with previous actions regarding impacts to water quality.

As part of the CWA Section 404 permitting process, the DoD would conduct appropriate modeling of silt and sedimentation effects from dredging activities prior to obtaining a CWA Section 401 Water Quality Certificate required for all in-water construction.

Volume 4, Chapter 11 of the EIS contains a detailed indirect impact analysis for marine biological resources which is based on sediment transport modeling from previous dredge sites in Apra Harbor.

B-007-003

Thank you for your comment. The potential impacts on the existing recreational resources enjoyed at Apra Harbor are discussed in Sections 9.2.2.2 ("Alternative 1 Polaris Point [Preferred Alternative: Offshore]") and 9.2.3.2 ("Alternative 2 Former Ship Repair Facility: Offshore]") of the EIS.

B-007-004

Thank you for your comment. The differences between the environmental effects of mechanical and hydraulic dredging are discussed in Chapter 2, Volume 4 and Appendix D of the EIS. Mechanical dredging involves use of a clamshell or fixed bucket that excavates the dredge sediment from the harbor floor and then carries the sediment in the full bucket through the water column before lifting the bucket out of the water and placing the dredged sediment in a nearby barge or scrow. During this movement, a small fraction of the collected sediment will escape from the bucket and create suspended sediment in the lower and higher levels of the water column. On the other hand, a hydraulic dredge works solely on the harbor floor and any suspended

sediment will emanate only in the lower portion of water column. As a result, the plume of suspended sediment is generally greater with use of conventional clam shell bucket as compared with a hydraulic dredge. However, use of hydraulic dredging is generally limited to soft bottom sediment on relatively flat surfaces. Mechanical dredging, which has historically been used in Apra Harbor, was chosen as the dredging method for evaluating environmental impacts as it presents the most adverse impact scenario. A sediment plume is an inevitable effect of in-water construction activities. The Navy proposes to minimize sedimentation by using best management practices such as silt curtains and operational controls of dredging equipment. Final mitigation measures for all dredging activities will be determined and agreed upon during the permit phase of the projects.

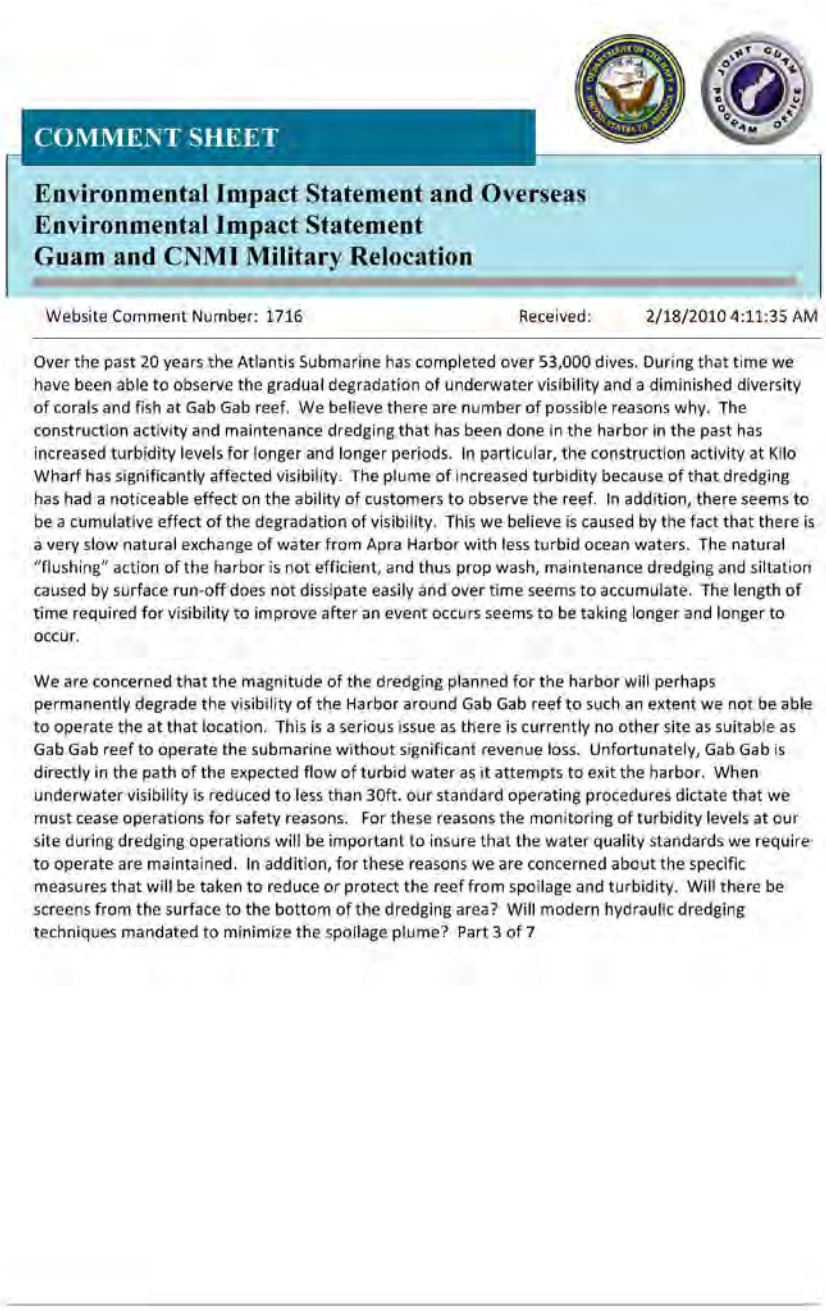
Volume 4, Chapter 16 of the FEIS acknowledges that there could be impacts to ocean based tourism within Apra Harbor including diving. However, economic impacts to tourism would be somewhat offset by increased tourism from military personnel.

B-007-005

Thank you for your comment. As referenced in your comment and in the EIS, there would be suspended sediment created by the action of dredging and in-water construction. These clouds or plumes of suspended sediment would cause turbidity in the waters of Apra Harbor near the proposed construction activities. Silt curtains would be used to contain the plumes of suspended sediment and the created turbidity would cease after the construction activities were completed.

B-007-006

Thank you for your comment. Site- and activity-specific BMPs to reduce the potential for erosion, runoff, and sedimentation would be implemented as part of the proposed action.



COMMENT SHEET

Environmental Impact Statement and Overseas Environmental Impact Statement
Guam and CNMI Military Relocation

Website Comment Number: 1716 Received: 2/18/2010 4:11:35 AM

B-008-001

Over the past 20 years the Atlantis Submarine has completed over 53,000 dives. During that time we have been able to observe the gradual degradation of underwater visibility and a diminished diversity of corals and fish at Gab Gab reef. We believe there are number of possible reasons why. The construction activity and maintenance dredging that has been done in the harbor in the past has increased turbidity levels for longer and longer periods. In particular, the construction activity at Kilo Wharf has significantly affected visibility. The plume of increased turbidity because of that dredging has had a noticeable effect on the ability of customers to observe the reef. In addition, there seems to be a cumulative effect of the degradation of visibility. This we believe is caused by the fact that there is a very slow natural exchange of water from Apra Harbor with less turbid ocean waters. The natural "flushing" action of the harbor is not efficient, and thus prop wash, maintenance dredging and siltation caused by surface run-off does not dissipate easily and over time seems to accumulate. The length of time required for visibility to improve after an event occurs seems to be taking longer and longer to occur.

B-008-002

We are concerned that the magnitude of the dredging planned for the harbor will perhaps permanently degrade the visibility of the Harbor around Gab Gab reef to such an extent we not be able to operate the at that location. This is a serious issue as there is currently no other site as suitable as Gab Gab reef to operate the submarine without significant revenue loss. Unfortunately, Gab Gab is directly in the path of the expected flow of turbid water as it attempts to exit the harbor. When underwater visibility is reduced to less than 30ft. our standard operating procedures dictate that we must cease operations for safety reasons. For these reasons the monitoring of turbidity levels at our site during dredging operations will be important to insure that the water quality standards we require to operate are maintained. In addition, for these reasons we are concerned about the specific

B-008-003

measures that will be taken to reduce or protect the reef from spoilage and turbidity. Will there be screens from the surface to the bottom of the dredging area? Will modern hydraulic dredging techniques mandated to minimize the spoilage plume? Part 3 of 7

B-008-001

Thank you for your comment. The FEIS will be updated to reflect this comment.

B-008-002

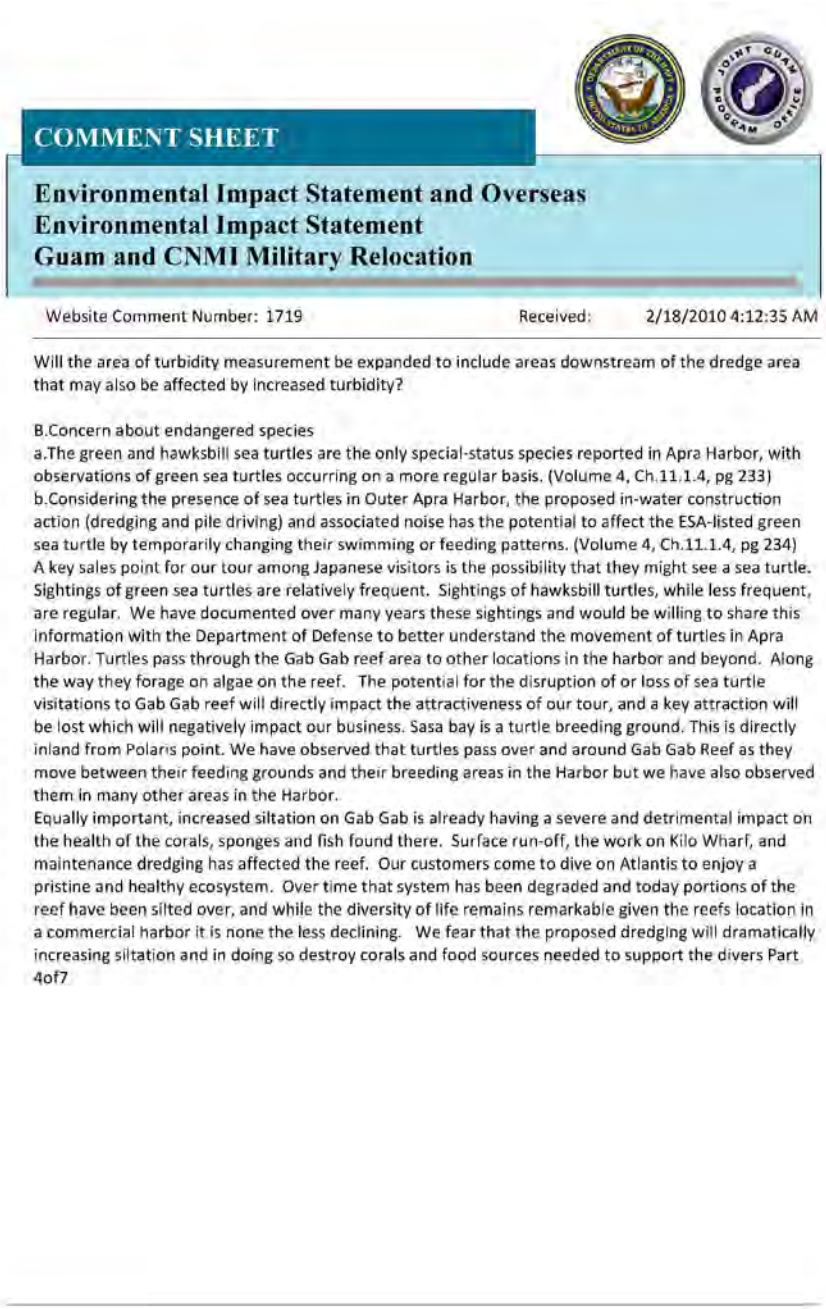
Thank you for your comment. This section will be updated in the FEIS to reflect this comment.

B-008-003

Thank you for your comment. A number of protective measures would be used to minimize the distribution of the turbidity plume that would unavoidably be generated by the proposed dredging operations. These measures are noted in Chapters 2, 4, and 11 of Volume 4. Silt curtains are one example of these types of protective measures. Standard turbidity curtains are approximately 20-30 feet (6-9 meters) in length and have a weighted bottom to maintain the effectiveness of the curtain against the movement of currents within the water body. Since the dredge equipment is not stationary for the entire period of dredging, it is impractical to have a silt curtain extending to and being anchored to the bottom of the harbor. As the material is being excavated by the mechanical dredge, the heaviest materials fall rapidly to the bottom of the water body with the lighter and more buoyant fraction floating in the upper levels and surface of the water where the curtains are most effective.

With regard to use of a hydraulic dredge, Chapter 4 of Volume 4 notes that mechanical dredges have historically been used in Guam. There are a number of trade-offs between the use of hydraulic or mechanical dredging equipment that range from the type of marine sediment to be excavated and the choice of upland or ocean disposal method. In either case, the use of best management practices including the deployment of a silt curtain, as noted above, would minimize adverse impacts from the suspended sediments caused by the dredging action. The choice of

dredging equipment and any restrictions on use would be determined during the permit phase of the proposed project.



COMMENT SHEET

Environmental Impact Statement and Overseas Environmental Impact Statement Guam and CNMI Military Relocation

Website Comment Number: 1719 Received: 2/18/2010 4:12:35 AM

B-009-001 Will the area of turbidity measurement be expanded to include areas downstream of the dredge area that may also be affected by increased turbidity?

B-009-002 B.Concern about endangered species
a.The green and hawksbill sea turtles are the only special-status species reported in Apra Harbor, with observations of green sea turtles occurring on a more regular basis. (Volume 4, Ch.11.1.4, pg 233)
b.Considering the presence of sea turtles in Outer Apra Harbor, the proposed in-water construction action (dredging and pile driving) and associated noise has the potential to affect the ESA-listed green sea turtle by temporarily changing their swimming or feeding patterns. (Volume 4, Ch.11.1.4, pg 234)
A key sales point for our tour among Japanese visitors is the possibility that they might see a sea turtle. Sightings of green sea turtles are relatively frequent. Sightings of hawksbill turtles, while less frequent, are regular. We have documented over many years these sightings and would be willing to share this information with the Department of Defense to better understand the movement of turtles in Apra Harbor. Turtles pass through the Gab Gab reef area to other locations in the harbor and beyond. Along the way they forage on algae on the reef. The potential for the disruption of or loss of sea turtle visitations to Gab Gab reef will directly impact the attractiveness of our tour, and a key attraction will be lost which will negatively impact our business. Sasa bay is a turtle breeding ground. This is directly inland from Polaris point. We have observed that turtles pass over and around Gab Gab Reef as they move between their feeding grounds and their breeding areas in the Harbor but we have also observed them in many other areas in the Harbor.

B-009-003 Equally important, increased siltation on Gab Gab is already having a severe and detrimental impact on the health of the corals, sponges and fish found there. Surface run-off, the work on Kilo Wharf, and maintenance dredging has affected the reef. Our customers come to dive on Atlantis to enjoy a pristine and healthy ecosystem. Over time that system has been degraded and today portions of the reef have been silted over, and while the diversity of life remains remarkable given the reefs location in a commercial harbor it is none the less declining. We fear that the proposed dredging will dramatically increasing siltation and in doing so destroy corals and food sources needed to support the divers Part 4of7

B-009-004

B-009-001

Thank you for your comment. Specific monitoring requirements will be identified and implemented following agency coordination and permitting.

B-009-002

Thank you for your comment. The Navy has co-existed with sea turtles in the Harbor for over 60-years and in a partnership with the Fish and Wildlife Service, monitors sea turtle activities within Apra Harbor and around Guam. There are no records of sea turtles nesting on beaches within Apra Harbor that would be impacted by the proposed action and there have been no reported observations of sea turtles grazing within the area to be dredged. The Navy will implement mitigation measures and BMPs during in-water and land-based construction activities (i.e. dredging and wharf construction) to lessen any potential impacts to sea turtles and sea life in general.

Additionally, the U.S. Army Corps permit will require measures to protect biological resources. These measures may include the following: biological monitors on vessels (making sure sea turtles and dolphins [although rare in Apra Harbor] do not approach the area); halting of dredging activities, if these animals enter the buffer zone, until the sea turtle and/or dolphin voluntarily leave the area, low impact lighting, and as described above, joint Navy/Guam Resource Agency monitoring of nesting beaches though out Guam, to name a few. The final determination of these protective measures and programs will be made when the U.S Army Corps permit is approved, after the Record of Decision on this EIS.

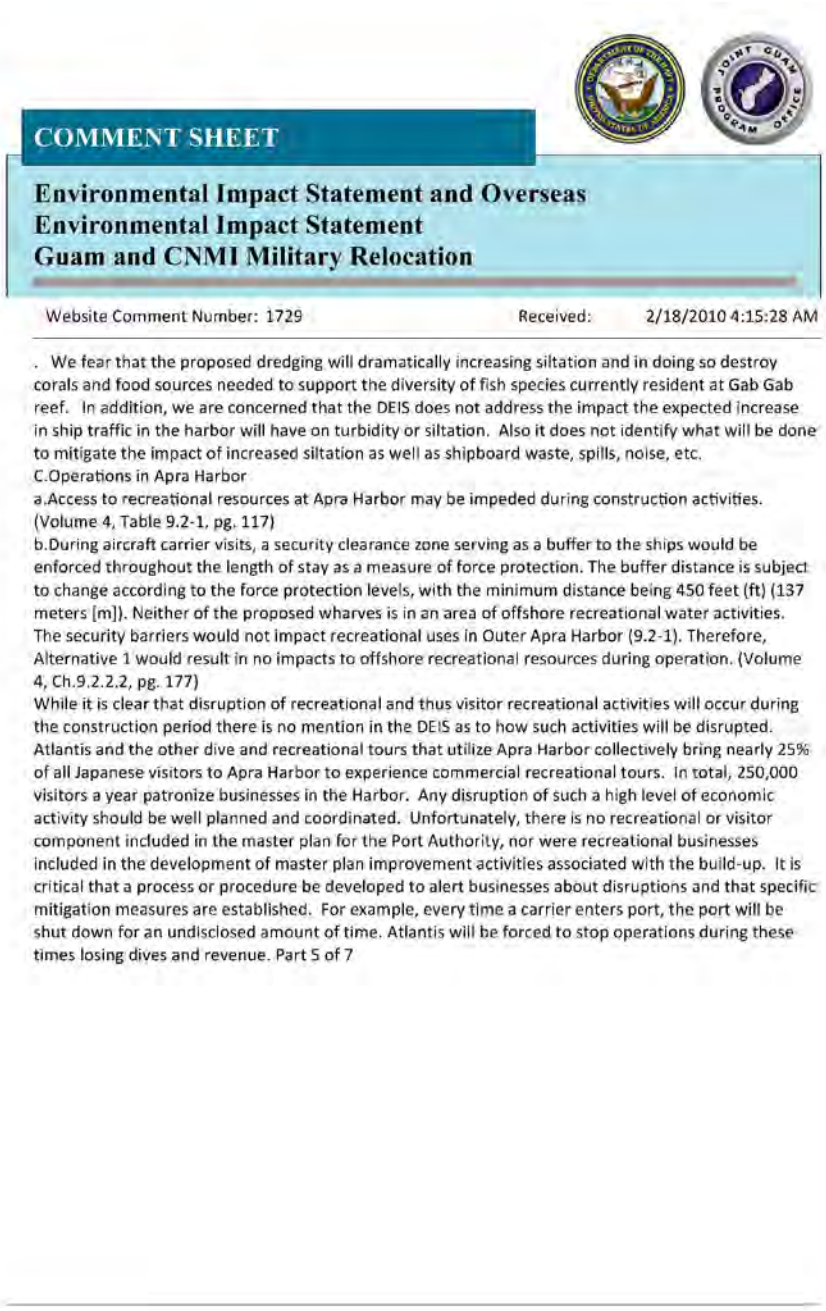
B-009-003

Thank you for your comment. The Navy is required to consider the Coral Reef Preservation Act, and has supported many of the Section 2.2 Purposes of this Act. However, the U.S. Army Corps of Engineers (USACE) Compensatory Mitigation Rule is more appropriate in this

situation. The primary goal of the USACE regulatory program is to protect the nation's aquatic resources. This is accomplished through the issuance of permits for projects that have undergone careful evaluation in light of applicable laws, regulations and policy to ensure that no action authorized by the USACE program will have an adverse impact on the overall public welfare. It is their mission to provide strong protection of the Nation's aquatic environment, including wetlands and coral reefs; to enhance the efficiency of the USACE administration of its regulatory program; and, to ensure fair and reasonable decisions. USACE permits will likely contain requirements for silt curtains, biological monitoring, restrictions in dredging activities during potential coral spawning months, and compensatory mitigation projects.

B-009-004

Thank you for your comment. See previous B-009-002.



COMMENT SHEET

Environmental Impact Statement and Overseas Environmental Impact Statement
Guam and CNMI Military Relocation

Website Comment Number: 1729 Received: 2/18/2010 4:15:28 AM

B-010-001 . We fear that the proposed dredging will dramatically increasing siltation and in doing so destroy corals and food sources needed to support the diversity of fish species currently resident at Gab Gab reef. In addition, we are concerned that the DEIS does not address the impact the expected increase in ship traffic in the harbor will have on turbidity or siltation. Also it does not identify what will be done to mitigate the impact of increased siltation as well as shipboard waste, spills, noise, etc.

B-010-002 C.Operations in Apra Harbor
a.Access to recreational resources at Apra Harbor may be impeded during construction activities. (Volume 4, Table 9.2-1, pg. 117)
b.During aircraft carrier visits, a security clearance zone serving as a buffer to the ships would be enforced throughout the length of stay as a measure of force protection. The buffer distance is subject to change according to the force protection levels, with the minimum distance being 450 feet (ft) (137 meters [m]). Neither of the proposed wharves is in an area of offshore recreational water activities. The security barriers would not impact recreational uses in Outer Apra Harbor (9.2-1). Therefore, Alternative 1 would result in no impacts to offshore recreational resources during operation. (Volume 4, Ch.9.2.2.2, pg. 177)

B-010-003 While it is clear that disruption of recreational and thus visitor recreational activities will occur during the construction period there is no mention in the DEIS as to how such activities will be disrupted. Atlantis and the other dive and recreational tours that utilize Apra Harbor collectively bring nearly 25% of all Japanese visitors to Apra Harbor to experience commercial recreational tours. In total, 250,000 visitors a year patronize businesses in the Harbor. Any disruption of such a high level of economic activity should be well planned and coordinated. Unfortunately, there is no recreational or visitor component included in the master plan for the Port Authority, nor were recreational businesses included in the development of master plan improvement activities associated with the build-up. It is critical that a process or procedure be developed to alert businesses about disruptions and that specific mitigation measures are established. For example, every time a carrier enters port, the port will be shut down for an undisclosed amount of time. Atlantis will be forced to stop operations during these times losing dives and revenue. Part 5 of 7

B-010-001

Thank you for your comment. The EIS acknowledges that dredging would result in short-term, localized impacts to water quality as discussed in Section 4.2.2.2, Volume 4. As noted in this Section, there would be short-term increases in turbidity, short-term decreases in dissolved oxygen, and resuspension of sediments. Historically, wharf construction and dredging activities in Apra Harbor have resulted in only short term, localized impacts to water quality with the use of Best Management Practices (BMPs). There have been no violations of water quality standards reported. It is anticipated that construction and dredging activities associated with the proposed transient CVN wharf would be consistent with previous actions regarding impacts to water quality.

As part of the CWA Section 404 permitting process, the DoD would conduct appropriate modeling prior to obtaining a CWA Section 401 Water Quality Certificate for in-water construction.

As discussed in the DEIS and FEIS, there are several likely BMPs that will be employed for the proposed CVN wharf dredging and construction activities (such as silt curtains). The specific BMPs that will be implemented will be generated in discussions with the USACE during the CWA permitting process. Because this process has yet to occur, the Navy cannot commit to any specific BMPs in the FEIS.

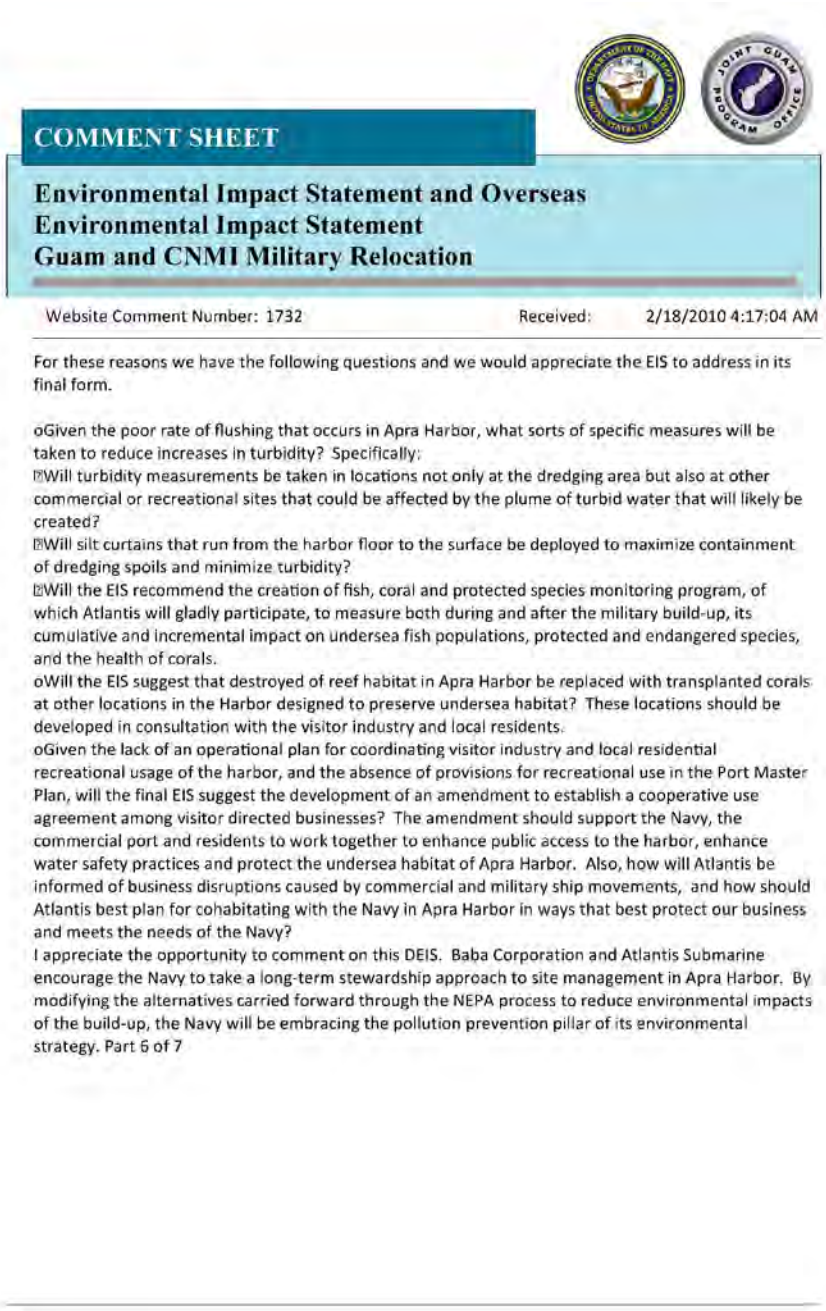
B-010-002

Thank you for your comment. Volume 4, Section 4.2.2.2/Operation/Nearshore Water contains an analysis of potential impacts from turbidity, siltation, shipboard waste, and spills.

B-010-003

Thank you for your comment. Sections 9.2.2.2 and 9.2.3.2 of the EIS have been revised to include additional discussion on the potential

impacts to the existing recreational resources in the Apra Harbor during dredging and wharf construction activities. It is anticipated that during dredging activities, recreational resources situated near the Inner Harbor, such as the Western Shoals, would be inaccessible. Despite the temporary loss of use of the Western Shoals, there are over 10 dive sites throughout Apra (Outer) Harbor that may be utilized by recreational users. Under Alternative 1, the Preferred Alternative (Polaris Point alternative), there would be no adverse impacts to the recreational uses. The effects would be similar under Alternative 2 (Shipyard Repair Facility [SRF] alternative), except activities at Gab Gab Beach near the SRF may be affected when the aircraft carrier is docked at the SRF due to the enforcement of security barriers. Notices to airmen and mariners (NOTAM, NOTMAR) may be issued to provide notice of aircraft approaching port.



COMMENT SHEET

Environmental Impact Statement and Overseas Environmental Impact Statement
Guam and CNMI Military Relocation

Website Comment Number: 1732 Received: 2/18/2010 4:17:04 AM

For these reasons we have the following questions and we would appreciate the EIS to address in its final form.

oGiven the poor rate of flushing that occurs in Apra Harbor, what sorts of specific measures will be taken to reduce increases in turbidity? Specifically:

B-011-001 ☒Will turbidity measurements be taken in locations not only at the dredging area but also at other commercial or recreational sites that could be affected by the plume of turbid water that will likely be created?

B-011-002 ☒Will silt curtains that run from the harbor floor to the surface be deployed to maximize containment of dredging spoils and minimize turbidity?

B-011-003 ☒Will the EIS recommend the creation of fish, coral and protected species monitoring program, of which Atlantis will gladly participate, to measure both during and after the military build-up, its cumulative and incremental impact on undersea fish populations, protected and endangered species, and the health of corals.

oWill the EIS suggest that destroyed of reef habitat in Apra Harbor be replaced with transplanted corals at other locations in the Harbor designed to preserve undersea habitat? These locations should be developed in consultation with the visitor industry and local residents.

B-011-004 oGiven the lack of an operational plan for coordinating visitor industry and local residential recreational usage of the harbor, and the absence of provisions for recreational use in the Port Master Plan, will the final EIS suggest the development of an amendment to establish a cooperative use agreement among visitor directed businesses? The amendment should support the Navy, the commercial port and residents to work together to enhance public access to the harbor, enhance water safety practices and protect the undersea habitat of Apra Harbor. Also, how will Atlantis be informed of business disruptions caused by commercial and military ship movements, and how should Atlantis best plan for cohabitating with the Navy in Apra Harbor in ways that best protect our business and meets the needs of the Navy?

B-011-005 I appreciate the opportunity to comment on this DEIS. Baba Corporation and Atlantis Submarine encourage the Navy to take a long-term stewardship approach to site management in Apra Harbor. By modifying the alternatives carried forward through the NEPA process to reduce environmental impacts of the build-up, the Navy will be embracing the pollution prevention pillar of its environmental strategy. Part 6 of 7

B-011-001

Thank you for your comment. Specific monitoring requirements will be identified and implemented following agency coordination and permitting.

B-011-002

Thank you for your comment. A number of protective measures would be taken to minimize the distribution of the turbidity plume that would unavoidably be generated by the proposed dredging operations. These measures are noted in Chapters 2, 4, and 11 of Volume 4. Silt curtains are one example of these types of protective measures. Standard turbidity curtains are approximately 20-30 feet (6-9 meters) in length and have a weighted bottom to maintain the effectiveness of the curtain against the movement of currents within the water body. Since the dredge equipment is not stationary for the entire period of dredging, it is impractical to have a silt curtain extending to and being anchored to the bottom of the harbor. As the material is being excavated by the mechanical dredge, the heaviest materials fall rapidly to the bottom of the water body with the lighter and more buoyant fraction floating in the upper levels and surface of the water where the curtains are most effective.

B-011-003

Thank you for your comment. A detailed compensatory mitigation plan would be submitted as part of the Clean Water Act 404 permit application for construction affecting the navigable waters of the United States (including the CVN transient wharf). Due to the ongoing review of DoD's habitat assessment methodology for coral reef ecosystems and associated uncertainties regarding the scope of mitigation required, a detailed mitigation plan has not been developed nor will one be available for incorporation into the FEIS. However, a number of mitigation options, including watershed restoration and the use of artificial reefs, are discussed in programmatic nature in Volume 4, Section 11.2 of the FEIS. DoD recognizes that, as part of the CWA Sec. 404 permitting

process, additional NEPA documentation may be required to address specific permitting requirements and implementation of required compensatory mitigations.

B-011-004

Thank you for your comment. Volume 2, Chapter 16, Section 16.2.2.2 of the EIS discusses economic impacts resulting from the proposed actions at Apra Harbor. Volume 2, Sections 9.2.2.2 and 9.2.3.2 of the EIS has been revised to include additional discussion on the potential impacts to the existing recreational resources in the Apra Harbor during dredging and wharf construction activities.

It is anticipated that during dredging activities, recreational resources at the Western Shoals in the Inner Apra Harbor and its vicinity would be inaccessible. The lack of access to the dive site, as well as lessened visibility in the vicinity due to sediment plume caused by the proposed dredging activities at the Western Shoals, are anticipated impacts during the construction period.

Despite the temporary loss of use of the Western Shoals, there are over 10 dive sites throughout Apra Harbor that may be utilized by recreational users. Impacts would be similar under Alternative 1, the Preferred Alternative (Polaris Point alternative) and Alternative 2 (Shipyard Repair Facility [SRF] alternative), except activities at Gab Gab Beach near the SRF may be affected when the aircraft carrier is docked at the SRF due to the enforcement of security barriers.

Notices to airmen and mariners (NOTAM, NOTMAR) may be issued to provide notice of aircraft approaching port.

Please note that the EIS is a disclosure document providing known and anticipated impacts caused by the proposed actions. An operational plan for coordinating visitor industry and local residential recreational usage of the harbor, as well as provisions for recreational use in the Port

Master Plan, are not part of the actions included with the Marine Corps relocation to Guam; as such, are not assessed for impacts in the EIS. Please note, however, one of the mitigation measures proposed in the EIS is to conduct a carrying capacity study for the recreational resources on Guam. Information formed from the data collected from the carrying capacity can be use used to determine what the threshold for the recreational resources are; subesequently, appropriate implementation measures can be formed to preserve the recreational resources.

B-011-005

Thank you for your comment.

COMMENT SHEET

Environmental Impact Statement and Overseas Environmental Impact Statement Guam and CNMI Military Relocation

Website Comment Number: 1734 Received: 2/18/2010 4:18:26 AM

B-012-001

We are available at any time to provide assistance to the Navy regarding prevention of marine habitat degradation and related topics. Not only does the proposed action impact our business but it will also impact the future of Guam. We stand in support of national defense policy and believe that with proper planning and mitigation, local businesses that depend upon a healthy Apra Harbor, can survive this project. If you have questions, please contact me at 671-646-5050. Please also send one copy of the Final EIS to the address below once it is released for public review.
Sincerely,
Hideharu "Bo" Baba
President, Atlantis Guam, Inc.

We Are Guahan supports the comments and concerns addressed in this comment.
Part 7 of 7

B-012-001

Thank you for your comment. As requested, the Navy will send you a copy of the FEIS when it is published.

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B-013-001

LABOR			
Appendix F	4-11	Immediate and long-term impacts from "wage drive" competition in limited labor pool.	1. Allow tourism related jobs lost by the buildup to be filled by temporary non-resident aliens either using H-2 labor or working holiday visas from source and/or emerging markets for up to 1-year at a time during the peak build-up period. This will address the loss of language capabilities in current industry staffing levels. More than 90% of Guam's visitors come from Japan, Korea, Taiwan, and the emerging opportunities from China.
Appendix F	vi/4-37	-The expected rapid increase in economic activity and the limited on-island labor pool will likely result in competition for labor and thus upward pressure on wage rates and will bring many new jobs, including a large new population from off-island.	
Appendix F	4-11	-Most impact would be more acute during the construction phase, then return to less than significant levels thereafter	
Appendix F	4-37	Hollowing out unskilled and semi-skilled workers in the hospitality services sector worsens an already under performing "service culture," drives up wages and exacerbates the downward spiral of fewer employees assigned to provide good customer service.	2. Invest in intensified language and customer service programs to off-set loss of institutional core competencies and degradation of service levels in the visitor industry – Guam must compete with other Asian destinations with established service cultures and plentiful supply of low cost labor.
Appendix F	4-11	-The build-up will bring more trained, skilled jobs	
		Eroding the island's tourism work force too deeply is a detriment to an industry competing in a low wage East Asian business environment where labor is plentiful and customer service focused.	
Appendix F	4-11	-Only 25% of civilian military jobs are expected to be filled by current Guam residents	

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B-013-001

Thank you for your comment. Your recommended mitigation measure(s) have been taken under consideration. An expanded mitigation discussion is available in the FEIS.

Public comments on the Draft EIS are an important part of the decision-making process. Comments received from the public allow DoD to make changes to the EIS before the document is finalized. This information becomes part of the Final EIS and is evaluated when DoD issues a Record of Decision at the end of the NEPA process.

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B-013-002	7	2-29	-DoD can: :Seek federal funding, and technical assistance in development and implementation of data collection systems focused on FAS citizens;	
	7	2-29	:Access to Compact impact and other related funding relative to medical care, housing, job training, etc., to target the ESL service population	
ENVIRONMENTAL DEGRADATION				
B-013-003	7	2-23	Siltation from the removal of vegetation and soil erosion can affect Guam's marine environment and is a threat to coral reefs and riparian life.	1. Fund a horizontal drilling project to dispose of storm water in Tumon Bay. The buildup will increase storm water runoff during major storm surges, thereby aggravating this problem. This measure will solve the development driven and growing flood problem at the heart of Guam's tourist district, and prevent sediment buildup and metallic contamination of Tumon Bay. Horizontal drilling will also leave the bay's rich marine park attraction undisturbed because its path to deep water will be below the shallow reef bed.
	7	2-3	Storm surges may result in inadvertent spillovers unto paved roadways and/or as yet undiscovered underground caves/sink holes often found in Guam's northern limestone plateau. Storm water volume will increase. Build-up will increase impervious surfaces in northern Guam resulting in overflow to roadways. This will aggravate overflow into Tumon Bay, heart of Guam's $1.2B tourism industry.	
B-013-004	7	2-21	-Most areas affected involve flat lands. During harbor dredging, silt curtains or bubble curtains to contain dredge material within seasonal windows to minimize impact, including no barge overflow during dredging operations.	

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B-013-002

Thank you for your comments and recommendations. Your mitigation recommendations have been taken under consideration. An expanded section on mitigations has been provided in the FEIS.

B-013-003

Thank you for your comment. The Navy has considered sediment runoff and resuspension as potential impacts to coral reef and ecosystem. Land-based activities will have permits requiring best management practices (BMPs) that contain and reduce sediment and pollutant discharges into nearby waters. Additionally, low impact development strategies will be implemented by the Navy during construction activities. The Navy will also implement mitigation measures and BMPs during in-water activities (dredging, wharf construction) that include Army Corps permits requiring silt curtains, biological monitors, halting of dredging activities during potential coral spawning months, and compensatory mitigation projects to help improve nearshore water quality through upland watershed reforestation and/or artificial reef construction, to name a few. The Navy, as part of the "build-up" on Guam will particitpate in the proposed upgrade to the Northern District Waste Water Treatment Plant from Primary to Secondary Treatment. This action will assist GWA in meeting its coast water quality standards and benefit the sea life and people of Guam.

B-013-004

Thank you for your comment. You have mentioned several best management practices to minimize the short term impacts of suspended sediment caused by dredging actions. DoD will work closely with the USACE during the permitting phase of the proposed project to craft and use all pertinant best management practices and mitigation measures to minimize impacts from dredging in Apra Harbor.

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B-013-006	7	3-15	Air and noise pollution, and visual blight associated with construction activity, are detractions from Guam's otherwise scenic and pristine environment.	2. Fund and implement air and noise (sound) abatement programs for affected hotels and businesses.
B-013-007	2	13-183	-Current aircraft flight patterns to be used. Use of native flora to create a natural appearing "screen" around cleared areas	
	7	3-44	Guam is marketed as an environmentally clean and scenic beach resort leisure destination. This image is negatively impacted by uncontrolled pollution and visual blight associated with construction activity and scarified landscapes.	
B-013-009	7	3-23	-Best Management Practices + The construction and implementation of a wide range of Quality of Life (QOL) on bases to reduce Use and impact of off-base recreational zones	
B-013-010			Heavy equipment and "construction surge" traffic on Guam roads and highways are safety and congested driving issues for both local residents and visitors alike. -Impact will be temporary and short-term and less than significant	
	6	13-24	Storm water runoff is a concern, especially with respect to organic and metallic contaminants to the island's aquifer and protected reefs.	3. Provide direct and/or supplemental funding to the UOG Marine Lab for coral research and restocking in areas that have been inadvertently damaged during construction.
B-013-0[illegible]	7	3-6	-Based on available data, there will be no significant impact to essential fish habitat with The implementation and Management of BMPs.	4. Implement better turbidity screening to maintain underwater visibility in the harbor, especially popular tourist sites like Gab Gab II.

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B-013-005

Thank you for your comment. The adaptive program management mitigation measure proposed in this EIS would result in acceptable noise levels during construction by reducing the amount of equipment required at any one time. However, extending the construction period would prolong the impacts. Construction around individual properties would be short-term in nature and soundproofing hotels and businesses due to temporary noise is not practicable.

B-013-006

Thank you for your comment. Construction-related activities related to the development of the Marine Corps facilities would be relatively temporary in nature and minimal in their impacts (i.e., earth-moving equipment clearing vegetation and constructing facilities).

B-013-007

Thank you for your comment. At this time, mitigation for noise impacts to hotels and businesses are not proposed.

B-013-008

Thank you for your comment. Mitigation measures have been proposed to maintain as much as possible Guam's environmentally clean and scenic qualities. To further augment a landscape plan, focused on retaining mature speciment trees during construction, where possible, there would be establishment of a full suite of vegetation representing Guam's native flora.

B-013-009

Thank you for your comment. Impacts, BMPs and mitigation measures identified in Volume 2 through 6 are identified in Volume 7. These

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B-013-013	Appendix F	4-37	Dredging of inner Apra Harbor compromises pristine, accessible and popular dive sites such as Western Shoals. Healthy reef systems will be affected	
B-013-014	7	3-6	-No significant/adverse effect in Apra harbor with implementation and Management of BMPs.	
			ACCESSIBILITY TO ATTRACTIONS	
B-013-015	Appendix F	4-39	Guam's destination appeal is differentiated by the cultural, historic, and natural features that unify into a brand identity. This brand image is increasingly dependent upon "living" the Guam brand, displaying or showcasing island cultural, and scenic assets, and ready access to them and to the natural trails, rivers, geology, and scenic vistas that enhance Guam's destination attraction.	1. Seed funding for the development of Guam's Chamorro infrastructure and fulfilling a vision of living the island's heritage and culture in an increasingly diverse ethnic population. A three pronged strategy is recommended: A. Inventory and authenticate all that is Chamorro: Physical and non-physical assets. Cultural, historical, natural sites and attractions, artifacts, paintings, carvings, etc. Custom, tradition, superstitions, mythology and legends. Group into commercial and non-commercial applications. Preserve for posterity, research, etc. Expand and deepen appreciation of the Chamorro heritage, history, and culture.

earlier volumes each provide a chapter dedicated to recreational resource impact analysis. Potential impacts and mitigation measures for both on- and off-base recreation resources are described.

B-013-010

Thank you for your comment. The traffic impacts were analyzed for the long term condition year of 2030 and peak construction year of 2014. The proposed improvements are recommended for the long term traffic conditions. The proposed projects addresses congestion, safety and the heavy vehicles. Proposing projects for short term impacts would be very costly and not feasible.

B-013-011

Thank you for your comment. DoD and regulatory agencies are equally concerned about preventing contamination of surface waters and groundwater (particularly drinking water aquifers). The EIS describes numerous programs and actions that will be taken to protect surface waters and groundwater from stormwater runoff. Construction of new facilities will use Low Impact Development (LID) principles to the extent practical. LID is a design philosophy that seeks to reduce the impact to the environment from new construction projects through the reduction of impervious surfaces. LIDs principles incorporate the design of facilities with the use of native vegetation, pervious (porous) surfaces to reduce storm water runoff and encourage recharge of groundwater, and water conservation. DoD is currently conducting a LID study that will identify specific types of alternative designs that can be incorporated into the construction of facilities associated with the buildup.DoD is also preparing a stormwater pollution prevention plan (SWPPP) and will apply for permits that regulate stormwater discharges during construction. The permit and plan is focused on reducing the amount of earth and soil that is exposed to stormwater during earth-disturbing activities (such as land clearing and grading), providing stabilization of soils during construction through the use of ground covers, and sediment ponds and

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B-013-016 B-013-017	3-23	-Wide range of Quality of Life programs to be implemented on base to minimize impact of use by military personnel and dependents	B. Enlarge talent pool of performing arts Song, dance, and written works Chamorro carving, painting, fishing, farming, construction, and other traditional skills, Oral history, Suruhanu and healing arts C. Establish policy framework that will sustain the vision. Regulatory environment to nurture, promote, fund, and conserve the island's cultural heritage. Academic and applied research to encourage commercial and non-commercial use of cultural, historical and natural assets Defining the Chamorro people in today's modern context, recording and authenticating the spoken and written word, and maintaining an appropriate ethnic registry
	12-65	-Cultural sites in affected areas to be relocated and curated (12-65)	
	13-70	-Sites views to be improved from vegetated to landscaped, developed areas	
B-013-018	3-41	Public access to cultural, historic, and scenic sites, including both Scuba and underwater vessels (Atlantis Submarine) are critical to Guam's competitiveness in the international tourism market.	2. Fund a cultural event center to display, bring to life, and perpetuate the island's unique history and cultural heritage. The event center should be large enough to facilitate proper documentation, preservation, and display of historical and cultural artifacts. It should also serve as a venue for live and recorded performances of oral presentations, story-telling, performing arts of music, dance and plays depicting the cultural heritage of Guam, both pre-Western and post Western contact, and should be aligned with the University of Guam Micronesia Area Research Center.

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traps/screens to reduce pollutants getting into storm runoff and from percolating into the ground. These plans also have specific requirements for containment of potential pollutants at construction sites (such as storage areas for equipment fuel). Lastly, DoD is developing a construction and demolition (C&D) waste management plan in consort with the stormwater construction plan that calls for the use of mulch on exposed soils, mulch that will be generated during the clearing of trees and low growth during land clearing activities.Once construction is complete, a SWPPP will be developed to control stormwater runoff and infiltration from base operations. This is being done on a regional DoD Guam-wide scale, and has the involvement of Guam EPA.

B-013-012

Thank you for your comment. A detailed compensatory mitigation plan for coral will be submitted to the U.S. Army Corps of Engineers as part of the Clean Water Act 404 permit application for construction affecting the navigable waters of the United States (including the CVN transient wharf). Due to the ongoing review of DoD's habitat assessment methodology for coral reef ecosystems and associated uncertainties regarding the scope of mitigation required, a detailed mitigation plan has not been developed for incorporation into the FEIS. However, a number of mitigation options, including watershed restoration and the use of artificial reefs, are discussed in programmatic nature in Volume 4, Section 11.2 of the FEIS. DoD recognizes that, as part of the CWA Sec. 404 permitting process, additional NEPA documentation may be required to address specific permitting requirements and implementation of required compensatory mitigation.

B-013-013

Thank you for your comment. As identified in the EIS, the proposed dredge area within the active commercial harbor was previously dredged over 60-years ago and maintenance dredging continues. Most of the area to be dredged has less than 30% coral coverage (i.e. 60% rubble,

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B-013-019		Marine Sports, Diving, and Sub-surface tours are currently taken by an estimated 480,000 visitors (40% of total visitors). At a conservative $45 per head, this can result in a $21.6M contribution to the island economy. A 10% reduction in this activity due to closure or restricted use of popular sites translates into a $4.8M loss to the island ($2.2M x 1.75 multiplier).	3.Install additional fish aggregating devices (FADs) that will provide added safety and allow improved productivity for deep-sea fishing, a major tourist attraction.
			4. Install additional near-shore mooring buoys to open up new dive and water recreation locations. This will offset some of the restrictions placed in currently popular dive sites like the Blue Hole and the Crevice off the Orote Peninsula.
			5. Assist in the development of alternate recreation sites for public and visitor use including best use of dive sites, including intensified QDL in the north to abate use of southern sites.
B-013-020			6. Provide funding for electronic/satellite tracking of the Green Sea Turtles and Hawksbill Turtles who nest on Guam's beaches. Funding for the monitoring and protection of endangered/protected mammal and marine species.

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sand, and algae) and is of moderate health based on dive surveys. The important shoal areas (Western Shoals, Middle Shoals, Jade Shoals, Big Blue Reef) would not be impacted by direct dredging activities. Based on computer modeling, taking into account tides and currents, there are no indirect (sedimentation) impacts anticipated. As identified in Volume 4, Section 11.2.2.5 - 11.2.2-7, federal law recognizes the value of irreplaceable marine resources and requires compensatory mitigation for unavoidable significant impacts to coral reef ecosystems caused by direct dredging activities.

A detailed compensatory mitigation plan would be submitted as part of the Clean Water Act 404 permit application for construction affecting the navigable waters of the United States (including the CVN transient wharf). Due to the ongoing review of DoD's habitat assessment methodology for coral reef ecosystems and associated uncertainties regarding the scope of mitigation required, a detailed mitigation plan has not been developed nor will one be available for incorporation into the FEIS. However, a number of mitigation options, including watershed restoration and the use of artificial reefs, are discussed in programmatic nature in Volume 4, Section 11.2 of the FEIS. DoD recognizes that, as part of the CWA Sec. 404 permitting process, additional NEPA documentation may be required to address specific permitting requirements and implementation of required compensatory mitigations.

B-013-014

Thank you for your comment. DoD recognizes the importance of reducing adverse effects on the people of Guam, its natural resources, and infrastructure. The EIS process identifies ways to implement the proposed relocation while minimizing adverse impacts. DoD will continue to ensure that the short-term impacts of construction are managed effectively and that the long-term effects of the military relocation reflect DoD policies to be good neighbors and responsible citizens on Guam.

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			EXERCISES	
B-013-021	7	2-14/15	Ground, air and sea military training exercises are an important aspect of the buildup, and require close collaboration for safety and scheduling of public facilities. -Advanced notice of operation schedules to allow safe use of harbor	1.Scheduling to avoid peak seasons when the industry must maximize income to make up for lower off season revenues. Scheduling also allows the government and inbound TDY personnel to benefit from the island's low season pricing structure.
			Safety regarding firearm practice on land and spatial competition for such marine activities as dolphin watching, wind surfing, diving, deep sea fishing, etc.	
B-013-022	2	11-54	-Trained lookouts to ensure quick and effective communication to facilitate implementation of protective measures if marine species are spotted.	2. Off season peaks generally from April 1 - July 15 (except for end of May "Golden Week") and again from October 1 - December 20.
	3	11-54	-Post exercise survey for harmful objects and other debris that may pose a danger to people and wildlife	
B-013-023			Increased military personnel and build-up related visits may task hotel room availability, especially during peak seasons. Also, average revenue per room erodes due to military discounting.	3. Apply the current 11% Guam hotel occupancy tax to military and federal travel at the island's hotels to prevent shortchanging Tourist Attraction Fund (TAF) revenues badly needed to sustain Guam's destination development and marketing efforts.
			Off season peaks generally from April 1 – July 15 (except for end of May "Golden Week") and again from October 1 – December 20.	

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B-013-015

Thank you for your comment. Through the process of public involvement that has accompanied this proposed action (see Final EIS, Volumes 1 & 10), the Chamorro people of Guam have voiced clearly and concisely their concern that the traditional Chamorro culture, including dance, language and traditions, will be forgotten or significantly marginalized by western culture. The DoD conducted archaeological surveys of over 5,000 acres of areas that could be disturbed as part of the Marine Relocation. Results of the historic studies done on Guam will be made available to the people on the island. The information from these surveys and future excavations will be provided to the public in educational displays, brochures, and public documents. In addition, the DoD plans cultural sensitivity orientation and awareness programs that will focus on mutual respect and tolerance and strive to educate all military personnel on the rich and varied cultural history that has created the Chamorro culture today.

B-013-016

Thank you for your comment.

B-013-017

Thank you for your comment. Through the process of public involvement that has accompanied this proposed action (see FEIS, Volumes 1 & 10), the Chamorro people of Guam have voiced clearly and concisely their concern that the traditional Chamorro culture, including dance, language and traditions, will be forgotten or significantly marginalized by western culture. While population increases can highlight cultural differences, they also present unique and new opportunities for cultural learning and sharing. As indicated in the FEIS (Volume 2, Section 16.2.5; Volume 4, Section 16.2.5), the DoD plans for cultural sensitivity orientation and awareness programs which will focus on mutual respect and tolerance and strive to educate all incoming and currently present military personnel on the rich and varied cultural history that has created the

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B-013-024		Military centered security concerns need to be balanced and not be an onerous impediment to the island's tourism industry.	4. Increase military shore patrol presence along Guam's tourism center, San Vitores Road. This should be jointly patrolled with Guam Police Department sharing resources such as: communication channels, Custody holding areas, and patrol vehicles.
NEW MARKET DEVELOPMENT AND RESTRICTIONS NEGATIVELY AFFECTING TOURISM			
B-013-025		The need to diversify Guam's source markets is compelling, and China's emergence as the largest outbound travel market is an opportunity to which Guam must be afforded access	Relocating 8,000 Marines their families, and support personnel impact the island's tourism landscape and "Sense of Place", thereby diminishing its attractiveness to those seeking solitude from Japan's hectic lifestyle. This segment is estimated at 8-10% (80,000 + visitors).
		Guam's diminished image as an island of solitude will erode a market segment (10% or more) seeking this experience.	Facilitating easier access to Guam from Haneda expands the total number of potential consumers, thereby helping to offset "lost customers" who choose other less crowded destinations that offer more "solitute".
		Tourism is currently Guam's primary source of income, accounting for some 20,000 jobs and more than 30% of the island's gross island product (includes tourism driven financial services and real estate).	1. Expedited decision on a favorable ruling by DHS to allow easier entry of new visitor markets such as China. This will stimulate scheduled air service to key cities and open up a significant visitor source market that will replace attritions from the declining mature markets of Japan and Korea.
		More than 90% of Guam's 1.2 million visitors come from East Asia, principally Japan (80%), Korea (10%) and Taiwan (3%)	

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culture that is Guam today. Finally, the DoD plans to increase military civilian joint activities in order to foster strong and mutually beneficial military civilian relationships that include the sharing and understanding of culture.

B-013-018

Thank you for your comment. Volume 4, Chapter 16 of the Final EIS acknowledges that there could be impacts to ocean based tourism within Apra Harbor including diving. However, economic impacts to tourism would be somewhat offset by increased tourism from military personnel.

B-013-019

Thank you for your comment. DoD would work with stakeholders to minimize impacts on commercial and recreational accesses to any areas that may be restricted for military use.

B-013-020

Thank you for your comment. The Navy currently funds programs and implements standard operation procedures and best management practices (BMPs) that address federally protected mammal and marine species and their well-being. The Navy has co-existed with sea turtles in the Harbor for over 60-years. The Navy, in partnership with the U.S. Fish and Wildlife Service (USFWS) and Guam Department of Aquatic and Wildlife Resources (DAWR), monitors sea turtle activities within Apra Harbor and around Guam. In addition, the DoD, as a stewards for natural resources on DoD lands and submerged lands, manages these restricted areas to benefit sea turtle nesting, foraging and resting areas.

Volume 4, Chapter 16 of the Final EIS acknowledges that there could be impacts to ocean based tourism such as tours and diving within Apra Harbor. However, economic impacts to tourism would be somewhat offset by increased tourism from military personnel.

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B-013-026				2. If China and Russia are added to the Guam and CNMI Visa Waiver Program or if a favorable non-immigrant visa were to be decided, Guam can expect a conservative forecast of 80,000 visitors from China within 3 years. Applying 70% of documented overseas spending (Nielsen Research: $1,350) due to anticipated shorter stay of Chinese visitors translates into $132.3M in annual income for Guam ($1,350 @ 70% = $945 x 80,000 = $75,600,000 x 1.75 multiplier).
	Appendix F	4-38	The island's economy is frequently "whip sawed" by the economic cycles of the Japanese and Korean economies. Guam can anticipate a negative strategic outlook from these two aging industrialized societies due to their low birth rates and increasing competition pulling the island's share of market.	Without the inclusion of China and Russia in an expanded visa waiver program, the island's tourism revenues will shrink from $1.2 billion to $810 million annually (Gov. Camacho letter to DHS, Sept 29, 2008). Inclusion of these two countries, however, will not only replace this -32% loss from attritions in our traditional markets, but can result in a 25% net gain to $1.5 billion within 10 years. Concern over the precipitous drop in tax receipts following the "construction bubble" can be significantly mitigated by new income that will be derived from the "Green Shoots" of these vibrant new growth markets. Island GRT, personal and corporate income taxes from this incremental gain alone exceeds $100 million.

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B-013-021

Thank you for your comments. Training cannot be scheduled for offpeak tourist seasons. However, the DoD plans to increase military civilian joint activities in order to foster strong and mutually beneficial military civilian relationships. DoD looks forward to working with stakeholders including tourism organizations to develop plans for stewardship and access that balances operational needs, public safety concerns, and the continuing public use and enjoyment of various sites.

B-013-022

Thank you for your comment. The Navy, in accordance with all appropriate regulatory guidance and permit requirements , will implement appropriate BMPs and actions to avoid, minimize, and mitigate to reduce impacts to marine species.

B-013-023

Thank you for your comment. Your recommended mitigation measure has been taken under consideration. Expanded mitigation discussion is available in the FEIS.

B-013-024

Thank you for your comment. An expanded mitigation measures section has been provided in the FEIS. Shore patrols and other security arrangements are typical especially when Navy ships are in port. However, the patrols would likely be limited to the areas frequented by military personnel. Patrols with the Guam police could be considered by the Joint Base command as determined to be required. Discussion on this subject matter is available in the crime and social order sections of the socioeconomics and general services resource chapters.

B-013-025

Thank you for your comment. DoD has no authority to provide greater

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	ADDITIONAL COMMENTS	
B-013-027		1. The existance of tourism and military operations is not mutually exclusive. The military buildup should not disturb or alter current or future tourism operations.
B-013-028		2. New military facilities should be built on existing military land.
		3. Closing of Apra Harbor and nearby recreational areas is unacceptable from a visitor industry perspective - both during and after the buildup.

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access from Haneda to Guam; it also does not have authority over the U.S. Department of Homeland Security's policies on entry requirements for foreign visitors.

B-013-026

Thank you for your comments. DoD does not have authority over the U.S. Department of Homeland Security's policies on entry requirements for foreign visitors.

B-013-027

Thank you for your comment. Public comments on the DEIS are an important part of the decision-making process. This information becomes part of the FEIS and is evaluated when DoD prepares the FEIS and issues a Record of Decision at the end of the NEPA process.

Your recommended mitigation measure(s) have been taken under consideration. Expanded mitigation discussion is available in the FEIS.

B-013-028

Thank you for your comment. DoD was required to determine whether military relocation requirements could be met by excess, underutilized or otherwise available property held by DoD on Guam. Early development plans attempted to keep all activities on existing DoD lands. However, as discussed in the FEIS (Volume 2, Chapter 2), after applying operational and environmental screening criteria, no contiguous DoD area on Guam was identified that could support all the land use and operational requirements of the action.

GUAM RESOURCE RECOVERY PARTNERS

February 16, 2010

Joint Guam Program Office (JGPO)
c/o Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134

ATTN: Guam Program Management Office

Re: Comments Regarding Draft Environmental Impact Statement / Overseas Environmental Impact Statement (DEIS)
GUAM AND CNMI MILITARY RELOCATION Relocating Marines from Okinawa, Visiting Aircraft Carrier Berthing, and Army Air and Missile Defense Task Force

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INTRODUCTION

With regard to solid waste, the DEIS Volume 6 Chapter2 proposes that DoD continue to use the Navy landfill until the new Government of Guam Layon Landfill at Dandan is available for use. In reaching this conclusion, the DEIS dismisses eight other alternatives including an alternative to use a potential new private waste-to-energy (WTE) Facility with landfill at Atantanao/Guatali proposed by Guam Resources Recovery Partners (GRRP). GRRP has reviewed the DEIS Volume 6 Chapter 2 Solid Waste, Chapter 3 Utilities, Chapter 6 Water Resources, and the July 17, 2009 Letter of Intent (LOI) among the Commander Navy Region Marianas (COMNAVREG), Naval Facilities Engineering Command Marianas (NAVFAC), Gershman, Brickner & Bratton, Inc., and the Government of Guam (GovGuam), and offers the following comments:

VIABILITY OF GRRP WTE and LANDFILL PROJECT

DEIS Reference: Volume 6, Section 2.4.4.8.

Volume 6, Section 2.4.4.8 evaluated the viability of using the GRRP WTE/landfill at Atantano/Guatali as an alternative disposal option. Relying on the *Guam Solid Waste Utility Study for Proposed U.S. Marine Corps Relocation* (HDR/Hawaii Pacific Engineers 2008), the DEIS dismisses this alternative on the basis that the permits have yet to be obtained, the project

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Thank you for your comment. The legality of the Layon landfill has been addressed by local courts in Guam and the Guam Federal District Court has reviewed the issue as part of the Ordot Consent Decree proceedings. The Consent Decree required the Government to conduct a screening process to identify the best landfill sites. Guam EPA and DPW implemented the site screening process of the 2000 Integrated Solid Waste Management Plan and selected the Layon area. No courts have ruled that the Layon landfill is illegal; nor have they halted or delayed plans for development of the Layon landfill. Further, the Layon landfill has cleared all hurdles associated with public (bond) financing, which includes a legal review, independent engineering evaluation, and a sound financial plan.

As noted in the DEIS, potential impacts to water resources at the Layon landfill were addressed in the Final Supplemental EIS for the Siting of a Municipal Solid Waste, the adequacy of which has not been challenged. More recent hydrologic studies confirmed earlier Layon EIS findings. Additionally, sub-liner systems for cells 1 and 2 of the Layon landfill are being installed at this time. We believe that further analysis of water resources associated with use of this already permitted facility is beyond the scope of this EIS.

Given the above, at this time DoD remains committed to meeting its long term solid waste disposal needs through the use of the proposed Layon landfill being constructed by the court appointed receiver. If additional waste disposal options become available in the future they may be considered.

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has a litigious history, the project will take too long to implement, and funding is unclear. GRRP believes this conclusion is unfounded and erroneous, and requires reconsideration for the following reasons:

- The study team did not interview GRRP or request references or materials which could have enlightened the study team so they could provide sound recommendations to DoD.
- GRRP is a partnership between Guam Power, Inc. and Wheelabrator Guam Inc., a wholly owned subsidiary of Waste Management Inc., which is the largest solid waste management company in the US; and is affiliated with NANA Corporation from Alaska. This team submitted their financial statements among other documents in an application to allocate $150 million of Private Activity Bonds (PAB). (*See* Reference 1 – PAB Application.) A public hearing by the Guam Economic Development Authority (GEDA) on the Private Activity Bond allocation was conducted on November 18, 2009, by GEDA. GRRP's application for the Private Bond Allocation was rejected by GEDA in January 2010, not because of the team's financial standing nor the merit of the project, but for the reason that GRRP WTE/landfill project will compete with Layon MSWLF. **GRRP intends to re-submit the PAB application shortly**. If GRRP is prevented from obtaining allocation of Private Activity Bonds from GEDA, GRRP has the capacity to obtain private financing at prevailing interest rates.
- GRRP pursued the Private Activity Bond according to Public Law 30-1, and pursuant to 26 USC Section 142(a)(6), US Internal Revenue Code, to obtain attractive, low interest rates. The lower interest rate will be passed on to the consumer, *i.e.*, Government of Guam, DoD, and commercial haulers in terms of lower tipping fees.
- Currently, there is no single lawsuit against the Guatali landfill site. On the contrary, there at two current civil lawsuits against Layon MSWLF in the Superior Court of Guam. (*See* Reference 2 – Pending Motion of Summary Judgment CV0892-04.)
- GRRP has the exclusive license to enter into negotiations with GovGuam for a municipal solid waste agreement ("MSW Agreement") for disposal and WTE facilities. (*See* Reference 1, Attachment 4A – License Agreement.)

  Guam laws that prohibit WTE facilities do not apply to GRRP's project. Such laws were challenged by GRRP and determined by the Guam Supreme Court to violate the Contracts Clause of the Organic Act. *See Pangelinan v. Camacho*, 2004 Guam 16 (*See* Reference 3 – Opinion Supreme Court Case No. CVA02-003.) Pursuant to the decision of the Guam Supreme Court, 2004 Guam 16, which invalided laws that impair GRRP's contract, **GRRP is the only entity that can build a WTE facility, and nobody else can.**

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- For the WTE component, GRRP estimates the completion of the design and the permit phase will take one year, considering the availability of technical data completed to date. GRRP estimates construction will be between 18-26 months, and one year for commissioning and startup. (*See* Reference 1, Attachment 5B, page 79 – Project Milestone.) The proposed WTE facility permitting, design, construction, and commissioning activities are estimated to take less then 5 years. Meanwhile, the landfill should be in operation during that time. Since the Navy Landfill has the potential to provide 10 years of capacity (until 2019) *(see DEIS, Volume 6, Section 2.4.5.1)*, the DoD's preferred alternative should not be evaluated until that time. GRRP anticipates that its WTE and/or landfill will be permitted and operational at that time, providing DoD with a more cost-effective and environmentally sound alternative.
- GRRP decided to proceed with building only one cell of the landfill portion ahead of the WTE component. The capacity of this cell will be approximately 1.8 million cubic yards, which would be adequate to handle disposal for the entire solid waste generation by the civilian and military population for approximately 8-10 years. The complete landfill design, EIA, and permit application is provided in Reference 1, Attachment 1 – Permit Application, Landfill Designs, and EIA.
- The conceptual design of the WTE has been completed and approved by the Government of Guam. This information is adequate to complete the EIA and proceed with the submission of the required permit applications. (*See* Reference 4 – WTE Facility Conceptual Designs.)
- GRRP has received several construction permits from the Department of Public Works for several components of the landfill; and also received a conditional operating permit from GEPA. (*See* Reference 1, Attachment 3C – Construction Permits, and Attachment 3A and 3B – Conditional Operating Permit.)
- GRRP started the construction of roads, bridges, and the first cell, and was halted during the rainy season. (*See* Reference 1, Attachment 5B, pages 76-77 – Construction in Progress.) GRRP is in the process of completing the construction as described in the issued permits before July 2010, before the rainy season begins again. The rest of the construction should be completed by March 2011.

PROBLEMS WITH THE LAYON LANDFILL ALTERNATIVE

DEIS Reference: Volume 6, Section 2.4.5.1.

Section 2.4.5.1 states that the preferred alternative would consist of using the Navy Landfill until the new Layon Landfill is completed by GovGuam in 2011, then using the Layon Landfill for disposal of all DoD solid waste. The Layon Landfill is illegal, environmentally unsound, and

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financially prohibitive. Since the Navy Landfill can continue to be used by DoD until 2019 *(DEIS Vol. 6. Section 2.4.5.1)*, DoD final decision on solid waste should not be made until that time as more alternatives will be available.

The Layon Landfill is Illegal

The Layon is not only unauthorized, it is also against the law. (*See* Reference 5 – Comments to Layon Permit and Request for Hearing, dated September 21, 2009, and Statement of Issues, filed October 26, 2009, submitted to GEPA and the GEPA Board.) The Guam Legislature mandated that the Guam MSWLF will be located at *Guatali* or *Malaa* – not at Layon. Building a MSWLF at Layon violates Guam law, including Public Law (P.L.) 24-06, enacted on March 20, 1997, which provides in Section 4(e) **that the new landfill "shall be located at either *Guatali* or *Malaa*, or both . . ."** P.L. 24-06 makes the use of *Guatali* or *Malaa* or both as the site of the new MSWLF both mandatory and unconditional. P.L. 24-06 has been the law of the land since 1997, predating and thus incorporated into the Consent Decree filed in *United States v. Government of Guam*, District Court of Guam Civil Case No. 02-00022.

Section 4 of Public Law 24-06 additionally requires that "the Department of Public Works shall immediately contract with a single, private entity for the financing, design, development, construction and operation of a new MSWLF facility," which contract Section 4 further mandates "shall require that the contractor comply with the Environmental Impact Study created by Juan C. Tenorio and Associates dated November 20, 1995 . . ." Guam Public Law 24-06:4(b) (March 20, 1997). Since the Environmental Impact Study developed by Juan C. Tenorio and Associates ("Tenorio EIS") only studies Guatali, Malaa and the Ordot expansion, it is quite impossible to comply with the Tenorio EIS by building a MSWLF at Layon.

Moreover, 10 Guam Code Annotated, Chapter 51 on "Solid Waste Management" specifically refers to P.L. 24-06 mandating that the new MSWLF be located at *Guatali* or *Malaa*. Section 51101, entitled "Legislative Findings," provides:

> (b) The purposes of this Chapter are to: (3) privatize Guam's Solid Waste Management System ('SWMS') subject to all applicable laws and ***Public Law Number 24-06***: (emphasis added).

The development of the MSWLF at *Guatali* or *Malaa* is consistent with the Consent Decree, which requires the Government of Guam's compliance with Guam law. Specifically, Section XII.47 states that **"[t]his Consent Decree in no way affects the Government of Guam's responsibilities to comply with all applicable federal and territorial laws and regulations."**

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The permitting process for the MSWLF at *Guatali* is in the advanced stage making Guatali a viable, cost-effective, and legal alternative to at the Layon Landfill (*See* Reference 1, Attachment 3D – GEPA-GRRP Final Meeting Notes.)

The Government of Guam requested a loan from the USDA for the construction of the Layon landfill. In addition to the Consent Decree itself mandating compliance with Guam laws (*e.g.*, P.L. 24-06), the United States Department of Agriculture (USDA) requires compliance with Guam law as a condition precedent for approval of a loan and grant for the new MSWLF. Specifically, one of the conditions for the continued processing of the USDA loan and grant is that **"[a]ll applicable Guam laws and requirements must be met."** As such, the Layon landfill cannot meet the conditions for the USDA loan and grant needed to fund the project because a MSWLF at Layon violates Guam law.

Furthermore, pursuant to Section 1511 of the American Recovery and Reinvestment Act of 2009, the Governor is required to certify that the infrastructure investment for the landfill at Layon has been properly approved as required by law and accept responsibility that the infrastructure investment is an appropriate use of taxpayer dollars, **which is untrue.** The Legislature has not approved the Layon site for the MSWLF as set forth in P.L. 29-116, which states that nothing in the law "shall be construed to be an acquiescence to or the legislative approval of *I Maga'lahi's* [the Governor's] or any other entity's selection of the Layon site as the location for a Municipal Solid Waste Landfill." **If a landfill at Layon violates Guam law, namely P.L. 24-06, and has not been approved by the Legislature, the Government cannot certify to the USDA that the investment has been properly approved and that it is an appropriate use of taxpayer dollars, as required.** The Government of Guam cannot ignore its own laws.

Environmental Problems with a Landfill at Layon

DEIS Reference: Volume 6, Section 6.2.5.

> This section states: "The Preferred Alternative for solid waste would be the continued use of Navy Landfill at Apra Harbor until Layon Landfill is opened, which is scheduled for July 2011. The proposed Layon Landfill and its impacts to water resources were evaluated in the Final Supplemental Environmental Impact Statement for the Siting of a Municipal Solid Waste Facility, Guam (Guam DPW 2005). The Layon Landfill has been designed to accommodate solid waste from all current and future DoD sources, as well as civilian and commercial sources.

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> GEPA approved the Final Integrated Guam and CNMI Military Relocation Draft EIS/OEIS (November 2009) Hydrogeologic Assessment for the Layon Municipal Sanitary Landfill Site (AMEC Geomatrix Consultants 2008) that established that the proposed landfill would not be located over an important source of groundwater because of potential low yield and marginal groundwater quality."

The DEIS erroneously concluded that the **water resources** are not at risk because the study centered only on the groundwater beneath Layon which according to their statement is protected by the current design. It is surprising that the DEIS acknowledges there is no groundwater that has a potential yield, and totally ignored the potential of significant surface waters that flow in the four rivers of the Inajaran Watershed. The focus of the DEIS is totally misguided by evaluating only the groundwater resource, not the vast fresh surface water resources. **Guam is a Seismic Zone 4 and the surface water in the Inajaran Watershed can be greatly endangered by simple mishaps to the landfill during its life cycle or after closure.** This can affect not only the potential surface water resources, but the Inajaran-Malojloj Water Treatment facility's 4 mgd currently in operation, and may have an effect on the Fena Reservoir which is in close proximity.

The importance of the water resources in southern Guam has been studied and well-documented. In 1980, the United States Army Corps of Engineers, Honolulu District, performed an extensive study called the "Ugum River Study" pursuant to the authority of Section 106 of the River and Harbor Act of 1970, which authorizes investigations of water resources on Guam. This study was a part of a series of investigations regarding Guam's water resources. Local officials facing increasing demand for water and uncertainties about the supply capacity of Guam's groundwater requested the study, which included a Final Environmental Impact Statement for the development of southern Guam water resources for domestic and agricultural use. The Summary concluded:

> [T]he current primary source of potable water supply is the northern groundwater lens. Based on current knowledge of the lens capacity and demand projections, ***there is the strong possibility that the full water production potential of the lens will be reached by the end of the century if additional sources are not developed in the near future.*** Surface water development in the south is considered a practical and supplemental source to increase the overall water supply of the island.
>
> Various possible solutions to the problems and needs of water use reduction and supply increase were analyzed. . . . Environmentally, the most acceptable

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> measure is the conservation approach. Based on the most probable future conditions, however, this measure would only defer the point at which consumptive demand will exceed the groundwater supply. In view of the study results, it is concluded that together with a locally implemented water conservation program, ***the most desirable plan for supplementing the water source at this time consists of a surface water storage project in the Ugum River drainage basin.*** (emphasis added) (*See* Reference 6 – Ugum River EIS Study, page 1.)

The Layon landfill site is part of the Inajaran River Watershed, which has a number of rivers and tributaries flowing through it, including the Ugum River, a major tributary of the Talofofo River. The combined average flow in the major drainage basins of the southern half of Guam totals approximately 60 million gallons per day (mgd) – compared to the 50 mgd that the northern aquifer yields. (*See* Reference 6– Ugum River EIS Study, pages 8-9). A landfill located in this area clearly will endanger a vital source of fresh water for Guam's future growth and development.

In addition, Guam Waterworks Authority Water Resource Management Plan 2006 ("WRMP")[1], Volume 2 Chapter 3, Water Budget, 3.4 Water Resources Occurrence and Behavior, 3.4.2 Southern Guam has emphasized the importance of the southern Guam's water resources, which states that:

> Surface water in the South is ***a substantial resource that may have to be exploited more intensively*** should population demand in the future exceed the sustainable yield of the northern aquifers. (emphasis added). 3.4.2.2 Surface Water (pp. 3-10).

WRMP also found that:

> Both groundwater and surface water are developed in southern Guam, but surface water offers the most voluminous source of supply . . . ***The importance of the surface water opportunities in southern Guam will increase as island population continues to grow.*** (emphasis added). 3.5 Water Development, 3.5.2 Southern Guam (pp. 3-20).

Further, it states:

[1] See http://www.guamwaterworks.org/wrmp_vol2.html

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> The surface water resources of southern Guam and proposals for developing them are thoroughly discussed in the surface water development study by the Barrett Consulting Group. The study concluded that although a dam/reservoir on several rivers would provide the greatest reliable yield, the most practical way to capture stream flow for use is by means of diversions of the surface water. (Section 3.5.2.1 Surface Water.)

Interestingly, the WRMP refers to the Barrett Consulting Group study, which assumes that one of the dams would be located in the same position on the Inarajan River as that proposed in the U.S. Army Corps of Engineers Ugum River Study and EIS.

None of the studies mentioned above have been used or referenced in the EIS for the Dandan/Layon site. Why are these professionally prepared comprehensive studies about Guam's future water resources being ignored? Placing a landfill at Layon would be as irrational as placing a landfill over Guam's northern aquifer. **How can the DoD consciously participate in this illegal landfill at Layon, and jeopardize critical water resources, especially considering the enormous influx of the US military buildup in the coming years?**

Building a landfill on top of a major future potable water resource is reckless. It is unconscionable for the GovGuam to use a USDA loan to build a landfill at Layon endangering the vital water resources of the Inajaran Watershed, and to state that the USDA loan is **"an appropriate use of taxpayer dollars"** pursuant to the American Recovery and Reinvestment Act of 2009.

Furthermore, the Layon landfill would contravene the intent of the LOI Section 12 which states: **"It is the intent of the parties that the to be constructed new MSWLF on Guam be operated in an efficient, cost-effective manner employing *best practices to protect the environment* and maximize its useful life."** Not building the landfill at Layon would be the only way to genuinely protect the environment and the valuable potable water resources of the Inajaran Watershed. The GRRP WTE/landfill option is the only cost-effective renewable energy approach that satisfies the DoD's requirements to promote the use of renewable energy and also DoD's intention to support best practices to protect the environment.

Financial Problems with a Landfill at Layon

DEIS Reference: Volume Six, Section 2.4.3.

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Section 2.4.3 recognizes the LOI between the Navy, GovGuam, and Gersham, Brickner, & Bratton that establishes the Navy's intent to pursue a contractual arrangement for the use of the Layon Landfill and states that the LOI was used as a basis to identify the solid waste alternatives considered in the DEIS.

A landfill at Layon is a heavy financial burden on GovGuam and the people of Guam. The LOI states: **"It is the intent of the parties that the to be constructed new MSWLF on Guam be operated in an efficient, *cost-effective manner* employing best practices to protect the environment and *maximize its useful life*."** A private WTE/landfill at Guatali is the most environmentally sound and cost-effective option to solve the solid waste crisis on Guam considering the following reasons:

- Initial development of the Layon landfill will cost GovGuam about $140 million, **while the GRRP WTE/landfill is being built using private funds that will cost GovGuam nothing.**
- The GRRP WTE/landfill option provides the lowest tipping fee per ton and cost per household. (*See* Reference 1, Attachment 5B – GEDA Public Hearing Presentation, page 88.)
- The GRRP WTE/landfill option will not require any funds to be used to upgrade roads and bridges.
- The operation of the WTE is expected to handle solid waste disposal for 40 years with the addition of new cells at the Guatali site; in comparison, the current two cells at Layon, costing about $140 million, will be filled within 5 to 8 years.
- Layon landfill will require the addition of two cells every 5 to 8 years at a cost of approximately $80 million present worth value, for a total of 11 cells at the cost of an additional $300 million.
- After paying off the debt service of the WTE/landfill approach in 20 years, the tipping fee will drop dramatically and may result in paying for the municipal solid waste as a source of fuel; meanwhile, the tipping fee for the Layon approach will keep escalating astronomically.

The Government of Guam has an enforceable, valid and binding license agreement with GRRP to build a WTE facility. GRRP has received a conditional approval for their operating permit for the landfill at Guatali site. GRRP is ready and willing to go forward with these projects.

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There are substantial funds in place for financing a MSWLF – albeit a private one – evidenced by the allocation by the GovGuam under P.L. 30-1 of $152,198,585 for private activity bonds for Solid Waste Disposal Facility Bonds pursuant to 26 USC Section 142(a)(6), along with $50 million each year thereafter. P.L. 30-1 further provides that Guam Legislature **"intends to authorize the use of Private Activity Bonds to achieve the most efficient and lowest cost financing arrangement available in the financial market for the construction, operation and maintenance of a properly permitted solid waste management system *in accordance with federal and local laws*."** In order to be eligible for these bonds, the project must comply with federal and local laws. A landfill at Layon does not meet that requirement. GRRP will submit a revised application to the Guam Economic Development Authority for obtaining the bond allocations.

Based on the above, the component of WTE/landfill integrated approach is the *Best Practice* considering the recovery and sale of energy. Furthermore, DoD is mandated to comply with the requirements for using renewable energy resources. The WTE/landfill by GRRP provides the renewable energy, and meets the environmental laws and local and federal regulations.

The LOI Section 4 states: **"It is the intent of the parties that tipping fees and other charges covering disposal of DoD generated household waste, household hazardous waste, commercial solid waste, and industrial solid waste into the to be constructed new MSWLF unit on Guam and associated solid waste management costs associated with waste reduction, RESOURCE RECOVERY, and recycling efforts shall be based on per ton rate."** **"Recovery" is the process of obtaining or energy resources from solid waste,** as defined in the LOI Section 1 paragraph l. Thus, the **DoD and GovGuam** recognize the need for waste-to-energy as part of an integrated solid waste management practice.

The cost benefit analysis clearly indicates that the tipping fee of GRRP WTE/landfill *versus* Layon MSWLF is unparalleled. The tipping fee at Layon will keep escalating through the years, whereas the tipping fees at GRRP WTE/landfill will decrease over the years as the energy revenue increases.

The tipping fee for the GRRP WTE/landfill in Year 1 is $103.51 as compared to the Layon tipping fee at $212.00. At the Year 20 of operation, the tipping fee for the GRRP WTE/landfill is $8.42 *versus* Layon MSWLF tipping fee $313.00. The intent of the LOI is to have the most cost effective tipping fee. **It is a fact the GRRP WTE/landfill approach is the best practice, environmentally sound, and cost effective.**

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Problems with the Letter Of Intent

DEIS Reference: Volume 6, Section 2.4.3.

The DEIS recognizes a letter of intent (LOI) between the Navy, GovGuam, and Gersham, Brickner, & Bratton that establishes the Navy's intent to pursue a contractual arrangement for the use of the Layon Landfill and states that the LOI was used a basis to identify the solid waste alternatives considered in the DEIS.

> The LOI recital states: **"WHEREAS, the existing Integrated Solid Waste Management Plan for Guam, developed by Guam Environmental Protection Agency and accepted by the Guam Legislature, and current Federal and Department of Defense regulations and policies each set forth similar goals and programs for the management of solid waste and recyclables."**

In fact, the only approved Integrated Solid Waste Management Plan (ISWMP) was completed in or about 2000 and was then adopted via Public Law 24-175. The ISWMP did not include Layon as the site for a new Municipal Solid Waste Landfill. Further it required that the new MSWLF to be located at the previously studied Guatali or Malaa sites.

Resolution No. 103 is the intent of the Legislature not to put a solid waste facility at Layon, which was submitted to the District Court in 2007 and clearly indicates the intention of the Legislature in that it does **not approve of the Layon site.** The Resolution states **" . . . the location of Guam's new landfill has already been determined by Public Law 23-95 and that the selection of *Dandan/Layon* area for a landfill is contrary to existing Guam law, is in violation of the Federal Consent Decree, and also ignores the necessity of developing water resources within the *Inarajan* Watershed for future use including addressing the need for as much as a 25% increase in the need for fresh water for the upcoming military buildup . . ."** (*See* Reference 7 – Resolution No. 103 and Exhibits.)

Public Law 29-116, Section 6 enacted on December 17, 2008, clearly indicates a Layon landfill has no Legislative approval: **"Nothing in the Act *shall* be construed to an acquiescence to *or* the legislative approval of *I Maga'lahi's or* any other entity's selection of the *Layon* site as the location for a Municipal Solid Waste Landfill."**

Furthermore, the selection of the landfill site at Layon was not authorized by the Guam Legislature. Only the Guam Legislature has the authority to select the next MSWLF. This

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conclusion is bolstered by the enactment of Public Law (P.L.) 23-95. Previously, in P.L. 22-115, the Legislature authorized the Governor of Guam to select the next landfill site, but then expressly repealed this authorization in P.L. 23-95. *See* P.L. 23-95:2. **There can be no doubt about the Legislature's intent in repealing an earlier grant of authority given to the Executive Branch concomitant with an exercise of that authority by the Legislature itself – the authority to select the next landfill site was reserved to the Legislature.** *See University of Guam v. Guam Civil Service Com'n*, 2002 Guam 4 § 13 ("In an express repeal, a legislature expressly declares its intent to abrogate an earlier statute.").

There is no law approving Layon or any site other than *Guatali* or *Malaa* for Guam's next MSWLF. Further, there is no credence in the position that the Legislature approved their selection of Layon by the Legislature's inaction with regard to the 2006 Integrated Solid Waste Management Plan ("ISWMP"), which identifies the Layon site. The 2006 ISWMP did not comply with Guam law, **thus it is invalid.** Guam law requires that the Guam Environmental Protection Agency (Guam EPA) adopt and update Guam's ISWMP pursuant to the provisions of the Administrative Adjudication Law ("AAL"). *See* 10 G.C.A. §51103(a)(2) (authorizing Guam EPA to prepare and adopt in accordance with the AAL a solid waste management plan). The AAL requires an Economic Impact Statement for any rule promulgated under the AAL that will cost the general public in excess of $500,000. See 5 Guam Code Annotated (G.C.A.) §9301.

The 2006 ISWMP was submitted to the Legislature without an Economic Impact Statement, despite the fact that the 2006 ISWMP (see *e.g.*, Sec. 6.5.2) specifically requires the development of the Layon MSWLF, the cost of which has been reported to be in excess of $110 million. (*See* Quarterly Reports of the Receiver). Guam EPA never prepared an Economic Impact Statement because the Guam EPA Administrator certified that the cost to the public to implement the 2006 ISWMP would be less than $500,000. Guam EPA skirted the issue by saying that it only needs to consider those elements that are not existing legal obligations. However, there is no provision whatsoever in the AAL recognizing the purported exemption for existing legal obligations, and it appears that Guam EPA's reliance thereon is an attempt to circumvent the clear mandate of the AAL. Without the Economic Impact Statement, the 2006 ISWMP was never properly promulgated. See 5 G.C.A. §9301(e) ("No proposed rule or regulation shall be transmitted to *I Liheslaturan Guahan* for consideration without an economic impact statement, **nor shall any proposed rule or regulation go into effect without a completed economic impact statement.**") (emphasis added). **Thus, the Legislature did not approve the selection of Layon by its failure to act on the submitted 2006 ISWMP.**

GUAM RESOURCE RECOVERY PARTNERS

B-014-001

The LOI is premised upon erroneous conclusions and thus should not be relied upon in consideration of the solid waste alternatives.

CONCLUSION

- The DEIS should incorporate the findings of the US Army Corps of Engineers *1980 Ugum River EIS Study* as a vital reference for Volume 6 Chapter 2 Solid Waste and Chapter 6 Water Resources. Such inclusion will significantly alter the conclusions and recommendations of the DEIS.
- **DoD cannot and must not participate in the illegal project at Layon.** This could delay or jeopardize the approval of the DEIS, thus delaying the US Military buildup.
- Although the construction of Layon MSWLF is currently in progress, any of the current lawsuits could halt or indefinitely stop the construction activities should any of the lawsuits prevail. The DoD cannot afford to interrupt or risk the Mission by relying on the Layon project, causing the DoD to have no means for disposal of solid waste.
- It is evident the LOI is premised upon erroneous conclusions. Thus, the LOI should not be considered as a basis for developing solid waste alternatives and the DEIS conclusion regarding the solid waste disposal must be re-addressed.
- DoD can continue to use the Navy Landfill until at least 2019 therefore DoD should not make any final decisions regarding solid waste disposal until that time. GRRP anticipates that its WTE/landfill will be permitted and operational well before 2019, thus presenting a legal, environmentally sound, and financially cost-effective option for DoD. The DoD must reconsider the GRRP WTE/landfill as the reliable means for solid waste disposal.

Submitted by
GUAM RESOURCE RECOVERY PARTNERS

Wagdy A. Guirguis, P.E., President

REFERENCES – Electronic Files*

Reference **1** –Private Activity Bond (PAB) Application to GEDA

Reference **2** – Pending Motion of Summary Judgment CV0892-04

Reference **3** – Opinion Supreme Court Case No. CVA02-003

Reference **4** – WTE Facility Conceptual Designs

Reference **5** – Comments to Layon Permit and Request for Hearing, dated September 21, 2009, and Statement of Issues, filed October 26, 2009, submitted to GEPA and the GEPA Board.

Reference **6** – USAC 1980 Ugum River Interim EIS Study

Reference **7** – Guam Legislation Resolution No. 103 and Exhibits 1-13

* Reference 1, Attachment 5B, and Reference 6 are also provided as hard copies.

Baba Corp/Atlantis DEIS Comment

Draft Environmental Impact Statement (DEIS) / Overseas Environmental Impact Statement (OEIS) GUAM AND CNMI MILITARY RELOCATION Comment Sheet

NAME: Hideharu Baba **TEL:** (671) 646-5050

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Tamuning, GU 96913

Atlantis Submarine is a member of the Baba Corporation group of businesses. Having operated on Guam since 1968, Baba Corporation is considered a pioneer in the visitor industry. The company currently employs one hundred and seventy five people whose livelihood is dependent on a healthy visitor industry. Atlantis Submarines has dedicated its presentation to the education and celebration of Guam's ecosystem. The flagship operation of the company is the Atlantis Submarine, which has been in operation for more than twenty years, is working in conjunction with the University of Guam's Sea Grant program and the Coastal Zone Management division of the Bureau of Statistics and Plans to provide information about Guam's fragile ecosystem and provide a way for visitors and local residents to become immersed in the island's unique environment. Our optional tour involves taking passengers underwater in an electric powered self sustaining submarine to depths of 150 feet to allow a unique perspective of Guam's underwater habitat. The Atlantis Submarine seats 48 passengers and offers a 35 minute educational tour of Gab Gab reef a pristine representative of the coral habitat in Apra Harbor. The reef supports a rich diversity of corals, sponges, and fish. Sea Turtles are frequently sighted swimming in the area. Our passengers are treated to viewing undisturbed tropical sea life in a largely undisturbed undersea tropical environment. The dive on Guam is known throughout Asia as offering one of the finest undersea viewing experiences available.

The recently released DEIS is quite daunting as a document to comprehend. We have read the document as thoroughly as we believe we could in attempting to understand how what is proposed will affect our business. There are three areas that we are specifically concerned about with regard to the proposed construction of a temporary carrier berthing in Apra Harbor:

B-015-001

1. The dredging required for the temporary carrier pier could significantly impact the turbidity of the waters in which we dive seriously degrading the quality of the product we currently offer visitors. The clarity of the water in Apra Harbor has deteriorated over the years and we are concerned that the planned dredging that may permanently impact visibility where the Atlantis

B-015-001

Thank you for your comment. It is anticipated that during dredging activities, recreational resources at the Western Shoals in the Inner Apra Harbor and its vicinity would be inaccessible. The lack of access to the dive site, as well as lessened visibility in the vicinity due to sediment plume caused by the proposed dredging activities at the Western Shoals, would not exceed the construction period. A sediment plume is an inevitable effect of in-water construction activities that the Navy proposes to minimize by using best management practices (BMPs) such as silt curtains and operational controls of dredging equipment. Mitigation measures will be determined and agreed upon during the US Army Corps of Engineers (USACE) permit phase of the projects. The Navy is monitoring dredging activity at Kilo Wharf and is aware of issues involving the subcontractor managing the silt curtain mitigation measures. Changes to the height of the silt curtains and some operational changes have been made to correct these issues.

The Kilo wharf project and the proposed action occur in very different areas of Apra Harbor. The setting of Kilo wharf is more exposed to wind and wave action that impact the BMPs and mitigation measures. The proposed action area is anticipated to be less challenging with regard to the Navy's ability to minimize environmental impacts from sediment plumes. The dredging plume models that were run for the Draft EIS, were based on high silt curtain sediment retention of 90% that were observed at another locations in Apra Harbor having similar conditions to the proposed action area.

In general, the Navy has overestimated the direct and indirect impact area, not underestimated it. The assessment of benthic communities report assumes a 60 ft (18 m) dredge depth, which is an overestimate of the actual proposed dredge depth of -49.5 ft (-15.1 m) MLLW plus 2 ft (0.6 m) overdredge, representing an approximately 10-15% increase in assessed benthic habitat in the dredged area. For this reason, the total

B-015-001 Submarine operates. The feared increase in turbidity levels may degrade the quality of our tour and damage our business.

B-015-002 2. Increased turbidity will deposit ever increasing amounts of silt on the reef. This will hasten the destruction of corals and negatively impact the variety and quantity of fish populations on the reef and will impact green and hawksbill turtles that visit the area.

B-015-003 3. The lack of attention provided by the DEIS to the impact of the proposed dredging and construction of the carrier pier on the management of Apra Harbor on one of Guam's most important recreational assets. How will the operation of the carrier pier and the changes it will bring to Apra Harbor impact the tourism industry? What changes should we as a business be aware of that might disrupt our operations during and after the build-up? How will optional tour businesses in Apra Harbor figure into the operations of the port once the build-up has been completed? Will there be new operating rules and how will that likely impact recreational businesses operating in the harbor?

Our specific comments are as follows:

SPECIFIC COMMENTS:

DEIS REFERENCES:

A. Dredging and Turbidity

a. *Potential impacts are related to ocean-based recreation and tourism in the local area due to the silting from dredging that clouds and degrades the water environment and due to increased congestion in Apra Harbor. These are construction-related impacts that are considered short-term. With implementation of potential mitigation measures in Chapter 4 of this volume, impacts due to dredging will be reduced to less than significant. (Volume 4, Ch. 19.2.2.2, pg 372)*

b. *To minimize these potential impacts, the site-specific construction Best Management Practices (BMPs)(Volume 7)will be implemented to reduce the potential for erosion, runoff, sedimentation, and associated water quality impacts. BMP's such as silt fences and hay bales would retain in silt laden storm water before it reaches a sensitive surface water resource. (Voume 4, Ch. 4.2.2.1, p. 102)*

B-015-004 Over the past 20 years the Atlantis Submarine has completed over 53,000 dives. During that time we have been able to observe the gradual degradation of underwater visibility and a diminished diversity of corals and fish at Gab Gab reef. We believe there are number of possible reasons why. The construction activity and maintenance dredging that has been done

dredged area differs from the dredged area provided in Volume 4, Chapter 4.

B-015-002

Thank you for your comment. The Navy has considered sediment runoff and resuspension as potential impacts to coral reef and ecosystem. Land-based activities will have permits requiring best management practices (BMPs) that contain and reduce sediment and pollutant discharges into nearby waters. Additionally, low impact development strategies will be implemented by the Navy during construction activities. The Navy will also implement mitigation measures and BMPs during in-water activities (dredging, wharf construction) that include U.S. Army Corps permits requiring silt curtains, biological monitors, halting of dredging activities during potential coral spawning months, and compensatory mitigation projects to help improve nearshore water quality through upland watershed reforestation and/or artificial reef construction, to name a few. The DoD, as part of the "build-up" on Guam will participate in the proposed upgrade of the Northern District Waste Water Treatment Plant from Primary to Secondary Treatment. This action will assist GWA in meeting its coast water quality standards and benefit the sea life and people of Guam.

B-015-003

Thank you for your comment. Volume 2, Chapter 16, Section 16.2.2.2 of the EIS discusses potential impacts to tourism activities resulting from the proposed actions at Apra Harbor. It is anticipated that during dredging activities, recreational resources at the Western Shoals in the Inner Apra Harbor and its vicinity would be inaccessible. The lack of access to the dive site, as well as lessened visibility in the vicinity due to sediment plume caused by the proposed dredging activities at the Western Shoals, are anticipated impacts during construction period.

Despite the temporary loss of use of the Western Shoals, there are over

B-015-004

in the harbor in the past has increased turbidity levels for longer and longer periods. In particular, the construction activity at Kilo Wharf has significantly affected visibility. The plume of increased turbidity because of that dredging has had a noticeable effect on the ability of customers to observe the reef. In addition, there seems to be a cumulative effect of the degradation of visibility. This we believe is caused by the fact that there is a very slow natural exchange of water from Apra Harbor with less turbid ocean waters. The natural "flushing" action of the harbor is not efficient, and thus prop wash, maintenance dredging and siltation caused by surface run-off does not dissipate easily and over time seems to accumulate. The length of time required for visibility to improve after an event occurs seems to be taking longer and longer to occur.

We are concerned that the magnitude of the dredging planned for the harbor will perhaps permanently degrade the visibility of the Harbor around Gab Gab reef to such an extent we not be able to operate the at that location. This is a serious issue as there is currently no other site as suitable as Gab Gab reef to operate the submarine without significant revenue loss. Unfortunately, Gab Gab is directly in the path of the expected flow of turbid water as it attempts to exit the harbor. When underwater visibility is reduced to less than 30ft. our standard operating procedures dictate that we must cease operations for safety reasons. For these reasons the monitoring of turbidity levels at our site during dredging operations will be important to insure that the water quality standards we require to operate are maintained. In addition, for these reasons we are concerned about the specific measures that will be taken to reduce or protect the reef from spoilage and turbidity. Will there be screens from the surface to the bottom of the dredging area? Will modern hydraulic dredging techniques mandated to minimize the spoilage plume? Will the area of turbidity measurement be expanded to include areas downstream of the dredge area that may also be affected by increased turbidity?

B. Concern about endangered species

a. *The green and hawksbill sea turtles are the only special-status species reported in Apra Harbor, with observations of green sea turtles occurring on a more regular basis. (Volume 4, Ch.11.1.4, pg 233)*
b. *Considering the presence of sea turtles in Outer Apra Harbor, the proposed in-water construction action (dredging and pile driving) and associated noise has the potential to affect the ESA-listed green sea turtle by temporarily changing their swimming or feeding patterns. (Volume 4, Ch.11.1.4, pg 234)*

B-015-005

A key sales point for our tour among Japanese visitors is the possibility that they might see a sea turtle. Sightings of green sea turtles are relatively frequent. Sightings of hawksbill turtles, while less frequent, are regular. We have documented over many years these sightings and would be willing to share this information with the Department of Defense to better understand the movement of turtles in Apra Harbor. Turtles pass through the Gab Gab reef area to other locations in the harbor and beyond. Along the way they forage on algae on the

10 dive sites throughout Apra Harbor that may be utilized by recreational users. The impacts would be similar under Alternative 1, the Preferred Alternative (Polaris Point alternative) and Alternative 2 (Shipyard Repair Facility [SRF] alternative), except activities at Gab Gab Beach near the SRF may be affected when the aircraft carrier is docked at the SRF due to the enforcement of security barriers. Notices to airmen and mariners (NOTAM, NOTMAR) may be issued to provide notice of aircraft approaching port.

Please note that one of the mitigation measures proposed in the EIS is to conduct a carrying capacity study for the recreational resources on Guam. Information formed from the data collected from the carrying capacity can be use used to determine what the threshold for the recreational resources are; subsequently, appropriate implementation measures can be formed to preserve the recreational resources.

B-015-004

Thank you for your comment. The majority of the impacts to nearshore waters (e.g., construction and dredging) would be temporary in nature and would have no lasting effect on nearshore water quality. The use of turbidity curtains for sediment control would further reduce potential impacts to adjacent nearshore waters. The temporary nature of these activities coupled with the use of engineered controls render these impacts less than significant. A number of protective measures would be taken to minimize the distribution of the turbidity plume that would unavoidably be generated by the proposed dredging operations. These measures are noted in Chapters 2, 4, and 11 of Volume 4. Silt curtains are one example of these types of protective measures. Standard turbidity curtains are approximately 20-30 feet (6-9 meters) in length and have a weighted bottom to maintain the effectiveness of the curtain against the movement of currents within the water body. Since the dredge equipment is not stationary for the entire period of dredging, it is impractical to have a silt curtain extending to and being anchored to the bottom of the harbor. The length of time the silt curtains will be in place

B-015-005

reef. The potential for the disruption of or loss of sea turtle visitations to Gab Gab reef will directly impact the attractiveness of our tour, and a key attraction will be lost which will negatively impact our business. Sasa bay is a turtle breeding ground. This is directly inland from Polaris point. We have observed that turtles pass over and around Gab Gab Reef as they move between their feeding grounds and their breeding areas in the Harbor but we have also observed them in many other areas in the Harbor.

Equally important, increased siltation on Gab Gab is already having a severe and detrimental impact on the health of the corals, sponges and fish found there. Surface run-off the work on Kilo Wharf, and maintenance dredging has affected the reef. Our customers come to dive on Atlantis to enjoy a pristine and healthy ecosystem. Over time that system has been degraded and today portions of the reef have been silted over, and while the diversity of life remains remarkable given the reefs location in a commercial harbor it is none the less declining. We fear that the proposed dredging will dramatically increasing siltation and in doing so destroy corals and food sources needed to support the diversity of fish species currently resident at Gab Gab reef. In addition, we are concerned that the DEIS does not address the impact the expected increase in ship traffic in the harbor will have on turbidity or siltation. Also it does not identify what will be done to mitigate the impact of increased siltation as well as shipboard waste, spills, noise, etc.

C. Operations in Apra Harbor

a. *Access to recreational resources at Apra Harbor may be impeded during construction activities. (Volume 4, Table 9.2-1, pg. 117)*

b. *During aircraft carrier visits, a security clearance zone serving as a buffer to the ships would be enforced throughout the length of stay as a measure of force protection. The buffer distance is subject to change according to the force protection levels, with the minimum distance being 450 feet (ft) (137 meters [m]). Neither of the proposed wharves is in an area of offshore recreational water activities. The security barriers would not impact recreational uses in Outer Apra Harbor (9.2-1). Therefore, Alternative 1 would result in no impacts to offshore recreational resources during operation. (Volume 4, Ch.9.2.2.2, pg. 177)*

B-015-006

While it is clear that disruption of recreational and thus visitor recreational activities will occur during the construction period there is no mention in the DEIS as to how such activities will be disrupted. Atlantis and the other dive and recreational tours that utilize Apra Harbor collectively bring nearly 25% of all Japanese visitors to Apra Harbor to experience commercial recreational tours. In total, 250,000 visitors a year patronize businesses in the Harbor. Any disruption of such a high level of economic activity should be well planned and coordinated. Unfortunately, there is no recreational or visitor component included in the master plan for the Port Authority, nor were recreational businesses included in the development of master plan

will be determined through agency coordination and permitting; however, in general terms the curtains would potentially be in place during and after dredging operations until monitoring indicates turbidity levels have returned to pre-dredging concentrations. Specific monitoring requirements will be identified and implemented following agency coordination and permitting.

B-015-005

Thank you for your comment. The Navy has co-existed with sea turtles in the Harbor for over 60-years, and in a partnership with the Fish and Wildlife Service, monitors sea turtle activities within Apra Harbor and around Guam. There are no records of sea turtles nesting on beaches within Apra Harbor that would be impacted by the proposed action. Additionally, there have been no reported observations of sea turtles grazing within the area to be dredged during Navy and subcontractor dives totalling over 1000 hours.

The Navy has entered into Section 7 consultation and has prepared a biological assessment in regards to the potential impacts to ESA-listed sea turtles.The Navy will implement mitigation measures and BMPs based on recommendations from this consultation process for in-water and land-based construction activities (i.e. dredging and wharf construction) to lessen any potential impacts to sea turtles and sea life in general. Additionally, the U.S. Army Corps permit will require measures to protect biological resources. These measures may include the following: biological monitors on vessels (making sure sea turtles and dolphins [although rare in Apra Harbor] do not approach the area); halting of dredging activities, if these animals enter the buffer zone, until the sea turtle and/or dolphin voluntarily leave the area, low lighting, and as described above, joint Navy/Guam Resource Agency monitoring of nesting beaches though out Guam, to name a few.

B-015-006

improvement activities associated with the build-up. It is critical that a process or procedure be developed to alert businesses about disruptions and that specific mitigation measures are established. For example, every time a carrier enters port, the port will be shut down for an undisclosed amount of time. Atlantis will be forced to stop operations during these times losing dives and revenue. For these reasons we have the following questions and we would appreciate the EIS to address in its final form.

B-015-007

- Given the poor rate of flushing that occurs in Apra Harbor, what sorts of specific measures will be taken to reduce increases in turbidity? Specifically:
  - Will turbidity measurements be taken in locations not only at the dredging area but also at other commercial or recreational sites that could be affected by the plume of turbid water that will likely be created?
  - Will silt curtains that run from the harbor floor to the surface be deployed to maximize containment of dredging spoils and minimize turbidity?

B-015-008

  - Will the EIS recommend the creation of fish, coral and protected species monitoring program, of which Atlantis will gladly participate, to measure both during and after the military build-up, its cumulative and incremental impact on undersea fish populations, protected and endangered species, and the health of corals.

- Will the EIS suggest that destroyed of reef habitat in Apra Harbor be replaced with transplanted corals at other locations in the Harbor designed to preserve undersea habitat? These locations should be developed in consultation with the visitor industry and local residents.

B-015-009

- Given the lack of an operational plan for coordinating visitor industry and local residential recreational usage of the harbor, and the absence of provisions for recreational use in the Port Master Plan, will the final EIS suggest the development of an amendment to establish a cooperative use agreement among visitor directed businesses? The amendment should support the Navy, the commercial port and residents to work together to enhance public access to the harbor, enhance water safety practices and protect the undersea habitat of Apra Harbor. Also, how will Atlantis be informed of business disruptions caused by commercial and military ship movements, and how should Atlantis best plan for cohabitating with the Navy in Apra Harbor in ways that best protect our business and meets the needs of the Navy?

B-015-010

I appreciate the opportunity to comment on this DEIS. Baba Corporation and Atlantis Submarine encourage the Navy to take a long-term stewardship approach to site management in Apra Harbor. By modifying the alternatives carried forward through the NEPA process to reduce environmental impacts of the build-up, the Navy will be embracing the pollution

B-015-006

Thank you for your comment. Volume 2, Chapter 16, Section 16.2.2.2 of the EIS discusses potential impacts to economic activities associated with tourism that may result from the proposed aircraft carrier birthing at Apra Harbor. Volume 2, Sections 9.2.2.2 and 9.2.3.2 of the EIS has been revised to include additional discussion on the potential impacts to the existing recreational resources in the Apra Harbor during dredging and wharf construction activities. It is anticipated that during dredging activities, recreational resources at the Western Shoals in the Inner Apra Harbor and its vicinity would be inaccessible. The lack of access to the dive site, as well as lessened visibility in the vicinity due to sediment plume caused by the proposed dredging activities at the Western Shoals, are what can be anticipated during the construction period. A sediment plume is an inevitable effect of in-water construction activities that the Navy proposes to minimize by using best management practices (BMPs) such as silt curtains and operational controls of dredging equipment. Mitigation measures will be determined and agreed upon during the US Army Corps of Engineers (USACE) permit phase of the projects.

Despite the temporary loss of use of the Western Shoals, there are over 10 dive sites throughout Apra Harbor that may be utilized by recreational users seeking comparable uses that would have been had at the Western Shoals (e.g., scuba diving). Notices to airmen and mariners (NOTAM, NOTMAR) may be issued to provide notice of aircraft approaching port.

B-015-007

Thank you for your comment. Specific monitoring requirements (e.g., for turbidity levels) will be identified and implemented following agency coordination and permitting. A number of protective measures would be taken to minimize the distribution of the turbidity plume that would unavoidably be generated by the proposed dredging operations. These

B-015-010

prevention pillar of its environmental strategy. We are available at any time to provide assistance to the Navy regarding prevention of marine habitat degradation and related topics. Not only does the proposed action impact our business but it will also impact the future of Guam. We stand in support of national defense policy and believe that with proper planning and mitigation, local businesses that depend upon a healthy Apra Harbor, can survive this project. If you have questions, please contact me at 671-646-5050. Please also send one copy of the Final EIS to the address below once it is released for public review.

Sincerely,

Hideharu "Bo" Baba
President
Atlantis Guam, Inc.

measures are noted in Chapters 2, 4, and 11 of Volume 4. Silt curtains are one example of these types of protective measures. Standard turbidity curtains are approximately 20-30 feet (6-9 meters) in length and have a weighted bottom to maintain the effectiveness of the curtain against the movement of currents within the water body. Since the dredge equipment is not stationary for the entire period of dredging, it is impractical to have a silt curtain extending to and being anchored to the bottom of the harbor. The length of time the silt curtains will be in place will be determined through agency coordination and permitting; however, in general terms the curtains would potentially be in place during and after dredging operations until monitoring indicates turbidity levels have returned to pre-dredging concentrations.

B-015-008

Thank you for your comment. As discussed in the DEIS, there are several likely mitigation measures that will be employed for the proposed CVN wharf dredging and construction activities. These specific mitigation measures to help preserve undersea habitat will be generated in discussions with the USACE during the CWA permitting process. Because this process has yet to occur, the Navy cannot commit to any specific mitigation measures in the FEIS.

A detailed compensatory mitigation plan would be submitted as part of the Clean Water Act 404 permit application for construction affecting the navigable waters of the United States (including the CVN transient wharf). Due to the ongoing review of DoD's habitat assessment methodology for coral reef ecosystems and associated uncertainties regarding the scope of mitigation required, a detailed mitigation plan has not been developed nor will one be available for incorporation into the FEIS. However, a number of mitigation options, including watershed restoration and the use of artificial reefs, are discussed in programmatic nature in Volume 4, Section 11.2 of the FEIS. DoD recognizes that, as part of the CWA Sec. 404 permitting process, additional NEPA

documentation may be required to address specific permitting requirements and implementation of required compensatory mitigation.

B-015-009

Thank you for your comment. The EIS is a disclosure document providing known and anticipated impacts caused by the proposed actions. An operational plan for coordinating visitor industry and local residential recreational usage of the harbor, as well as provisions for recreational use in the Port Master Plan, are not part of the actions included with the Marine Corps relocation to Guam; as such, are not assessed for impacts in the EIS. Please note, however, one of the mitigation measures proposed in the EIS is to conduct a carrying capacity study for the recreational resources on Guam. Information from the data collected from the carrying capacity can be used to determine what the threshold for the recreational resources are; subesequently, appropriate implementation measures can be formed to preserve the recreational resources.

Despite the temporary loss of the Western Shoals, there are over 10 dive sites throughout Apra Harbor that may be utilized by recreational users. Notices to airmen and mariners (NOTAM, NOTMAR) may be issues to provide notice of aircraft approaching port.

B-015-010

Thank you for your comment. The EIS acknowledges there would be impacts associated with the proposed construction of a new deep-draft wharf in Apra Harbor to accommodate a transient nuclear powered aircraft carrier. Dredging is required to provide the minimum depth requirements to safely navigate the aircraft carrier. The DoD undertook several measures to avoid environmental impacts, including choosing a channel alignment that avoided dredging of coral shoals, reducing the aircraft carrier turning basin radius, and choosing a parallel to shore wharf alignment with a reduced clearance for the aircraft carrier. Best

management practices, such as the use of silt curtains and operational dredging controls, and proposed mitigation measures, as described in Chapter 11 of Volume 4, would reduce and mitigate impacts from dredging.

Younex

Draft Environmental Impact Statement (DEIS) /
Overseas Environmental Impact Statement (OEIS)
GUAM AND CNMI MILITARY RELOCATION
Comment Sheet

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Younex Enterprises Corporation has formed a team to build and operate the Ukudu Workforce Village (UWV), a full-service workforce housing solution for construction and service contractors. In concert with PAE (a Lockheed Martin Company) STX Construction and several SBA certified local companies Younex will operate the largest workforce housing facility on Guam. The local SBA certified team members include, but are not limited to:

- Kloppenburg Enterprises, a transportation company;
- Big Pacific LLC, a food and beverage and recreational services company;
- Guam Radiology Consultants, an experienced healthcare provider; and,
- Clean Care laundry services, a leading laundry services company.

Ukudu Workers Village (UWV) will accommodate as many as 18,000 foreign temporary laborers. Located in the area known as the Harmon annex, UWV occupies the largest M1 zoned property adjacent to the proposed Marine cantonment area.

UWV complies with all requirements of the U.S. Government and the Government of Guam as specified in solicitation #N62742-09-R1314 and Guam Land Use Commission Resolution 2009-01.

Younex

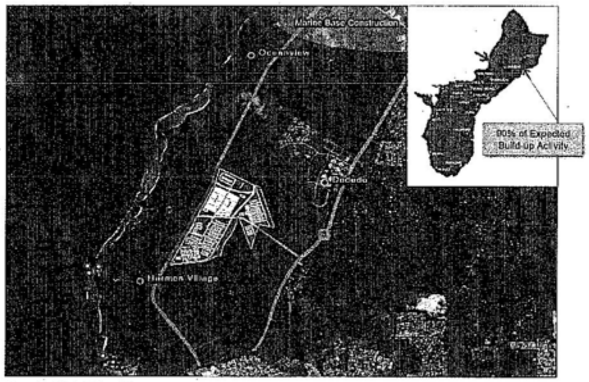


Figure 1 – Ukudu Village Site

Younex wishes to comment on four specific issues addressed in the DEIS:

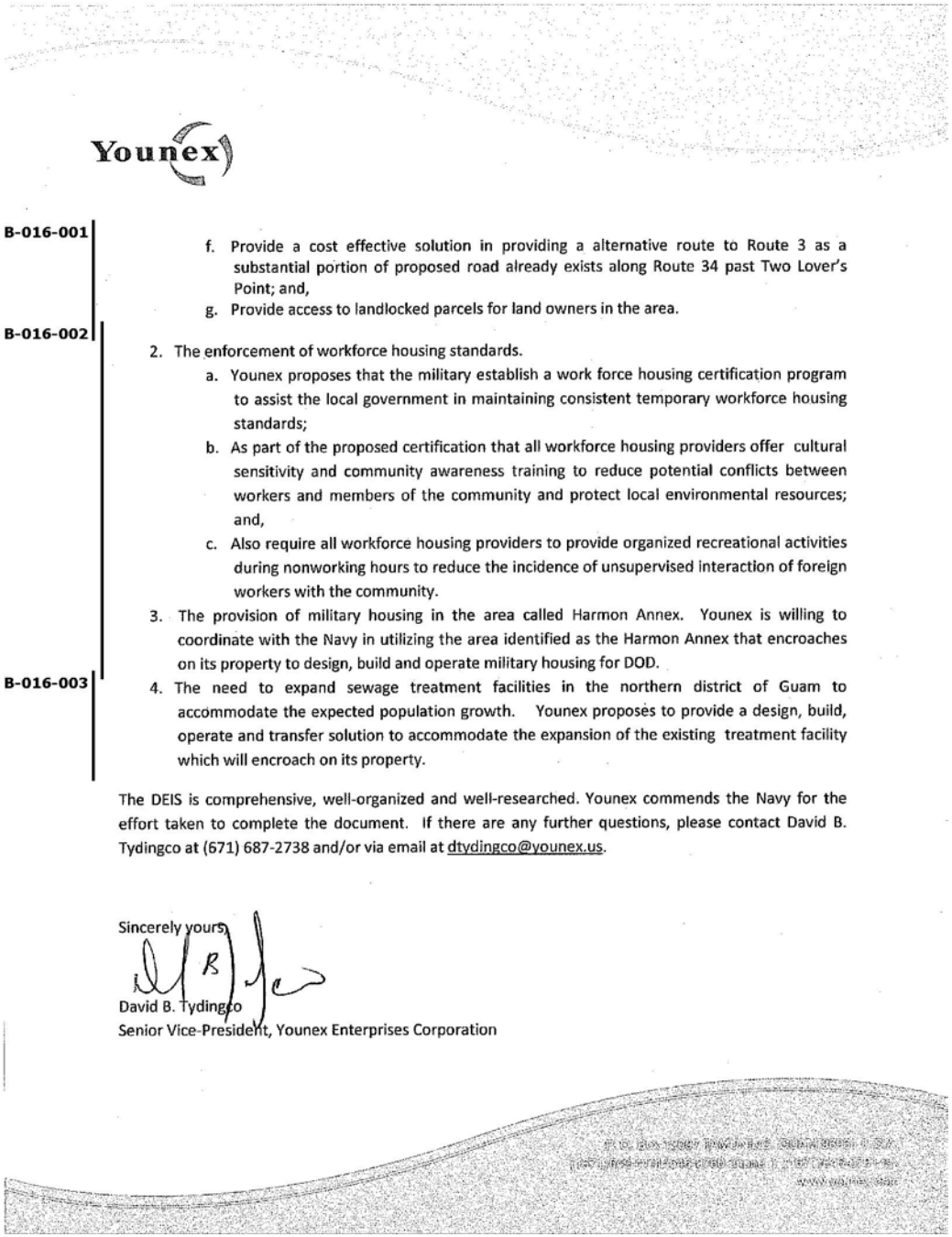
B-016-001

1. The need to construct the Finegayan Connection, identified in the DEIS as GRN #124. Younex believes that the construction of this transport connection between Route 1 and Route 3 should be given as high a priority if not more so than the improvements required for Route 3. The construction of the Finegayan Connection will:

   a. Distribute NCTS/South Finegayan development traffic to a parallel facility reducing impacts to Route 3;
   b. Alleviate the need for extensive improvements at Route 1/3 which may include a triple-left turn from eastbound Route 1 to Northbound Route 3, or potential flyover;
   c. Provide an alternate route to NCTS/South Finegayan (and the possible military cantonment area) in the event that Route 3 is blocked by an accident or another incident;
   d. Reduce the requirements to strengthen Route 3 to accommodate increased commercial and residential traffic ;
   e. Provide a direct connection for the transport of laborers from work force housing areas to the cantonment area. In addition, the road will accommodate the transport of construction materials, equipment and supplies to the cantonment area further reducing adverse traffic impacts;

B-016-001

Thank you for your comment.



Younex

B-016-001

f. Provide a cost effective solution in providing a alternative route to Route 3 as a substantial portion of proposed road already exists along Route 34 past Two Lover's Point; and,
g. Provide access to landlocked parcels for land owners in the area.

B-016-002

2. The enforcement of workforce housing standards.
   a. Younex proposes that the military establish a work force housing certification program to assist the local government in maintaining consistent temporary workforce housing standards;
   b. As part of the proposed certification that all workforce housing providers offer cultural sensitivity and community awareness training to reduce potential conflicts between workers and members of the community and protect local environmental resources; and,
   c. Also require all workforce housing providers to provide organized recreational activities during nonworking hours to reduce the incidence of unsupervised interaction of foreign workers with the community.
3. The provision of military housing in the area called Harmon Annex. Younex is willing to coordinate with the Navy in utilizing the area identified as the Harmon Annex that encroaches on its property to design, build and operate military housing for DOD.

B-016-003

4. The need to expand sewage treatment facilities in the northern district of Guam to accommodate the expected population growth. Younex proposes to provide a design, build, operate and transfer solution to accommodate the expansion of the existing treatment facility which will encroach on its property.

The DEIS is comprehensive, well-organized and well-researched. Younex commends the Navy for the effort taken to complete the document. If there are any further questions, please contact David B. Tydingco at (671) 687-2738 and/or via email at dtydingco@younex.us.

Sincerely yours,

David B. Tydingco
Senior Vice-President, Younex Enterprises Corporation

B-016-002

Thank you for your comment. Public comments on the DEIS are an important part of the decision-making process. This information becomes part of the FEIS and is evaluated when DoD prepares the FEIS and issues a Record of Decision at the end of the NEPA process.

Your recommended mitigation measures have been taken under consideration. An expanded mitigation measures discussion is available in the FEIS.

B-016-003

Thank you for your comment. Conceptual design of the potential expansion of the North District Wastewater Treatment Plant (NDWWTP) to secondary treatment has not been done at this time as this alternative is long-term and only covered at a programmatic level. The refurbishment of the NDWWTP to its original primary treatment capacity should not require expansion of the existing footprint. Please keep tuned into the future procurement for the potential of proposing on a design/build/operate opportunity.

DEIS COMMENT 1: FINEGAYAN CONNECTION

DEIS REFERENCES:

B-016-004

DEIS Location: Volume 6, Chapter 2
Chapter Title: Related Actions – Utilities and Roadway Projects, Proposed Action and Alternatives
Page: 119

> *GRN #124 is a "new two-lane road parallel to Route 3, with left-turn lanes at existing access points, with 4-ft (1.2-m) median and 4-ft paved shoulders. At the Route 1/16 intersection, improve the existing at-grade intersection."*

DEIS Location: Volume 6, Chapter 15
Chapter Title: Related Actions – Utilities and Roadway Projects, Visual Resources
Page: 14

> *"Of the projects in the North region, it is anticipated that (...) GRN #124 (new Finegayan Connection), would cause a slight decrease in the existing visual quality of the corridors. The Finegayan Connection does not have the viewer sensitivity of Route 28; however, because the roadway would be located through an area of unpaved roads, it would add an urban element where none currently exists."*

SPECIFIC COMMENT:

The Finegayan Connection is a new proposed road that will connect Route 1 with Route 3 from the intersection of Route 1 and Route 16 through an area adjacent to the proposed Marine Base cantonment area. The proposed road will run along the western perimeter of the Ukudu Workforce Village (UWV). The road is identified in the DEIS as an alternate haul road designed to reduce traffic congestion along Route 3. This alternative has also been identified as a key component of the 2030 Guam Transportation Plan. Younex strongly believes that construction of the Finegayan Connection should be identified in the DEIS as requiring a higher priority than it is currently assigned by DoD and recommend that the road be constructed simultaneously with or prior to scheduled improvements to Route 3.

B-016-004

Thank you for your comment.

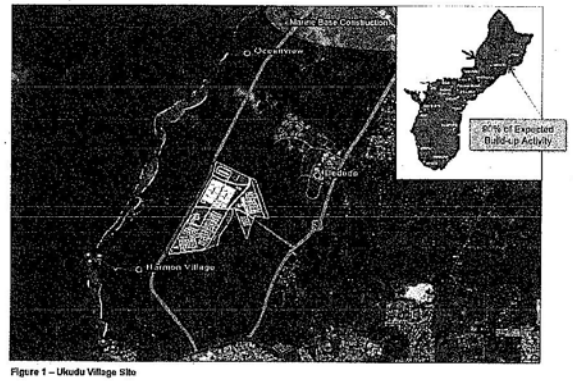


Figure 1 – Ukudu Village Site

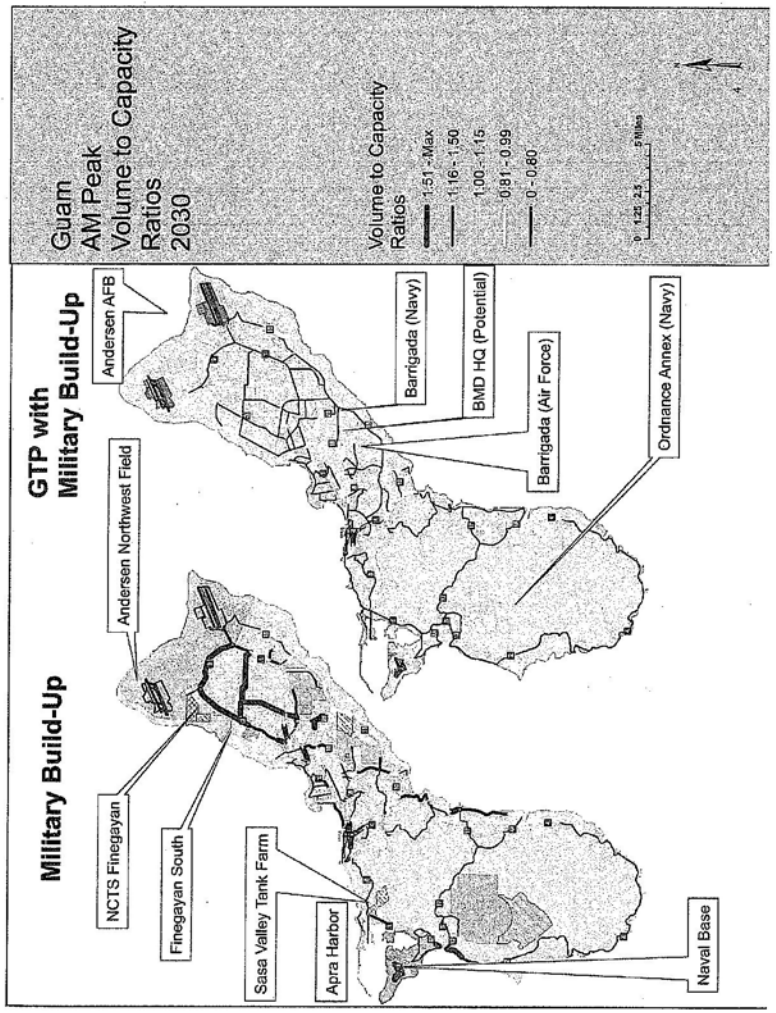
B-016-004

The construction of the road provides an important alternative to access to the Marine cantonment area from Route 3. At the peak of the construction period there will be between 14,000 and 18,000 workers temporarily residing within the immediate vicinity of the Marine cantonment area, not to mention thousands of additional employees working in facilities that are likely to locate along Route 3 to support and supply the construction activity in the area.

The Younex facility will be a singular significant contributor to traffic flow in the area. The temporary construction workers that will be housed at the UWV will be bussed to and from the property during peak usage hours in the morning and evening. Those working at and supplying the Younex facility, estimated to number as many as 500 to 700 employees, will be using passenger and delivery vehicles and will also require access to Route 3 during peak travel times. In addition to this, approximately 75 acres of the property will accommodate construction lay down and warehouse facilities. While it is unknown how may additional employees and vehicles the warehouse and lay down area will attract the transportation planning for the facility was designed to accommodate as much as an additional 500 to 1,000 additional employees. This does not include the transportation requirements associated with a 16 acre concrete batch processing plant likely to supply much of the concrete required for the construction of the marine training facility and much of the accompanying construction activity in the northern end of the island.

Younex has access to Route 3 directly through an existing right of way capable of accommodating all of the expected traffic to and from the UWV. The necessary permits have been obtained and the traffic associated with the facility can be accommodated by the proposed road improvements included in the 2030 Guam Transportation Plan. However, Younex does not believe that a singular access to the Marine cantonment area via Route 3 is

B-016-004 the preferred alternative to transporting the necessary people, materials and supplies to and from the Marine cantonment area and is in support of the full implementation of the 2030 Guam Transport Plan (GTP) prepare by the Guam Department of Public Works.



B-016-004

The peak construction period will create average traffic levels that will maximize the capacity of Route 3 as planned. The volume to capacity ratios for traffic through the area from the UWV

B-016-004

to the cantonment area and from the cantonment area to Andersen AFB without the installation of the Finegayan Connection will be 1.51 to Max. Such levels of congestion are expected to remain through 2030. The GTP projects that with the construction of the Finegayan connection traffic along Route 3 would be cut in half. In addition to the reduction in traffic flow there are a number of additional benefits the construction of the Finegayan Connection will provide:

1. The level of improvement required for Route 3 would be reduced. Without the Finegayan connection a triple left turn lane from Route 3 may be required, or perhaps even the need for a fly over to accommodate the expected traffic flow. These improvements significantly add to the cost of the required improvements.
2. Without the Finegayan Connection there is no alternative route if an incident or accident were to significantly obstruct traffic along Route 3. Blockage of Route 3 could significantly and possibly entirely prevent access to the cantonment area for significant periods of time. Such delays could severely impact the transport of time sensitive construction materials (e.g. concrete to job sites in the Marine cantonment area), and will affect the response time for emergencies. With the Finegayan Connection an alternative egress and exit route is made available.
3. Installation of the Finegayan Connection will increase the availability of construction staging areas closer to the cantonment area adding to construction efficiencies.
4. The existence of the Finegayan Connection will provide a direct connection between the cantonment area and the UWV relieving significant congestion on Route 3. In addition, the use of the Finegayan Connection as a haul road will reduce the wear and tear on Route 3 reducing maintenance and the attendant disruption to the flow of traffic.

Although the 2030 GTP and the DEIS recognize the utility of the Finegayan Connection it is not identified as the preferred haul road for the area. This calls to question the priority it has been assigned by the local and federal governments both in terms of funding and the proposed timing of its construction. It is clear to Younex that the construction of the Finegayan Connection is critically important to facilitate the most efficient and least disruptive accommodation of traffic flow both through the construction period and beyond.

B-016-005

However, there is another important reason from the local community's perspective that priority should be assigned to construction of the Finegayan Connection. The area traversed by the proposed road is on land that is in the process of being transferred from the GSA to the Government of Guam. Known as the "Dos Amantes" Planning Area, the various properties included in the area have been the focus of community attention for decades. The property includes what are called "Crown Lands" a collection of parcels where individual titles were

B-016-005

Thank you for your comment and the background information supporting your proposal for construction of a Finegayan connection roadway.

B-016-006

disputed and never recognized by the United States when Guam was acquired from Spain in 1898.

The heirs of the original land owners have pursued the return of the property to local ownership for decades. As a result, the Ancestral Lands Commission was created to represent the interests of land owners facing property disputes in Guam, including the "Dos Amantes" planning area. The Ancestral Lands Commission was granted the authority to manage the property in trust for the benefit of those land claimants.

B-016-006

Thank you for your comment. DoD acknowledges that the issue of land acquisition is a complex and sensitive issue, particularly related to prior acquisition of land in Guam by the federal government. Prior land acquisition policies and procedures are not reflective of current land acquisition laws and DoD policy.

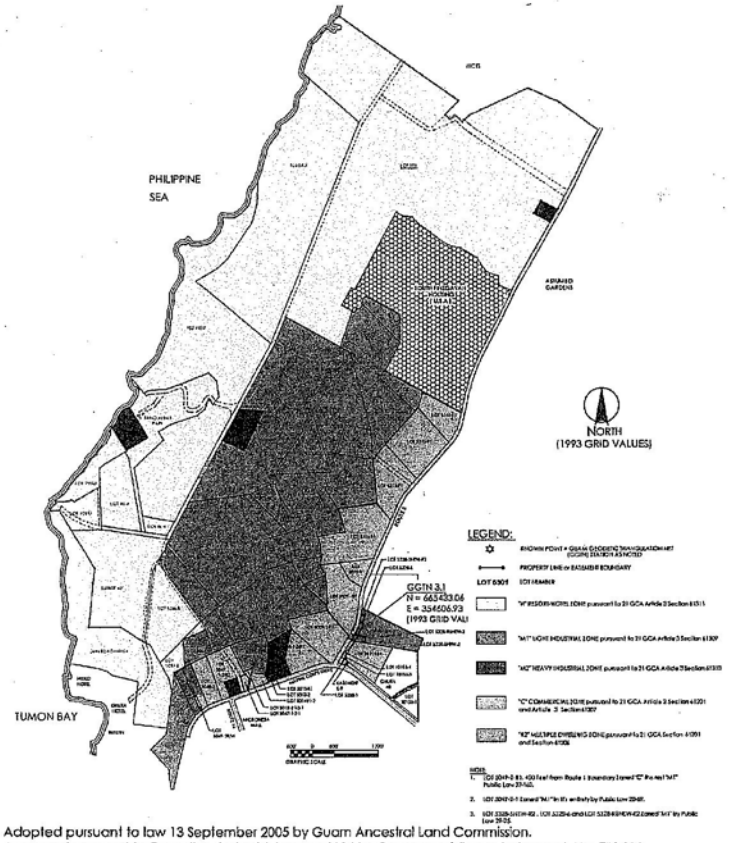
Should DoD determine that additional land is necessary to meet its requirements, DoD policy requires that it negotiate with affected public and private land owners in good faith, seek agreements to acquire desired lands interests and pay fair market value. Where circumstances exist that require resolution of issues such as ownership or value, procedures exist under eminent domain authority to resolve those questions. Eminent domain requires reimbursement at fair market value.

INTERIM ZONING MAP

Approved 28 February 2008
Guam Land Use Commission Resolution No. 2008-01

(Pursuant to 21 GCA-Real property Div.. 2 Regulating Real Property uses Article 2: Establishment of Zone and Boundaries Section (B) 61201 Zones 61203 Zone Boundaries; and Article 3: Lot Parceling .... Section 62303 ... Approval)

"Dos Amantes" Planning Area *



* Adopted pursuant to law 13 September 2005 by Guam Ancestral Land Commission.
Approved pursuant to Executive Order 26 January 2006 by Governor of Guam Instrument No. 720464.

B-016-007

In September of 2005 the Guam Ancestral lands commission approved a map for the "Dos Amantes" area that identifies the Finegayan Connection as a higway travesing the area from

B-016-007

Thank you for your comment and the background information supporting your proposal for construction of a Finegayan Connection roadway as described in the Dos Amantes map provided. The Final EIS includes the Dos Amantes 2008 zoning information.

B-016-008

Route 1 to federal property adjacent to the Marine cantonment area. In February 2008, the Guam Land Use Commission formally approved an interim zoning map for the area through resolution No. 2008-01. In 2009 refinements to the plan were made changing certain zoning designations of privately held parcels and was approved by the Governor and submitted to the Guam legislature for final approval in December, 2009. The Ancestral Lands Commission believes that the installation of the Finegayan Connection is key to its future development plans because without it nearly 60% of the "Dos Amantes" area will remain landlocked preventing access to land claimants and the public. The proposed road is designed along already "disturbed" areas in the region to minimize the impact of the road on historic sites. The interim zoning plan extends the Finegayan Connection up to federal property north of the "Dos Amantes" planning area that has not been returned to the local government. Thus, for the road to access the cantonment area the Navy would have to grant a right of way across existing federal property and in to the adjacent cantonment area. In addition, a portion of the "Dos Amantes" planning area, known as GLUP 77, has not been transferred to the Government of Guam. Although GLUP 77 is part of the entire planning area that was approved to be transferred by the federal government, GSA has yet to execute the conveyance.

B-016-009

Younex believes that in light of existing conditions related to the needs of the military for the pending build-up and the commitment the Navy has repeatedly made to seek "win-win" solutions to problems identified through the NEPA process that the Finegayan connection provides a highest and best solution to increase access to the Marine cantonment area and support a cooperative development approach to the area with the local community. We respectively request a response to following questions that we believe need to be explicitly addressed in the final EIS.

1. Will construction of the Finegayan Connection be given greater or equal priority to constructing the required improvements to Route 3? Improvements to Route 3 provide a necessary but insufficient solution to relieving the congestion that has been projected. Without the construction of the Finegayan Connection volume to capacity traffic measures will be maximized immediately and create congestion that will last through the year 2030.
2. Will the EIS identify the need to construct the Finegayan Connection before or simultaneously with construction of improvements to Route 3? Without a suitable alternative access to the cantonment area, during and after the construction of improvements along Route 3, the possibility exists that all access could be prevented by an accident of incident? Having alternative access to the cantonment area given the magnitude of the construction effort contemplated appears to Younex to represent a prudent means of assuring access to the construction area without disruption.

B-016-008

Thank you for the background information supporting your proposal for construction of a Finegayan Connection roadway as described in the Dos Amantes map provided.

B-016-009

Thank you for your comment.

B-016-010

3. Will the final EIS identify the necessity to immediately transfer the remaining portion of the "Dos Amantes" planning area designated as GLUP 77 from GSA to the Government of Guam and areas assign the necessary rights of way across proposed Navy housing areas adjacent to the cantonment area? Also, will the final EIS recommend that necessary changes be made to the master plan for the cantonment area required to facilitate construction of the Finegayan Connection?

B-016-010

Thank you for your comment. The EIS is not edited to describe land transfers that would occur off-base because the lands are not part of the proposed action requirements and DoD has no jurisdiction over these land issues.

The military master plan has many land use constraints to address for the long-term operations phase of the project. The long-term plan would not be modified to facilitate short-tem construction phase access.

DEIS COMMENT 2: WORKFORCE HOUSING CERTIFICATION

DEIS REFERENCES:

B-016-011

DEIS Location: Appendix F, Chapter 3, Section 3.3.2
Appendix Title: Economic Characteristics
Section Title: Housing Supply and Characteristics

> *"Based on information from Guam construction contractors and the GDLM there is presently capacity to house 3,700 temporary workers. Over half of this capacity (1,900) is owned and operated by one contractor at a single location in Harmon Industrial Park. The remainder of the capacity (1,800) is spread among 17 different locations, mostly in the north and central regions (JGPO & NAVFAC Pacific 2009)."*

Appendix F, Chapter 4, Section 4.3.2.4 (page 143)
Section Title: Temporary Workforce Housing
Pages: 144-146

> *"DoD would rely on construction contractors, who have significant expertise in the areas of workforce housing and logistics, to support temporary foreign worker housing requirements. While GovGuam and federal agencies would retain their authority to conduct inspections and enforce laws, DoD contract provisions would require aspects of quality control and oversight and contractors with proven track records."*
>
> *"Well thought-out plans related to workforce housing, including quality of life requirements, would be given award preference. Contract provisions would also include requirements provide workforce medical, dining, transportation and safety/security. There will be health screening of all workers to reduce health risk to the Guam population. Contractors will be required to provide health care either by supplementing local Guam staff and resources or building their own clinic."*

SPECIFIC COMMENT:

The DEIS recognizes that the current availability of workforce housing is a fraction of what will be required to accommodate the size of the workforce that has been estimated as necessary to support the military build-up. Current estimates of the availability of workforce housing have

B-016-011

Thank you for your comments. Certification of workforce housing (recommended in your letter) is implemented by the Guam Department of Labor. As such, this recommendation should be brought to their attention. The DoD contract requirements would stipulate that the Guam and federal requirements for worker housing be met.

Workforce housing would be provided by the contractors as described in Volume 2, Chapter 16, "Socioeconomics and General Services." DoD would not provide workforce housing, but design/construction contracts would require the contractor to accommodate the workforce in accordance with specified health and safety standards. Various proposals are being developed by potential contractors in anticipation of winning a contract. The timing and location are unknown for construction and/or renovation of housing to accommodate the construction workforce, but it is possible that some of the workforce housing projects would begin independently of DoD's Record of Decision.

There are no plans to allow contractors to locate workforce housing on DoD-controlled land. Therefore, it is anticipated that should workforce housing needs require the construction of new housing, such workforce housing would be located on either private or Government of Guam lands. In either instance Guam officials would control the underlying land use and permit decisions associated with the siting of such housing. DoD would work with Government of Guam land use and natural resource officials to identify any contractor plans or efforts to construct workforce housing and DOD shall ensure that contractors are informed of their responsibilities to comply with Government of Guam land use restrictions. In particular, the Guam Land Use Commission recently issued GLUC 2009-1 which specifically addresses the issue of zoning for workforce housing.

B-016-012

identified facilities capable of accommodating less than 4,000 workers. Estimates of the required workforce indicate that it could grow to as large as 20,000 workers at the peak of the construction period. The Navy, early on in its planning process reached out to the community in search of a solution to accommodating such a large potential population of temporary workers. At the Industry Forums, sponsored by JGPO on Guam between 2006 and 2008, suggestions were solicited from the construction industry and developers in attendance. At those events it was clearly communicated that the provision of workforce housing should remain "outside the fence" and be the responsibility of private contractors and not the federal government. The general sentiment expressed was that the restriction of housing to military property would limit options for contractors and increase costs as locations closer to military construction sites outside the fence on private property were readily available. NAVFAC adopted these recommendations and has identified the management of work force housing as being the responsibility of contractors bidding for construction work. The Department of Defense would continue to reserve the right to inspect properties, but the primary responsibility for regulation of workforce housing would remain with the Government of Guam.

B-016-013

While closely representing the interests of industry representatives at the time, there has been significant political reaction from specific interest groups since then that local policy makers have been sensitive to. The interpretation of the Navy's plans, by these groups, has been that in fact there is no "comprehensive plan." Local politicians now believe that DOD must do more to develop "comprehensive strategies" to assist contractors to adhere to standards for medical care and workforce housing to assure that the abuse of temporary workers is prevented and public health risks are avoided.

Underlying these concerns are the current challenges faced by the local government in providing adequate primary public health and mental health services. Many believe these apparent shortfalls should prompt the Navy to reconsider its reliance on GovGuam to monitor and enforce workforce housing standards. An inherent uncertainty and lack of confidence exists among local political elites that local governmental institutions are capable of consistent and reliable monitoring and enforcement of workforce housing regulations. Regulations they perceive as important to protect workers and the community.

B-016-014

These concerns are based largely on unsubstantiated assumptions and a lack of understanding of the systems and procedures that are currently being instituted by private contractors to meet the workforce housing expectations of DOD. Regardless, the public's knowledge of and confidence in such a process is lacking. To address the community's concerns it is suggested that a "certification" process for workforce housing be created for Guam by the Department of Defense. The certification process would provide the public assurances that the workforce housing standards that are required by the DOD, which reflect "Well thought-out plans related

B-016-012

Thank you for your comment. Workforce housing would be provided by the contractors as described in Volume 2, Chapter 16, "Socioeconomics and General Services." As indicated in your letter, DoD would not provide workforce housing, but design/construction contracts would require the contractor to accommodate the workforce in accordance with specified health and safety standards. Various proposals are being developed by potential contractors in anticipation of winning a contract. The timing and location are unknown for construction and/or renovation of housing to accommodate the construction workforce, but it is possible that some of the workforce housing projects would begin independently of DoD's Record of Decision.

There are no plans to allow contractors to locate workforce housing on DoD-controlled land. Therefore, it is anticipated that should workforce housing needs require the construction of new housing, such workforce housing would be located on either private or Government of Guam lands. In either instance Guam officials would control the underlying land use and permit decisions associated with the siting of such housing. DoD would work with Government of Guam land use and natural resource officials to identify any contractor plans or efforts to construct workforce housing and DOD shall ensure that contractors are informed of their responsibilities to comply with Government of Guam land use restrictions. In particular, the Guam Land Use Commission recently issued GLUC 2009-1 which specifically addresses the issue of zoning for workforce housing.

B-016-013

Thank you for your comment. Volume 2, Section 16 specifies that the DoD would rely on construction contractors, who have significant expertise in the areas of workforce housing and logistics, to support temporary foreign workers. There would be health screening of all workers to reduce health risk to the Guam population. Contractors would

B-016-015 to workforce housing, including quality of life requirements" are being met by the companies that obtain certification.

The certification would also assure contractors that the workforce housing program that they provide or that they may procure from a third party is certified as meeting DOD standards. The certification would also provide guidance to the Department of Labor of the Government of Guam, in administering, monitoring and enforcing workforce housing standards.

B-016-016 In addition, it is suggested that greater definition be provided to standards required for non working hour transportation and recreational activities. Programs should be provided for supervised recreational activities during non working hours to assuage concerns of the community about large numbers of workers entering the community during non working hours.

B-016-017 Also, it is suggested that local cultural sensitivity and awareness training be mandated for workers so that they are made aware of local customs and laws. This will help prevent illegal harvesting of local fauna on land an on Guam's reefs.

Given the sensitivity of the work force housing issue to local policy makers, we respectfully request the inclusion of the following specific comments in the final EIS:

B-016-018 1. To ensure consistency the definition and provision of suitable workforce housing standards that a certification process be devised by DOD to publicly identify those companies that provide workforce housing consistent with DOD's intentions. The certification would be for specific periods of time and require the inclusion of specific provisions and services that define DOD's intentions.

B-016-019 2. That the requirements of certification include detailed recreational plans inclusive of the provision of supervised outings to public recreational areas. The intention is to help reduce the amount of unsupervised interaction between temporary workers and the local community.

B-016-020 3. That the requirements include the provision of local cultural sensitivity training and orientations regarding local laws and regulations with particular emphasis on safety and environmental protection laws.

also be required to provide health care either by supplementing local Guam staff and resources or building their own clinic. In addition, the socioeconomic chapters in the DEIS and the Socioeconomic Impact Assessment Study (SIAS) which is Appendix F, Volume 9 of the DEIS identify the impacts of the proposed action and alternatives to the Guam agencies. It is recognized that Guam agencies would likely require additional staff and facilities to accommodate the increased construction worker population.

Workforce housing would be provided by the contractors as described in Volume 2, Chapter 16, "Socioeconomics and General Services." DoD would not provide workforce housing, but design/construction contracts would require the contractor to accommodate the workforce in accordance with specified health and safety standards. Various proposals are being developed by potential contractors in anticipation of winning a contract. The timing and location are unknown for construction and/or renovation of housing to accommodate the construction workforce, but it is possible that some of the workforce housing projects would begin independently of DoD's Record of Decision.
There are no plans to allow contractors to locate workforce housing on DoD-controlled land. Therefore, it is anticipated that should workforce housing needs require the construction of new housing, such workforce housing would be located on either private or Government of Guam lands. In either instance Guam officials would control the underlying land use and permit decisions associated with the siting of such housing. DoD would work with Government of Guam land use and natural resource officials to identify any contractor plans or efforts to construct workforce housing and DOD shall ensure that contractors are informed of their responsibilities to comply with Government of Guam land use restrictions. In particular, the Guam Land Use Commission recently issued GLUC 2009-1 which specifically addresses the issue of zoning for workforce housing.

DEIS COMMENT 3: MILITARY HOUSING IN THE HARMON ANNEX

DEIS REFERENCES:

DEIS Location: Volume 2, Chapter 2
Chapter Title: Marine Corps Relocation – Guam, Proposed Actions and Alternatives

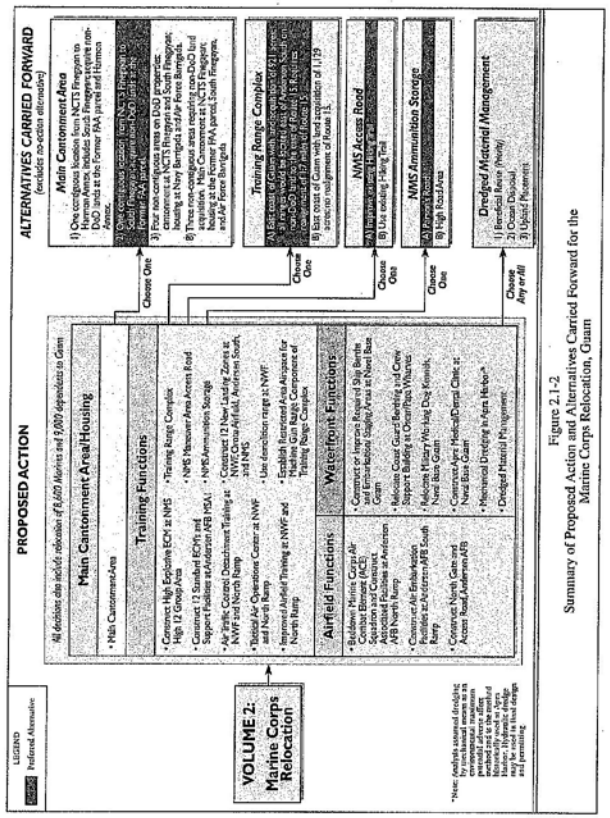


Figure 2.1-2
Summary of Proposed Action and Alternatives Carried Forward for the Marine Corps Relocation, Guam

B-016-014

Thank you for your comment. Please see response to B-016-012.

B-016-015

Thank you for your comment.

B-016-016

Thank you for comment. DoD would work with stakeholders on these important issues that are the responsibility of non-DoD organizations to implement.

B-016-017

Thank you for your comment. DoD recognizes the importance of managing efforts in implementing the proposed military relocation to reduce adverse effects on the people of Guam, its natural resources and infrastructure. The Final EIS process identifies ways to implement the proposed relocation while minimizing adverse impacts. DoD will continue to ensure that the short term impacts of construction are managed effectively and that the long term effects of the military relocation reflect DoD policies to be good neighbors and responsible citizens on Guam.

Through the process of public involvement that has accompanied this proposed action, the Chamorro people of Guam have voiced clearly and concisely their concern that the traditional Chamorro culture, including dance, language and traditions, will be forgotten. While population increases can highlight cultural differences, they also present unique opportunities for cultural learning and sharing. As noted in the Final EIS, the DoD plans for cultural sensitivity orientation and awareness programs will focus on mutual respect and tolerance and strive to educate all incoming and currently present military personnel on the rich and varied cultural history that has created the culture that is Guam

DEIS Comment – Younex Enterprises Corporation

B-016-021

As can be seen from this map (taken from page 2-6 of the DEIS, Volume 2, Chapter 2) the Harmon Annex factors as a housing location in Alternative 1 (of 4 possible alternatives) in the DEIS. Currently, the Harmon properties are owned by private owners and the Government of Guam, and remains:

> "*(...)* mostly undeveloped with the exception of some apparent temporary structures and a few abandoned buildings" *(page 2-15)*

It is still in the process of being analyzed for suitability; while it meets feasibility criteria, concerns regarding its suitability arise from limited land availability and encroachment potential.

today. Finally, the DoD plans to increase military civilian joint activities in order to foster strong and mutually beneficial military civilian relationships that include the sharing and understanding of culture.

B-016-018

Thank you for your comment. Please see response to B-016-012.

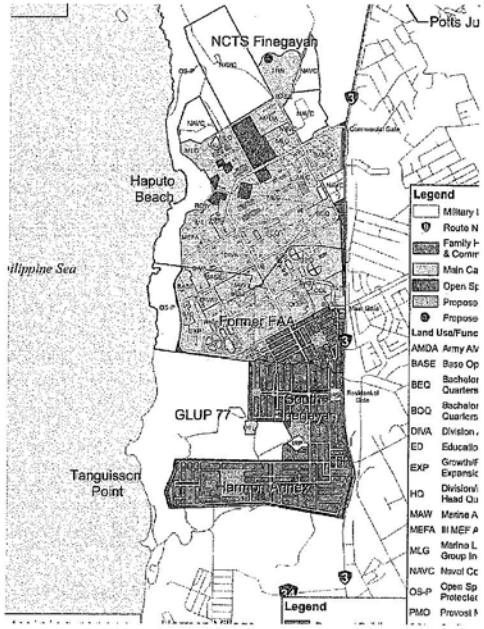
B-016-019

Thank you for your comment. DoD would work with stakeholders to support measures that would minimize impacts and that are the responsibility of others to implement. The suggested measures appear outside of DoD control and responsibility.

B-016-020

Thank you for your comment. DoD recognizes the importance of managing efforts in implementing the proposed military relocation to reduce adverse effects on the people of Guam, its natural resources and infrastructure. The Final EIS process identifies ways to implement the proposed relocation while minimizing adverse impacts. DoD will continue to ensure that the short term impacts of construction are managed effectively and that the long term effects of the military relocation reflect DoD policies to be good neighbors and responsible citizens on Guam.

Through the process of public involvement that has accompanied this proposed action, the Chamorro people of Guam have voiced clearly and concisely their concern that the traditional Chamorro culture, including dance, language and traditions, will be forgotten. While population increases can highlight cultural differences, they also present unique opportunities for cultural learning and sharing. As noted in the Final EIS, the DoD plans for cultural sensitivity orientation and awareness programs will focus on mutual respect and tolerance and strive to



SPECIFIC COMMENT:

B-016-022

Younex is willing to coordinate with the Navy in utilizing the area identified as the Harmon Annex that encroaches on its property to design, build and operate military housing for DOD.

Younex has a proven track record of providing quality resources to meet the housing needs of Guam. This is evidenced by the construction of the Emerald Oceanview Park Towers, the Ukudu Workforce Village, and other projects it has developed.

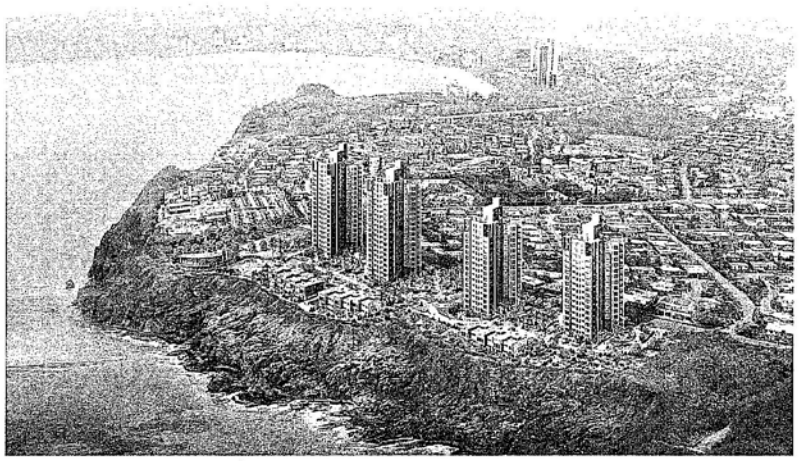
educate all incoming and currently present military personnel on the rich and varied cultural history that has created the culture that is Guam today. Finally, the DoD plans to increase military civilian joint activities in order to foster strong and mutually beneficial military civilian relationships that include the sharing and understanding of culture.

B-016-021

Thank you for the background information supporting your proposal for construction of a Finegayan Connection roadway, as described in the Dos Amantes zoning map provided.

B-016-022

Thank you for your comment. The preferred alternative is Alternative 2 that does not include the acquisition of the Harmon Annex.



DEIS COMMENT 4: WASTEWATER TREATMENT FACILITIES

DEIS REFERENCES:

B-016-023

DEIS Location: Volume 3, Chapter 19
Chapter Title: Marine Corps Relocation – Training on Tiyan, Public Health and Safety

The DEIS references the GWA 2007 Guam Water Resources Master Plan (WRMP), which includes descriptions of, and plans for, the local wastewater treatment plants (WWTP) inclusive of the Northern District WWTP, which services the Finegayan area. The specific upgrades designed for the NDWWTP, as outlined within the WRMP, are as follows:

- Upgrade sewer capacities
- Provide sewer hook-ups for the Hagatna WWTP and the Northern District WWTP un-sewered properties (e.g.: septic tanks). This has been identified as a high priority effort because septic systems have the potential to impact Guam's sole source aquifer used for drinking water (the Northern Guam Lens Aquifer)."

The following additional requirements were added after 2007:

- Northern District WWTP Ocean Outfall
- Northern District WWTP Renovation – GWA has completed portions of the treatment plant refurbishment.

Volume 3, Chapter 19 of the DEIS indicates, however, that while the WRMP includes capital improvements plans (CIP) for the Guam wastewater system, it does not consider the wastewater flow increases which could result from the military buildup. It also states that:

> *"NPDES Discharge Monitoring Reports (DMR) for the Hagnata* (sic) *WWTP and the Northern District WWTP from January to June, 2009 indicate that despite progress made by GWA to bring their facilities into compliance, the plants continue to violate their permit conditions. Discharges from the Hagatna WWTP and the NDWWTP do not consistently meet the minimum primary treatment standards for removal of organic matter and suspended solids. Both plants also experience routine violations of their effluent discharge pollutant limits, including exceedances of their maximum flow (6 MGd), and exceedances of their suspended solids and biological oxygen demand limits."*

The DEIS provides a review of the NDWWTP as follows (3-19 to 3-20):

B-016-023

Thank you for your comment. The volume reference in this comment should most likely be Volume 6, and not Volume 3 (training exercises on Tinian, CNMI). Comment noted.

B-016-024

"Currently, the NDWWTP is owned by GWA and operated by Veolia under contract with GWA. The treatment plant treats wastewater flows from civilian populations and DoD installations that are located in northern Guam. Andersen AFB, NCTS Finegayan, and South Finegayan contribute wastewater flows to the NDWWTP.

The wastewater collection system maintained by Andersen AFB consists of a network of gravity sewers, four major pump stations, and force mains located on the south side of the airfield. Two small sewage pump stations collect wastewater generated from facilities located on the north side of the airfield and convey the wastewater via force main to the gravity collection system on the south side of the airfield.

The system also collects wastewater generated by the industrial and residential areas on the base. The average daily wastewater flow generated by Andersen AFB in 2008 is approximately 0.36 MGd (1.36 mld). Wastewater generated by Andersen AFB is discharged off base into the GWA sewage collection system at a sewer manhole located near the Andersen AFB main gate. The wastewater is then conveyed to the NDWWTP for treatment.

The wastewater collection system at NCTS Finegayan is primarily gravity sewer system consisting of two main trunk lines. The wastewater is conveyed to the NDWWTP via a GWA wastewater collection system. At South Finegayan, the wastewater collection system is a gravity sewer system connected to the GWA wastewater collection system. The wastewater is conveyed to the NDWWTP. The current average wastewater flow generated by NCTS Finegayan is approximately 0.17 MGd (0.64 mld).

Facilities and infrastructure at Andersen South have been abandoned and are not being maintained. The original sewers in the area flowed to a sewer pumping station located along the northern edge of the site. Sewage from the pump station discharged to a GWA sewer collection system and was subsequently conveyed to the NDWWTP for treatment. Neither the sewer lines nor the sewer pumping station are in operating condition and Andersen South contributes no wastewater flows to the NDWWTP. The NDWWTP is a primary treatment plant designed for an average daily flow of 12.0 MGd (45.4 mld) and a peak capacity of 27 MGd (102 mld). Communication with GWA has indicated that the current average daily flow to the NDWWTP from civilian and military sources is approximately 5.7 MGd (22 mld) (GWA 2008a).

The NDWWTP discharges treated effluent through a newly constructed 34-in (86-cm) outfall into the Philippine Sea approximately 2,100 ft (640 m) offshore at a depth of approximately 150 ft (45 m) near Tanguisson Point. Section 301(h) of the CWA allows the USEPA administrator to waive secondary treatment requirements for publicly owned

B-016-024

Thank you for your comment. Your participation in such a solicitation would be encouraged.

B-016-025

treatment works that discharge into marine waters under a modified National Pollutant Discharge Elimination System (NPDES) permit. The NDWWTP had received a 301(h) modified permit (NPDES Permit No. GU0020141) that expired on June 30, 1991. This permit authorized the NDWWTP to discharge a maximum daily flow of 6 MGd (23 mld). Because GWA failed to provide sufficient information for USEPA to conclude that the GWA permit renewal application met the 301(h) criteria, USEPA issued a tentative decision on April 4, 1997, denying the reissuance of a 301(h) variance to GWA. GWA revised the permit renewal applications by installing a new extended outfall and planned CIP for restoring the treatment capacity of the plant. The new outfall was put into service in December 2008. Based on plant operation performance and data provided by GWA on the actual discharged wastewater qualities, USEPA denied GWA's application for a renewed variance from full secondary treatment in September 30, 2009, and concluded that the CWA 301(h) criteria have not been met at the NDWWTP."

SPECIFIC COMMENT:

In concurrence with the DEIS, GWA is not convinced that the current plans for the NDWWTP are sufficient to support the additional load expected from the military buildup. Younex proposes to provide a financial design, building, operating and transfer solution to accommodate the expansion of the existing treatment facility which will encroach on its property.

B-016-025

Thank you for your comment. Your participation in such a proposal is encouraged.

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February 16, 2010

JGPO
c/o NAVFAC Pacific
258 Makalapa Dr. Suite 100
Pearl Harbor, HI 96860-3134
Attention: GPMO

Dear JGPO:

As part of our function to foster discussion, encourage critical thinking, and support the opinions of our faculty, staff, students and administrators, please find enclosed comments and/or recommendations provided by those who have chosen to respond to the Draft Environmental Impact Statement (DEIS) through the university. As a university, there are always multiple opinions and views on all of the issues included in the DEIS and we have afforded members of the University community the opportunity to respond.

B-017-001

Guam will continue to face risks to survival and sustainability over the coming decades whether it is climate change with increasingly severe typhoons and droughts, dependence on global supply and pricing of petroleum and other commodity imports, exposure to military conflicts in East Asia and the Pacific Rim, and/or dramatic population increase from the build-up of forces in the island and region. As with any build-up or boomtown scenario, especially the one that the DEIS portrays, the bubble effect of the swelling and shrinking population that Guam will experience is in itself a severe threat to its sustainability if not effectively mitigated.

Guam critically needs visionary planning and educated implementation of strategic and policy solutions for both short and long-term risks. As a catalyst of leading the way to relevant change, the University of Guam's (UOG's) response to these needs is the establishment of the Center for Island Sustainability (CIS). The CIS will address these needs by attracting and focusing academic research and training as well as rising to provide an "honest broker" to the current mix of decision-makers, commercial interests and community input. The CIS will provide and network leadership in identifying problems, developing coordinated research agendas, and proposing comprehensive strategies for sustainability. It will build the Guam's and the region's local capacity to manage and lead the changes that will come.

The CIS will assess strategies and deploy expert leadership by drawing on current academic capacity and programs which are underway:

B-017-001

Thank you for your comment. Based on the concept, the CIS could be an extremely helpful resource for the community of Guam.

B-017-002

1. The UOG Green Initiative has attracted nearly $1 million from the Department of the Interior and the Office of Naval Research to raise and focus environmental consciousness and to study and recommend alternative energy futures for the island;
2. The UOG Natural Energy Center stipulated by Guam Code sponsors emerging programs in weatherization and energy conservation on Guam;
3. The UOG Environmental Sciences Master's program is training managers and community leaders in fundamental science as well as environmental management;
4. Pre-degree programs in pharmacy, engineering, and health sciences are coalescing with partners in the Pacific, U.S. mainland and Asia; Engineering will grow into a full-fledged degree program; Nursing and Health Sciences will grow to join existing graduate studies in Public and Business Administration, Education, Environmental Science, Biology, Social Work, and Micronesian Studies. These programs will address the immediate and near-term needs for educated managers and leaders required by the military buildup and its aftermath;
5. The School of Business and Public Administration is engaging with the community and the needs of the imminent buildup by partnering with Small Business Administration, the Pacific Islands Small Business Development Center Network, and the Pacific Center for Economic Initiatives;
6. Research, education and training programs are emerging in social and environmental as well as biological and health sciences through the UOG and University of Hawai'i partnership to reduce cancer health disparities in the region by way of an $8.2 million grant from the National Institutes of Health – National Cancer Institute;
7. UOG Green is inspiring faculty research and curriculum development, supporting student internships, developing a pacific island green workforce, and promulgating environmental protocols for environmental sustainability;
8. U.S. Land Grant and Sea Grant programs for agricultural, marine resources, and rural development on Guam and in the region add planning as well as technical services capacity to UOG.

These activities at UOG will coalesce into the CIS for coordinated expertise, grantsmanship, academic development, leadership and leadership training, as well as deployment of strategies through technical studies and services. The CIS will draw on the experience and capabilities of the Water and Environmental Research Institute, the UOG Marine Laboratory, the Western Pacific Coral Reef Institute, the Western Pacific Tropical Research Center, and School of Business and Public Administration to coordinate synergistic efforts in the region. Micronesian partners including the College of Micronesia-Federated States of Micronesia (COM-FSM), Palau Community College (PCC), Northern Marianas College (NMC), the College of Marshall Islands (CMI), and administrative linkages through the Council of Governors, U.S. Department of the Interior Office of Insular Affairs, and the Micronesian Challenge will provide the authority to promote and engage in applied research programs for all islands and island communities in Micronesia.

B-017-002

Thank you for providing us with information on the University's CIS program.

B-017-002

The CIS will serve as a proactive clearinghouse to address problems and match them with resources, personnel, and creative strategies for resolution. The CIS will foster dialogue for difficult and contentious issues such as human-fostered climate change and effective islander adaptations including migration and other strategies. Mitigation efforts will be in direct response to the anticipated growth of the population and the anticipated $15 billion expenditures in military construction and infrastructure enhancements that will affect every dimension of the island's economic, utility, communications, transportation and environmental protection systems.

The CIS is the key to integrating and providing leadership during a critical period in the history of the islands of Guam and Micronesia. The military build-up brings opportunities as well as dramatic changes, not least of which is the focused economic support for future infrastructure on Guam. It is imperative that this development be guided toward sustainable paths, not only for the term of the build-up but to effectively manage the "build-down" on the other side of the development bubble. The long term sustainability of Guam and the Micronesian islands depends on energy independence and indigenous capacity-building, which includes technology, natural resource, and workforce development. The CIS is the institution that can guide this process through the next critical ten years, and many decades to come. From its emergence as a planning resource for the island of Guam, the CIS will ultimately develop and implement a model that is replicable throughout the region.

Now is the opportune time for JGPO, Department of Defense, and Federal agencies to segue with UOG in partnership for those critical areas. UOG brings to the planning table an inherent and historical understanding of the operational and cultural framework of research many federal teams lack mostly due to unfamiliarity with the island and regional ecology. Officially establishing these relationships completes the basic foundation for data collection needs by federal agencies or federally hired experts to complete their plans. And it will be these same local University experts who will continue to monitor, collect data, and respond to the impacts of these plans well after federally contracted personnel are gone.

Thank you for the opportunity to allow the people of Guam to respond to the DEIS. As the University continues to play an integral part in leading change to help shape a sustainable future for Guam and the region, we look forward to engaging in effective partnerships that will be based on sound research, community sensitivity and building local capacity to lead change in the coming decades.

Sincerely,

Robert A. Underwood
President

JGPO c/o NAVFAC Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134
Attention: GPMO

From:

Dr. Peter Houk
Pacific Marine Resources Institute
P.O. Box 10003, PMB # 1156
Saipan, MP. 96950
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670-233-7333

47 pages

Comments on Draft Environmental Impact Statement
GUAM AND CNMI MILITARY RELOCATION
Relocating Marines from Okinawa, Visiting Aircraft Carrier Berthing, and Army Air and Missile Defense Task Force

Overview:
Enclosed please find comments regarding the Draft Environmental Impact Statement (DEIS) for the re-location of the Marines from Okinawa to Guam, and the construction and dredging associated with increased aircraft carrier berthing. Specific comments referring to sections within the DEIS are enclosed; however this overview first provides a list of critical, overarching concerns and makes specific recommendations accordingly.

B-018-001

We urge you to consider that addressing all of the major flaws associated with the DEIS will significantly raise the costs associated with much, if not all, of the buildup activities. These costs may actually be prohibitive to carrying out certain proposed action alternatives, and alternatives previously dismissed (or not investigated at all) should be seriously considered. Guam is a relatively small island with high biological diversity, finite natural resources, and limited infrastructure. These considerations underpin many of the key points presented below. The following bullet points briefly introduce our concerns, which are subsequently expanded upon in this section:

B-018-002
B-018-003

- Need separate EIS processes for marine relocation, CVN Berthing, and Army Ballistic Missile Defense Task Force, as they are significantly different projects, they do not appear to be interdependent, and do not appear to be restricted to the same timeframe. Combining all of these proposed actions into a single, massive DEIS document greatly limits the ability of government agencies and the public to review the document.

B-018-004

- Need a complete, baseline ecological and sediment contaminant analyses for Guam (i.e., the entire island) upon which change can be detected as a result of build-up and construction activities. Guam's coastal zone is heavily relied upon for subsistence, tourism, and recreation, forming the backbone of life on Guam. Instead of waiting for the individual permitting process before these data are presented, a project of this magnitude necessitates that such an assessment and the associated recommendations be presented in the FEIS.

B-018-005

- Climate change is not mentioned once in the entire document. Shifting patterns of rainfall, air and sea temperature, storm events, and of many other events and processes will impact a multitude of resources upon which society depends. We strongly recommend that the FEIS include a section specifically addressing climate change, and that climate change be incorporated into the impact analyses of project alternatives for each of the propose actions.

B-018-001

Thank you for your comment. DoD recognizes the importance of managing efforts in implementing the proposed military relocation to reduce adverse effects on the people of Guam, its natural resources and infrastructure. The Final EIS process identifies ways to implement the proposed relocation while minimizing adverse impacts. DoD will continue to ensure that the short term impacts of construction are managed effectively and that the long term effects of the military relocation reflect DoD policies to be good neighbors and responsible citizens on Guam.

Through the process of public involvement that has accompanied this proposed action, the Chamorro people of Guam have voiced clearly and concisely their concern that the traditional Chamorro culture, including dance, language and traditions, will be forgotten. While population increases can highlight cultural differences, they also present unique opportunities for cultural learning and sharing. As noted in the Final EIS, the DoD plans for cultural sensitivity orientation and awareness programs will focus on mutual respect and tolerance and strive to educate all incoming and currently present military personnel on the rich and varied cultural history that has created the culture that is Guam today. Finally, the DoD plans to increase military civilian joint activities in order to foster strong and mutually beneficial military civilian relationships that include the sharing and understanding of culture.

B-018-002

Thank you for your comment. Because of the proximity in timeframe and geographic location to the proposed Marine relocation to Guam, the proposed aircraft carrier berthing was also included in this EIS. There would be a legal risk of segmentation of project impacts under NEPA if this action was evaluated separately.

- There are major concerns with how Volume 4, and most of the associated supporting studies summarized within, assess the potential marine resource impacts of the CVN Berthing project. An overarching concern is the apparently systematic bias towards a major underestimation of the impacts to marine resources. This bias is evident in the misinterpretation and misuse of scientific literature, the use of questionable data collected using inadequate survey methods, the inappropriate use of coral cover and the lack of coral size frequency data for use in the HEA, and the lack of data for significant areas of coral reef habitat. These concerns are as follows:

B-018-006

  - Apra Harbor is a unique coral reef environmental within US jurisdictional waters and the Mariana Archipelago, and possesses unique assemblages and unique species of flora and fauna. The potential loss of biodiversity is not considered.

B-018-007

  - Artificial substrates have been found to host significantly larger populations of non-native, introduced fauna, than natural substrate, but the DEIS authors extol the benefits of increased artificial substrate associated with the deep-draft wharf and continue to support the use of artificial reefs as a preferred mitigation method. Artificial substrate should not be considered beneficial, and artificial reefs must not be considered as compensatory mitigation for these, and other reasons cited below.

B-018-008

  - A comprehensive invasive species monitoring and response plan is currently lacking for Apra Harbor; such a plan must be completed, reviewed, and included in the FEIS.

B-018-009

  - The existing habitat equivalency analyses (HEA) is based solely upon coral cover data and a coarse-scale "rugosity" measurement; such an approach does not provide a meaningful measure of the various ecological functions and services provided by the coral reef communities within the project area. HEA calculations must take into account ecosystem functions and services provided by non-coral invertebrates, un-occupied reef substrate, soft-bottom sediments, and coral reefs below 60 ft. Additionally, the HEA must take into account the services lost by blocking ~50% of the entrance to Guam's nearby Sasa Bay Marine Protected Area that holds unique biodiversity and is a no-take fish preserve.

B-018-010

  - Dredge plume models were only run for 24 hours under assumptions of 90-100% sediment removal efficiency. Both parameters are unrealistic and provide inaccurate estimates of sediment production, removal, and transfer to adjacent reefs. The FEIS must rigorously account for cumulative sediment dispersal associated with longer term

2

B-018-003

Thank you for your comment. The proposed actions are complex, inter-related, multi-service proposals and are not discrete individual actions of the different military services. The National Environmental Policy Act specifically prohibits segmentation of a large proposal into smaller actions for environmental analysis. As this EIS shows, the proposed and related actions are having effects on the same resource areas and must be considered together to determine the full potential for environmental effects. Further, a comprehensive analysis helps define the best mitigation and management practices to lessen adverse effects.

B-018-004

Thank you for your comment. Sediment samples within the proposed dredging areas were analyzed according to USEPA and USACE testing criteria. As discussed in the EIS (Chapters 2 and 4 of Volumes 2 and 4), preliminary sampling results indicate that all contaminant parameters that were tested with the exception of nickel were below the Effects Range Low (ER-L) level. Nickel is a substance that is naturally occurring in the environment. The study results suggest that the materials to be dredged would not require special handling and would be suitable for upland placement for beneficial reuse or ocean disposal (although the ocean disposal permitting process requires separate analysis and toxicity testing). Additional testing will occur during the permitting process and a dredged material disposal management plan will be developed.

The cummulative effects of the military build up and construction activites upon Guam's coastal zone is further discussed in Volume 7 of this EIS.

B-018-005

Thank you for your comment. The Navy acknowledges there is potential for marine resources and aquifers to be affected by sea level rise,

B-018-010

dredging, and with more realistic removal efficiencies that will be present as a result of curtain breaks/failure, sediment escape below and between curtains, uncontrollable weather events, anomalously large tidal cycles, and other weather patterns. Existing current studies only encompassed two field days, which is not nearly sufficient to characterize the impacts to the project area given the magnitude of proposed activities.

B-018-011

- Finally, the cumulative impact analysis presented in Volume 7 is greatly inadequate. Rather than describing specific impacts of each project and how the additive impacts of multiple projects may affect a resource within a given area, a table summarizing all the on-going and proposed activities is provided.

B-018-012

The cumulative impacts are never really analyzed at any level of detail, yet these impacts are of great significance for Guam's biological diversity, ecosystem function, and social well-being. A thorough description of cumulative impacts and a commitment to mitigating these impacts must be presented in the FEIS.

Each proposed action requires a separate EIS process

B-018-013

First and foremost, we are concerned that the extraordinarily large cumulative scope of the DEIS and the rapid timeline of the planned projects is unrealistic and inappropriate, as it reduces the likelihood that the best possible information is integrated into the NEPA

B-018-014

process and places an unreasonable burden on the already capacity-limited government agencies, other organizations/institutions, and the general public to conduct an adequate review within the given timeframe. The relocation of troops to Guam, and associated

B-018-015

infrastructure demands, appear to be entirely separate from, and not dependent upon, the Army Air and Missile Defense Task Force, and the major construction and dredging operations required for the Carrier Vessel Nuclear (CVN). Consistent with our past position, we continue to strongly recommend that each of these projects be carried through the NEPA process separately, with separate EISs staggered in an order according to project priority.

Need for baseline water and ecological data

B-018-016

Second, the existing data to characterize Guam's nearshore coastal waters and ecological assemblages provide a poor baseline upon which change can be detected. Because of the major increases in human population, land-based construction, training activities, and recreational uses, a quantitative study must be conducted to address the long-term impacts of the buildup and associated activities. We strongly recommend that the Department of Defense commit to supporting a comprehensive, in-situ characterizations of ecological assemblages and sediment content characteristics around Guam, with adequate statistical power to detect change at the individual site-level.

Existing baseline data from NOAA habitat maps and NOAA Coral Reef Ecosystem Division datasets were not conducted with local-scale, site-specific questions in mind, and instead were designed to address pressing national and regional concerns. Further,

inundations from more extreme storm events and other consequences of climate change. The impacts may be both adverse and beneficial. The current level of scientific knowledge can predict trends in sea level rise based on historic data but there are no established methods for assessing and quantifying potential impacts on marine resources or aquifers.

The University of Guam provides analysis of the aquifer responses to sea level change and recharge in a November 2007 study. Climate change may impact the success of production wells in the future (e.g., the placement of the well screen may not be optimal if the sea level rises or falls). Given the uncertainty of climate models including lack of information that is directly applicable to northern Guam and lack of specificity regarding the time and degree of impacts to conditions that could impact the aquifer, the DoD wells would be installed based on current conditions. Monitoring would be conducted during well operation. If production or water quality declines over time, DoD would take actions to mitigate the impacted wells.

A quantitative assessment of the additive or cumulative impact of climate change on the proposed action and natural resources, including aquifers,is not practical.

B-018-006

Thank you for your comment. Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem

B-018-017

Guam's local agencies are tasked with the continuation of their agency-specific data collection programs. Guam Division of Wildlife and Aquatic Resources currently monitors trends in ecological assemblages, namely fish, in the existing MPA's to examine their efficacy. They also conduct surveys of catch rates and composition to assist fisheries management. Currently, their program does not have the resources to expand monitoring efforts to include site-specific investigations pertaining to build-up activities that will rapidly change Guam's environment. Guam's Environmental Protection Agency conducts weekly water quality assessments at numerous beaches, as well as annual assessments of several streams. The coastal work conducted by Guam EPA is limited by the financial and personnel resources, and granting agency requirements. The Government of Guam has recently initiated a multi-agency, long-term coral reef monitoring program with funding through a NOAA Coral Reef Initiative Monitoring Grant, but the scale of the effort remains limited due to major funding and capacity limitations and is not sufficient for the needs discussed here.

B-018-018

Because of the magnitude and speed of the proposed build-up, a holistic ecological monitoring design appropriate to detect site-specific change is imperative. The notable difference for the purpose of the DEIS is the need to move from 'assessment' type work to 'monitoring'. It will form the basis of individual project permitting requirements, and identify when/where/if mitigation is needed in the future. Typically, these discussions wait until the individual permitting procedure; however, given the unique magnitude and speed of the build-up, relevant baseline ecological data with sufficient replication and scale to answer questions regarding change over time must be included in the FEIS. At the very least, the FEIS should mention a specific process to ensure that such a program will be undertaken, and identify funding, logistics, and key constituents. In addition, it is imperative for this ecological baseline of Guam's coral-and-reef-associated assemblages be conducted in cooperation with local expertise.

B-018-019

Examples of methods used for question-driven, site-specific monitoring can be found within English et al. (1994), Brown et al. (2004), and Houk and van Woesik (2006). Calculations from the existing marine survey data presented in Volume 4 indicate that the data provided are very low in statistical power. The statistical power to detect a 20% change in coral cover (one dominant benthos within Apra Harbor) over time on the coral-rich 'direct-slope' reefs is only 6% (using data from Volume 9, Appendix J, Table 3, following calculations of Houk and van Woesik 2006). Similarly, only 20% statistical power exists for detecting a change of 50% in coral cover. These are unacceptable foundations upon which change can be assessed, and provide a near meaningless, *in-situ* ecological baseline. The argument presented in the DEIS that statistical power cannot be calculated (Appendix J, CVN marine survey, methods section) due to high ecological zonation is not valid; the study must account for this zonation and provide a baseline to detect change over time.

Ignoring the impacts of climate change

B-018-020

Third, climate change is not mentioned once in the entire document. Clearly, the change in global climate resulting primarily from anthropogenic forcing provides for much uncertainty for future climate regime predictions at the global, regional, and local scales;

restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-007

Thank you for your comment. A detailed compensatory mitigation plan would be submitted as part of the Clean Water Act 404 permit application for construction affecting the navigable waters of the United States (including the CVN transient wharf). Due to the ongoing review of DoD's habitat assessment methodology for coral reef ecosystems and associated uncertainties regarding the scope of mitigation required, a detailed mitigation plan has not been developed nor will one be available for incorporation into the FEIS. However, a number of mitigation options, including watershed restoration and the use of artificial reefs, are discussed in programmatic nature in Volume 4, Section 11.2 of the FEIS. DoD recognizes that, as part of the CWA Sec. 404 permitting process, additional NEPA documentation may be required to address specific permitting requirements and implementation of required compensatory mitigations.

B-018-008

Thank you for your comment. Throughout Volume 2 and 4 there is great

B-018-020 shifting patterns of rainfall, air and sea temperature, storm events, and of many other events and processes will impact a multitude of resources upon which society depends (Tebaldi et al. 2005). We strongly recommend that the FEIS include a section specifically addressing climate change, that climate change be incorporated into the cumulative impacts analysis, and that climate change also be incorporated into the impact analyses of project alternatives for each of the propose projects. We also strongly suggest that the precautionary principle be adopted when considering the impacts of climate change (and for other impacts, for that matter). It is well-known that the prevention of impacts is much less costly than the restoration of lost resources – and that, in some cases, the lost resources cannot be restored within time frame relevant to human societies. Examples of climate change-influenced factors affecting the outcome of impact analyses, include, but are not limited to 1) decreased recovery times for coral reef resources that will be impacted by DEIS activities, 2) the potential for ecosystem collapse as a result of synergistic influences associated with acute dredging and construction disturbances (Baker et al. 2008), 3) fluctuations in Guam's freshwater resources as influenced by changing rainfall patterns and the increased dependence on the Northern Aquifer from the increased human population, and 4) increased dependence upon Guam's power grid, sewer lines, roads, and other infrastructure given increasing future uncertainties.

B-018-021

B-018-022

B-018-023

B-018-024

B-018-025

B-018-026 **Major flaws in marine resource impact assessment presented in Volume 4**
Fourth, and of utmost importance in this particular review, there are major flaws with Volume 4 of the DEIS, many of the associated studies and appendices, and the assumptions that informed the Habitat Equivalency Analyses (HEA). While numerous specific examples are enclosed to support the above statement, several main points are discussed here, along with specific recommendations.

B-018-027 *Uniqueness of Apra Harbor marine environment*
Apra Harbor is a unique coral reef environmental within U.S. jurisdictional waters and the Mariana Archipelago, and possesses unique assemblages and unique species of flora and fauna. In a report to the Navy regarding the diversity of select marine invertebrate taxa within Apra Harbor, Paulay et al. (1997) state:

- *"A total of 60 species of sponges, 72 species of echinoderms and 47 species of ascidians were documented from the harbor. These represent 63% of the sponges, 37% of the echinoderms and 38% of the ascidians currently known on Guam. Thus the harbor has a thriving and rich marine biota, and is home to a large portion of Guam's marine fauna. In addition to these selected taxa, 511 species of other invertebrates were also recorded from the harbor."*
- *"About 80% of the sponges and 53% of the ascidians of Apra Harbor are not known outside the harbor on Guam, while only 18% of the echinoderms are so restricted."*

discussion regarding non-native (invasive) species – there are specific sections associated with this. A Micronesian Biosecurity Plan will be developed by DoD to help manage non-native species introduction to Guam from the proposed action.

B-018-009
Thank you for your comment. Please see response to B-018-006.

B-018-010
Thank you for your comment. The majority of the sediment (e.g., >50%) is comprised of larger grained material and, therefore is generally referred to as being "coarse" in the EIS. Sediment grain size data is presented as a percentage and is discussed as such in the EIS. The EIS will be updated to include a clear presentation of collected grain size data. The three-dimensional circulation and transport model of the project area was developed using the Environmental Fluid Dynamics Code (EFDC). The model included wind and tide forcing, and fresh water inflow into the Inner Apra Harbor; the dredge plume was simulated by loading the water column with specified quantities of suspended sediment composed of 5 different grain sizes. The sediment grain distribution was determined from bottom samples taken in the project area.

A number of protective measures would be taken to minimize the distribution of the turbidity plume that would unavoidably be generated by the proposed dredging operations. These measures are noted in Chapters 2, 4, and 11 of Volume 4. Silt curtains are one example of these types of protective measures. Standard turbidity curtains are approximately 20-30 feet (6-9 meters) in length and have a weighted bottom to maintain the effectiveness of the curtain against the movement of currents within the water body. Since the dredge equipment is not stationary for the entire period of dredging, it is impractical to have a silt curtain extending to and being anchored to the bottom of the harbor. The

B-018-027

- *"Three areas stood out in Apra Harbor for their especially diverse and unique biota: the central shoals and mounds, especially Sponge Mound, the Sasa Bay mangroves, and the mooring and navigational buoys."*

Given the extremely high level of unique fauna not found elsewhere in the entire Mariana Archipelago, it becomes clear that the no action alternative should be very seriously considered, or that an alternative berthing (other than Guam) be investigated. No clear evidence is provided to support the oft-mentioned conclusion that the severe impacts to the large area of reef habitat within the project area will not have any significant impact on Essential Fish Habit, sea turtles, or other marine resources.

B-018-028

Currently, the DEIS gives no consideration of biodiversity when calculation ecological functional losses, and rather focuses only upon coral cover and a crude measure of landscape rugosity. The information provided by Paulay et al. (1997) is not mentioned anywhere in the DEIS, despite the fact that it presents a great amount of biological knowledge specific to the harbor. The FEIS must account for the high degree of unique fauna that will be directly and indirectly removed, and mitigation measures must be presented in detail.

B-018-029

The "benefits of artificial substrate" and the impacts of non-native species

The findings of Paulay et al. (1997) indicate that a higher (statistically significant) prevalence of probable non-native species was found upon artificial substrates compared with natural reef substrate. Currently the DEIS provides no assessment of the potential damage of increased invasive species establishment due to increase man-made structure within the harbor, or increased vessel traffic as a result of the entire military build-up. Instead, the DEIS authors extol the benefits of increased artificial substrate associated with the deep-draft wharf and continue to support the use of artificial reefs as a preferred mitigation method. Artificial substrate should not be considered beneficial, and artificial reefs must not be considered as compensatory mitigation for these, and other reasons

B-018-030

cited below. The FEIS must include a full assessment of the impacts of the likely increase in non-native species introductions into Apra Harbor, a complete monitoring program description to detect changes in non-native species over time, and a complete response plan upon detection of potentially invasive non-native species. Further, the introduction of additional artificial substrata within the harbor should be minimized, as it represents a key vector for the establishment of non-native species. The propensity of non-native species for artificial substrate is also another reason why artificial reefs should be removed from consideration as a potential compensatory mitigation alternative.

Significantly flawed Habitat Equivalency Analysis

B-018-031

There are several major flaws with the Habitat Equivalency Analyses (HEA) presented in the DEIS. As a result of these flaws, the scale of compensatory mitigation required to offset the impacts to the marine resources is vastly underestimated. One of the major flaws with the HEA presented in the DEIS is that assumption that only coral-reef structure with living coral should be considered. The living assemblages that reside upon these coral reefs (i.e., the geological structures) are extremely dynamic in nature. When the surveys were conducted, the impacts of past disturbance regimes were unknown and unreported in the DEIS. Consider if there was a large typhoon during the year(s) prior to

length of time the silt curtains will be in place will be determined through agency coordination and permitting; however, in general terms the curtains would potentially be in place during and after dredging operations until monitoring indicates turbidity levels have returned to pre-dredging concentrations. Specific monitoring requirements will be identified and implemented following agency coordination and permitting.

B-018-011

Thank you for your comment. Due to the complexity of the project, there are two parts of the cumulative impact analysis: the summary of impacts for all components of the proposed action (Volume 7 Chapter 3) and an assessment of the additive impacts of the proposed action in combination with other past, present and reasonably foreseeable projects (Volume 7, Chapter 4). A systematic methodology was applied in both analyses.

Volume 7, Chapter 3 summarizes the combined potential impacts of the preferred alternatives for the entire proposed action on Guam and Tinian. This is the aggregate analysis that you request in your comment. The impacts of Volumes 2 through 6 are discussed by resource. At the end of Volume 7, Chapter 3.3 there is a table summarizing the combined impacts of all components of the preferred alternatives. Significant impacts are identified. Trends in the resource health due to anthropogenic and non-anthropogenic factors that impact resource health on Guam and Tinian since World War II are described. This section includes limited quantitative data for proposed action impacts. For example, special-status species habitat loss due to the proposed action and current amount of habitat available island wide is presented in Volume 7, Section 3.3. There is no quantitative island-wide data readily available for most of the resource areas assessed and the impact analysis is often qualitative.

6 Volume 7, Chapter 4, Cumulative Impacts, assesses the potential

B-018-031

the surveys, and less living coral was found just because of the unfortunate natural disturbance.

B-018-032

The logical conclusion of this assumption would be that less coral equates to less value. This is not appropriate, and not supported by the scientific literature. Rather, these well-known ecological dynamics form the basis for metapopulation ecology (Hanski and Hanski 1999), used to successfully model how populations change over time given differential environmental scenarios. A general assumption of metapopulation ecology is that unoccupied patches of habitat that may be colonized at a later time are equally important as occupied patches. Indeed the metapopulation structure (of both occupied and unoccupied patches) is an essential component that can determine ecological recovery after disturbances (Lipcius et al. 2008); whereby an absence of unoccupied patches can hinder recovery following disturbance (i.e., hinder the persistence of populations). Thus, keeping unoccupied patches in a suitable state for colonization should be a top priority for management, and they deserve similar value as occupied patches with contemporary coral growth. Clearly there is a strong scientific basis for providing value to unoccupied patches of reef, however the DEIS does not consider any of this. Based upon the well-supported science surrounding population dynamics, it is recommended that all of the coral reef structures subject to impact must be considered in the HEA calculations for the FEIS. They are all of high ecological value, as certainly many of today's assemblages reside upon unoccupied patches of the past, and removal of unoccupied patches will alter the future of marine species populations and overall reef ecosystems within Apra Harbor.

B-018-033

In Volume 4, Appendix E (the Habitat Equivalency Analyses), and supporting studies, no value was given to reefs below 60 ft., to macroinvertebrates that will not be able to escape the project footprint, to soft-bottom habitat, or to fish assemblages. No clear logic is provided in the DEIS for their omission. For example, it is not clear why the study was limited to reef area shallower than 60 ft when the impacts of dredging will certainly

B-018-034

extend to the harbor bottom. A preliminary spatial analysis indicates that approximately 25 acres of coral reef habitat that occurs at depths below 60 feet on the slopes of reefs planned for dredging; an additional 70 acres of deeper (>60 ft) reef occur on the slopes of reefs within the arbitrary 200 m indirect impacts buffer. When considering the totality of coral reef habitat (hard-bottom and softbottom, coral and non-coral areas) within the direct and indirect impact areas, an estimated 440 acres will be impacted to some degree or another. Deeper water coral assemblages are dismissed because of their sparse coverage in comparison to their shallow-water counterparts, and their natural adaptation to lower light and high sedimentation. However, no quantitative assessment is made of these coral assemblages and no support is given that the added sediment won't impact deeper assemblages, despite their inherent physiological adaptations. Deeper reefs have been shown to be very important refuges for coral populations around the world during times of stress (Riegl and Pillar 2003, Riegl et al. 2009); showing less impact from disturbance and assistance of shallow-water coral recovery. Further, their differing tolerances to natural conditions that exist at depth are irrelevant, as the percentage increase above typical ambient conditions (for deep and shallow reefs alike) is what will alter the physiological response of the adapted coral (Telesnicki and Goldberg 1995).

7

additive impact of the EIS proposed actions when compared to potential impacts of past, present and reasonably foreseeable projects. The period of consideration for the cumulative impact analysis is 2004 to 2019. The project list is based on best available information from DoD and the Guam Land Use Commission database. There is no National Environmental Policy Act (or similar) document disclosing project impacts for most of the cumulative projects listed; therefore, there is insufficient data on most cumulative projects listed to conduct a quantitative impact analysis. There is a table at the end of Chapter 4 that summarizes the potential cumulative impacts. Potential significant cumulative impacts are identified for some resources. Mitigation measures are proposed earlier in the EIS.

B-018-012

Thank you for your comment. The cumulative impacts analysis has been expanded in response to public and agency comments.

B-018-013

Thank you for your comment. The proposed actions are complex and have many components. In order to characterize the affected environment and potential impacts, sufficient detail needed to be included in the Draft EIS. The Draft EIS was broken down by Volumes for each major action, and the Executive Summary provides an overview of the proposed actions to facilitate readability. The Draft EIS was developed with the intent to balance readability with sufficient technical information.

B-018-014

Thank you for your comment. The DoD carefully considered all requests to extend the length of the comment period beyond the 45-day minimum required by NEPA. In evaluating multiple options, DoD leadership determined that a 90-day comment period best balanced the need for

B-018-034

Since data are not available for these areas, and because much of the data for shallower reef communities are flawed and unusable, we strongly recommend that a much more robust impact assessment be conducted for reef habitat (soft and hardbottom, coral and non-coral areas) at all depths utilizing a range of ecological parameters collected using the appropriate methods. The importance of these areas are clearly demonstrated by the scientific literature, and it is critical that data from these deeper reef communities be incorporated into the HEA model in order to ensure that a more appropriate level of compensatory mitigation is provided.

B-018-035

Similarly, it is not clear why macroinvertebrate and fish assemblages data were not included in the HEA, as they provide, among other functions, necessary ecological functions that are needed for coral populations to persist. There is well-accepted, published evidence to demonstrate the importance of grazing on coral reefs. Grazing rates are coupled with not only macroalgae dynamics (Mumby et al. 2006) but also with coral recruitment and growth following natural disturbance cycles (Mumby and Harborne, 2010). Removal of reefs that grazing sea urchins and herbivorous fish depend upon will certainly have consequences for the long-term population dynamics of these taxa within Apra Harbor. Fish and urchin density estimates must form the basis for valuing the key ecosystem services they provide, and for assessing the services that will be lost. Value must be assigned to these key coral-associated fauna in the HEA based upon the published literature describing their significant contribution to coral reef ecosystems, and the detrimental, long-term consequences of their reduction and/or absence.

Soft bottom sediments provide foraging grounds and support populations of fish that are comparable in biomass to topographically-complex, rock bottom and coral habitats (Gomelyuk, 2009), but differing in composition. It is not clear why the impacts to the infauna (i.e., the food for the fish that exist in these areas) are not considered in the DEIS. Clearly, fish represent a steady source of protein for island societies, and the removal of infaunal communities that support fish populations deserves consideration and value. Further, some of the dredging will replace soft-bottom with flat hard-bottom structure, and the soft bottom composition will likely change as a result of sediment re-suspension and eventual accumulation associated with dredging operations. An assessment of the infauna assemblages in Apra, including identification of the dominant species, their population dynamics, and rates of recovery from disturbances must be provided in the FEIS. Value must also be assigned to these areas for use in the HEA.

B-018-036

With respect to fish assemblages, there is no mention of negative impacts to the efficacy of Guam's Marine Protected Area (MPA), Sasa Bay, and its proximity to the dredging footprint. Guam's MPA's have been established for over 10 years, and have been generally shown to provide for increased fish biomass compared to reference sites. Common goals of MPA's are to export larvae to surrounding reefs, and eventually provide for adult emigration to adjacent reefs. Obviously, the project footprint nearly surrounds the MPA, and during dredging activities will adversely impact the efficacy of the MPA in terms of adult migration and larvae transport. Kim and Grigalunas (2009) estimates costs to the fishing industry associated with dredging at $40,000 per annum for

sufficient time to review a complex document with the requirement to reach a timely decision regarding the proposed military buildup on Guam.

B-018-015

Thank you for your comment. All of these project components are inter-related and therefore included in one EIS. While combining the actions into one EIS results in a large document, it reduces the legal risk of segmentation under NEPA.

B-018-016

Thank you for your comment. The baseline data sets referred to is the best currently available scientific information. This information was supplemented with site-specific data required for a thorough NEPA analysis.

B-018-017

Thank you for your comment.

B-018-018

Thank you for your comment. A detailed compensatory mitigation plan would be submitted as part of the Clean Water Act 404 permit application for construction affecting the navigable waters of the United States (including the CVN transient wharf). Due to the ongoing review of DoD's habitat assessment methodology for coral reef ecosystems and associated uncertainties regarding the scope of mitigation required, a detailed mitigation plan has not been developed nor will one be available for incorporation into the FEIS. However, a number of mitigation options, including watershed restoration and the use of artificial reefs, are discussed in programmatic nature in Volume 4, Section 11.2 of the FEIS. DoD recognizes that, as part of the CWA Sec. 404 permitting process, additional NEPA documentation may be required to address

B-018-036

a single, small sand-mining project in Korea. While costs remain un-estimated for tropical coral reef environments, such as Apra Harbor, it is clear that value needs to be assigned for the lost ecosystem services. Further, mangrove habitats are significantly linked with enhanced fish biomass on reefs that are several kilometers away (Mumby et al. 2004). The mangrove stand in Sasa Bay MPA represents the largest in the Marianas, and export of larvae will be impeded in the direct project footprint, adjacent to the MPA. The DEIS stated that the dredging would only provide limited impacts to the transfer of larvae and fish populations, and would not lead to long-term declines in larval export or adult populations. However, no scientific studies or quantitative modeling data were presented. Further, Amesbury (1981) shows significant 3-year declines in fish diversity and abundance within a footprint associated with airport-related dredging in Truk, Micronesia, where sediment accumulation was noted. It is imperative to note that the project footprint is adjacent to the Sasa Bay MPA, and covers approximately 50% of the entrance to the bay. It is essential that the final EIS provide a scientifically-defensible value for the compromised services of the Sasa Bay MPA during the dredging and recovery period.

B-018-037

Finally, there are valid concerns with respect to the use of models to assess indirect impacts associated with dredging activities, as reported in Volume 4, Section 4, Water Quality Resources. Typically, all pollutant discharge (inclusive of any local water quality standards violations) requires a zone of mixing calculation, and must gain approval through coordination with the local and federal Environmental Protection Agencies. This important, legal process was not described within the DEIS but will be required in the permitting. The permitting process needs to be addressed in the FEIS to ensure that costs can accurately be assessed.

B-018-038

In addition, the DEIS used extremely limited surface current data gathered on only 2 events, coupled with scientifically-unfounded assumptions to estimate indirect sediment discharge rates. Wolanski et al. (2003) used a combination of 1.5 years of current meter data and satellite-derived surface topography to model surface-current eddies around Guam to gain a perspective of events that may occur within a typical year. The DEIS uses only two days of current data and no satellite derived information to come to a conclusion that the project area is characterized by low-velocity conditions. This is troubling, especially considering that the proposed action will require between 8 and 18 months of continuous dredging activity. There is a major discrepancy between the length of the construction activities that modeling needs to account for, and the temporal scale of the data that went into the model. We strongly recommendations that surface current data to be much more temporally-robust for modeling purposes, and that these data encompass a range of anomalous conditions that might occur during the course of a typical year in Apra Harbor.

Further, silt-curtain sediment retention efficiencies of 90-100% were used in all model calculations, and only unpublished literature was provided as supporting evidence. Unfortunately, the key study that was cited was unavailable to reviewers of the DEIS without access to Navy reports. We recommend that all cited literature be peer-reviewed and made available through libraries, or be made available to the agency reviewers.

specific permitting requirements and implementation of required compensatory mitigations.

B-018-019

Thank you for your comment. Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-020

Thank you for your comment. The Navy acknowledges there is potential for marine resources and aquifers to be affected by sea level rise, inundations from more extreme storm events and other consequences of climate change. The impacts may be both adverse and beneficial. The

B-018-038

Without understanding the basis for the assumptions, the public and agencies can't assess the level of certainty associated with each assumption. It is possible that the technical reports cited may have little scientific merit, but the reviewers would never know. Silt curtain capture efficiencies between 90-100% assume extremely minimal tearing and low rates of failure. Regardless of the authors' opinions on the success of silt curtain use, models should be run assuming a wide range of sediment release rates and silt curtain efficiencies. In fact, there should be a 'null' model produced that shows expected sediment release given no intervention, upon which varying assumptions of silt curtain success can be measured. This information should be provided in the FEIS, and will enable reviewers to understand the potential benefits of successful management, and potential pitfalls if accidents happen. Clearly, EIS statements should include more realistic uncertainty factors, and the 90-100% efficiency of the curtains provides for little margin of error (i.e., breakage/failure of curtain, bad weather events, or poor curtain maintenance).

B-018-039

Multiple incidents of tearing have been reported during earlier NAVY work constructing and dredging Kilo Wharf, and large sediment plumes documented to extend well beyond the confines of the silt curtains. The GCMP Biologist has personally observed the significant accumulation of sediment at depths >10 m on the reef tract between Kilo Wharf and Finger Reef, consistent with sediment dispersal plumes. These and other professional observations raise serious concerns about the high rate of effectiveness of silt curtains claimed by the DEIS authors. The escape of a large amount of sediment from silt curtains should not be surprising, as the curtains typically only extend to a depth of about 10 meters. These observations highlight the need to explore more effective methods of sediment retention and dredging operation.

B-018-040

Inadequacy of cumulative impacts assessment
Another critical point is that the cumulative impact analysis presented in Volume 7 is greatly inadequate. Rather than describing impacts in detail, a simple table is provided summarizing the impacts of all proposed activities on a range of general resource categories. The cumulative impacts are of great significance for Guam's biological diversity, social well-being, and ecosystem function, but this importance is evidently not shared by the DEIS authors. A thorough description of cumulative impacts and the required mitigation must be provided in the FEIS.

Overview conclusions
Together, all of the critical recommendations outlined in this overview, as well as the additional points raised below, strongly suggest that much improvement must be made in the FEIS regarding the sediment plume modeling, the HEA model inputs, the cumulative impacts analysis, and in the science used to defend various assumptions that have significant impacts on the outcomes of the impact assessment.

B-018-041
B-018-042
B-018-043

B-018-044

It seems as though the costs associated with including all of the reef areas (occupied and unoccupied coral reef habitat), macroinvertebrate and fish assemblages, reefs below 60 ft., and soft-bottom sediments, would likely lead to drastic increases in the cost to carry out appropriately-scaled compensatory mitigation. The required enhancement of the

current level of scientific knowledge can predict trends in sea level rise based on historic data but there are no established methods for assessing and quantifying potential impacts on marine resources or aquifers.

The University of Guam provides analysis of the aquifer responses to sea level change and recharge in a November 2007 study. Climate change may impact the success of production wells in the future (e.g., the placement of the well screen may not be optimal if the sea level rises or falls). Given the uncertainty of climate models including lack of information that is directly applicable to northern Guam and lack of specificity regarding the time and degree of impacts to conditions that could impact the aquifer, the DoD wells would be installed based on current conditions. Monitoring would be conducted during well operation. If production or water quality declines over time, DoD would take actions to mitigate the impacted wells.

A quantitative assessment of the additive or cumulative impact of climate change on the proposed action and natural resources, including aquifers,is not practical.

B-018-021
Thank you for your comment. The FEIS has been updated to include a more robust discussion of climate change. The FEIS also quantifies greenhouse gas emissions.

The change in climate conditions caused by greenhouse gas emissions resulting from the burning of fossil fuels from both stationary and mobile sources is a global effect, and requires that the emissions be assessed on a global scale. The proposed action mostly involves the relocation of the military operations already occurring in the West Pacific region; therefore, fossil fuel burning activities in the West Pacific region are unlikely to change significantly. Consequently, overall global greenhouse

B-018-044

current data used in the sediment plume model, and a more accurate assessment of indirect impacts would also likely result in significantly greater compensatory mitigation costs. It is therefore strongly recommended that the FEIS include a cost/benefit analysis for the entire scope of Volume 4 and that a longer transit, Hawaii-or-US-based alternative, the use of Kilo Wharf, or another location within the region be more seriously considered. The high costs of habitat offset and required science may be inhibitive for the proposed build-up in Apra Harbor. Regardless of the EIS conclusion, the cost/benefit analyses of the entire operation must be transparent to the reviewers, and not kept as an internal affair.

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gas emissions are likely to remain near the current levels on a regional or global scale under the proposed condition, resulting in an insignificant impact to global climate change.

The Navy acknowledges there is potential for marine resources and aquifers to be affected by sea level rise, inundations from more extreme storm events and other consequences of climate change. The impacts may be both adverse and beneficial. The current level of scientific knowledge can predict trends in sea level rise based on historic data but there are no established methods for assessing and quantifying potential impacts on marine resources or aquifers.

B-018-022

Thank you for your comment. DoD concurs with your observation and it is the intent of this EIS to identify key aspects of the natural and built environment and disclose the impacts associated with the proposed actions.

B-018-023

Thank you for your comment. The Navy acknowledges there is potential for marine resources and aquifers to be affected by sea level rise, inundations from more extreme storm events and other consequences of climate change. The impacts may be both adverse and beneficial. The current level of scientific knowledge can predict trends in sea level rise based on historic data but there are no established methods for assessing and quantifying potential impacts on marine resources or aquifers. Please see response to B-018-021.

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B-018-024

Thank you for your comment. Please see response to comment B-018-020.

B-018-025

Thank you for your comment. The entire world is facing the uncertainty of potential global warming. Even the "experts" are in sharp disagreement on the nature and extent of global warming. In fact, over the last 10 years or so, temperature measurements have not shown any increase at all, which is completely at odds over the prior predictions. DoD is planning prudently for this proposed expansion, and future uncertainties are acknowledged.

DoD acknowledges there is potential for marine resources and aquifers to be affected by sea level rise, inundations from more extreme storm events, and other consequences of climate change. The impacts may be both adverse and beneficial. The current level of scientific knowledge can predict trends in sea level rise based on historic data, but there are no established methods for assessing and quantifying potential impacts on marine resources. A quantitative assessment of the additive or cumulative impact of climate change on or from the proposed action and natural resources, including coral reefs, is not practical.

B-018-026

Thank you for your comment. Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United

Specific comments, with focus on impacts to marine resources as presented in Volumes 2, 4, 7, and 9:

B-018-045

Vol. 2, Ch. 11, pg. 11-1, 1st paragraph
The DEIS authors define marine biological resources as "marine-related organisms, their behaviors, and interactions with the environment that may be directly or indirectly affected by the proposed action within the established marine region of influence" which, in turn, is defined arbitrarily as the nearshore waters of Guam out to the 164 foot isobaths; however, the analysis is restricted to waters offshore of Finegayan, offshore of the Rt. 15 lands, and all waters of Apra Harbor. There will clearly be impacts to marine resources beyond these areas. Many of these impacts, particularly those associated with the large population increase (increased harvesting pressure, increased recreational impacts) would probably be considered "secondary." These impacts should be addressed in the appropriate sections.

B-018-046

Vol. 2, Ch. 11
Off-base impacts to natural resources, particularly those associated with the massive population increase (e.g., increased harvesting pressure, recreational impacts, user conflicts, deforesting, loss of critical habitat, runoff, etc.) are not adequately addressed (and sometimes not at all); no mitigation is offered for impacts to marine resources off-base, which would not occur but for the military buildup. Mitigation must occur, regardless of whether the impacts occur on or off-base, and must be an integral part of the project and must be clearly identified in the funding request/application.

B-018-047

Vol. 4, Ch. 4, pg. 10
In this section and in others, there is reference to relatively coarse grained sediments being found in the vicinity of dredging. However, there does not appear to be a summary of grain-size analyses data that was collected in 2006 as part of a NAVFACPAC study that is not readily accessible to the readers. Further, it is not appropriate to make comparative statements without quantitative data. Such statements must be be removed unless relevant quantitative data is provided. In addition, a summary of organic content measurements was not presented, and only brief mention was made to a related aspect of sediment composition. These basic data should be presented, especially considering the magnitude of this project and the major impacts to marine resources. Recommend including grain size distributions for the project site, and values from other locations if comparisons are to be made.

B-018-048

Vol. 4, Ch. 4, pg. 10
No data were reported regarding the infaunal composition of the sediments. The importance of soft-bottom habitats and their infauna to food fishes (Gomelyuk, 2009) was stated in the introduction to these comments. A full characterization of the marine environment, required by the EIS process, must include a characterization of the soft-sediment infauna. Recommend for this information to be included in the FEIS.

States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-027

Thank you for your comment. The location of the new Navy wharf was chosen as the least environmentally damaging alternative, in efforts to avoid the least amount of live coral in the area. The proposed area to be dredged is mainly a sand and rubble zone. The Navy will implement mitigation measures and Best Management Practices during in-water activities (i.e. dredging, wharf construction) to help lessen impacts to the marine environment. Additionally, the U.S. Army Corps of Engineers permits will likely contain requirements for silt curtains, biological monitoring, restrictions in dredging activities during potential coral spawning months, and compensatory mitigation projects.

The commenter is incorrect in stating that the DEIS did not identify adverse impacts to marine biological resources. To compensate for the loss in ecological service provided by coral reef ecosystem, upland reforestation (to improve nearshore water quality), artificial reefs (to provide increased fish habitat) or a combination these and other

B-018-049

Vol. 4, Ch. 4, pg. 10
In this section and throughout the DEIS, there does not appear to be any mention of a specific Environmental Protection Plan (EPP), which is required for all WQS permits by Guam EPA. While the details of the EPP typically aren't fleshed out until the permitting process is initiated, the FEIS should inform readers about the process, including a general summary of what the EPP will entail.

B-018-050

Vol. 4, Ch. 4, pg. 11
The existing Guam water quality standards list these waters as M-2 or area of "Good" water quality. Please provide relevant quantitative criteria for M-1, M-2, and M-3 waters so readers are aware of these designations.

B-018-051

Vol. 4, Ch. 4
Duration of dredging operations is stated as 8-18 months; this is a very large range and not useful when trying to assess impacts of dredging operations on marine waters. Recommend including a narrower estimated range. Further, please include the various dredge schedule options being considered, and how decisions will be made.

B-018-052

Vol. 4, Sec. 4.2.2.4, p 4-17
The coral mass spawning period should be identified here. This period should encompass the entire process of spawning and larval settlement, including 1) a 5-day pre-spawning period to protect the larval development period appropriate for competency of broadcast spawning corals (Harrison and Wallace, 1990, Miller and Mundy, 2003), 2) an 8-day period following the full moon when corals have been observed to spawn (Richmond, 1995), and 3) an 8-day post-spawning period during which larvae settle upon reefs and attached larvae have been observed to undergo peak metamorphosis, (Miller and Mundy, 2003). The total of 21 days is thus strongly recommended for inclusion into the FEIS based upon published scientific data that describes each critical stage needed for successful coral reproduction. This criteria and language is currently part of the Commonwealth of the Northern Mariana's Water Quality Standards; all activities associated with the build-up of Tinian must follow these criteria, and is strongly recommended that these criteria be adhered to Guam as well.

B-018-053

Vol. 4, Sec. 4.2.2.4, p 4-17
What exactly are "rough sea conditions" to which the third bullet point in this section refers? These conditions must be clarified. Also, the sediment dispersal study in Appendix J uses a 90-100% silt curtain effectiveness for all scenarios. Such high effectiveness levels equate to little or silt curtain failure. It seems probable that curtain failure and sediment leakage (at some level) is inevitable. This assertion is supported by multiple anecdotal reports, particularly with regard to current dredging operations at Kilo Wharf. Recommend revising the models to include various rates of failure in predictions, and present findings in revised FEIS. Also, a null model for sediment dispersal should be included to understand the reliance placed upon curtain effectiveness.

B-018-054

Vol. 4, Ch. 4, pg. 4-33

compensatory mitigation alternatives will be considered by the Navy to comply with federal laws that protect coral resources.
A detailed compensatory mitigation plan would be submitted as part of the Clean Water Act 404 permit application for construction affecting the navigable waters of the United States (including the CVN transient wharf). Due to the ongoing review of DoD's habitat assessment methodology for coral reef ecosystems and associated uncertainties regarding the scope of mitigation required, a detailed mitigation plan has not been developed nor will one be available for incorporation into the FEIS. However, a number of mitigation options, including watershed restoration and the use of artificial reefs, are discussed in programmatic nature in Volume 4, Section 11.2 of the FEIS. DoD recognizes that, as part of the CWA Sec. 404 permitting process, additional NEPA documentation may be required to address specific permitting requirements and implementation of required compensatory mitigations.

B-018-028

Thank you for your comment. Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover

B-018-054

It is not clear why nutrient or bacteria density data were not collected when water sampling occurred. Clearly, increased aircraft carrier activity has the enormous potential to increase pollution loading through direct runoff from the large ship platform, as well as through bilge waters. This is the equivalent of major watershed urbanization with impervious surfaces that are known to contain elevated bacteria and nutrient concentrations (Mallin et al. 2009). Background levels of the pertinent water quality constituents are needed, and should be included in the FEIS. Nutrient and bacteria concentration data are needed to serve as a basis for potential changed over time. The data must be spatially and temporally sufficient for an appropriate characterization.

Vol. 4, Ch. 4, pg. 4-30

B-018-055

Here, and throughout the DEIS, the coral reef ecosystem within the CVN impact area is considered of "lower ecological value," in part due to algae cover estimates (~40%) that are nearly twice the cover of living coral. This conclusion is incorrect, and is not supported by the scientific literature. First, reefs globally around the world have had similar algae cover-coral cover ratios (as reported in the DEIS) for decades (see Bruno et al. 2007 and Bruno et al. 2009). This is a natural feature of coral reef ecosystems. A key attribute of reef health/function that was also brought up by nearly all of the peer-reviewers of the CVN Marine Impact Assessment Report (Appendix J), is calcification. In order to make statements about absolute 'reef' health within a confined area, like Apra Harbor, one would need to accumulate valid photosynthesis-to-respiration ratios. At ecological scales, when comparing multiple reefs around entire jurisdictions, the most relevant 'health' indicators appear to be centered upon coral species richness, recruitment, and overall biodiversity (Jokiel et al. 2004, Cooper et al. 2009, Houk and van Woesik, in Press). In all of these studies, coral cover did not serve as a good metric of 'health' - yet the DEIS relies solely upon coral cover and accompanying "landscape" rugosity as descriptors of reef function and are used in the HEA to scale compensatory mitigation. There is a major discrepancy between what the contemporary knowledge-base of coral reef science suggests as valid measures for 'health' and function and what is used in the DEIS. We strongly recommend that a new impact assessment be carried out, and that it employ survey methodologies that accurately estimate key coral community attributes, such as coral colony density, size-frequency, rugosity (using standard chain-length method). Given the relatively small spatial scale of the proposed turning basin and deep-draft wharf, it is not unreasonable to require that the in-situ surveys be carried out, and that both ecological and physiological data be collected (similar to parameters discussed in Brown et al. 1990). Also, please refer to the comments overview, which describes the need to include data for non-coral invertebrates, fish, and all associated reef biota into discussions about functional ecological value and that these data must be incorporated into the HEA calculations. As stated earlier, a more accurate assessment of the reef ecosystem function that would be lost as a result of the dredging and fill associated with the CVN berthing project would translate into a much greater area of replacement reef required to offset the losses. The extraordinarily high costs of habitat replacement and the cost to carry out the scientific assessments/studies for a project of this magnitude (especially within a diverse, high-value coral reef ecosystem), should, at the very least, provide a fiscal rationale for more vigorously investigation other

B-018-056

methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-029

Thank you for your comment. Volumes 2 and 4 include specific sections on non-native invasive species. A Micronesia Biosecurity Plan (MBP) is under development that will help manage non-native species introduction to Guam from the proposed action. Since the final MBP is not complete, the Final EIS discusses interim measures that will minimize the potential for the introduction or transport of non-native invasive species to/from Guam. The FEIS includes a programmatic discussion of a number of potential coral mitigation options including establishment of an artificial reef. DoD will work with resource agencies and, ultimately, the USACE during the permit process to identify final coral mitigation requirements.

B-018-030

Thank you for your comment. A percentage increase of invasive species cannot be predicted with any accuracy and the species that may become problematic are difficult to determine. The Micronesia Biosecurity Plan (MBP) that is being developed in conjunction with the proposed action will provide an analysis. The MBP will also provide inspection recommendations for cargo entering and leaving Guam and will recommend steps to prevent spread of invasive species. The MBP will address all aspects of the potential for the transport of brown treesnake and all potential non-native invaseive species to other Pacific Islands and to Guam due to military activities originating on Guam. The Navy is in ongoing discussions with the U.S. Fish and Wildlife Service regarding

B-018-056

alternatives. A cost-benefit analysis should be carried out in a transparent fashion and the results presented in the FEIS.

B-018-057

Vol. 4, Ch. 4, pg. 4-30

Here it is stated that "pre-construction" ecological conditions would return relatively quickly following dredging; however, no quantitative data or scientific reasoning is provided to support the statement. Where does the estimated recovery time frame come from? Relative to what? Amesbury (1981) found that fish assemblages in dredging impact zones, where fine sediments accumulated during dredging, were significantly and permanently altered. This study was carried out over a 3 to 4-year period. Brown (1990) reported 22 months recovery time for corals on reefs adjacent to dredging (i.e., the indirect impact zone). However, the results of both of these studies were dependent upon the timeframe and magnitude of dredging, the reef assemblages in question, and an array of environmental parameters (depth, exposure, ambient turbidity, etc.). Thus, the cumulative impacts, or time-integrated responses of the reefs surrounding dredging, may differ widely. any analysis of the results of these and similar studies must include a detailed discussion about the various factors influencing ecosystem impacts, and how those factors may be different (or similar) to the study area in question. In the DEIS, the

B-018-058

estimated timeframe is presented as a wide range (8-18 months), which suggests widely varying rates of daily dredging. The FEIS needs to refer to a narrower range of dredging operations, and thus provide a more focused description of the conditions that can be used to predict impacts to various assemblages. Please revise accordingly for the FEIS. Further, these narrowed ranges should then be translated into predictable ecological changes based upon published scientific data. The DEIS eventually reaches the conclusion, "According to the TSS modeling results noted in Section 230.60, the turbidity plumes rapidly dissipated following dredging resulting in less than significant impacts" on page 4-33. However model assumptions were unrealistic, suggesting a sediment capture efficiency of 90-100%; to our knowledge, this range of efficiency has not been proven for any large-scale dredging project. On the contrary, unexpected silt curtain failures and resulting violations have occurred regularly during current dredging operations at Kilo Warf. This is not unusual for dredging projects. The FEIS must include more realistic model inputs, and should account for greater silt curtain failure rates (and thus reduced silt curtain effectiveness).

B-018-059

Vol. 4, Ch. 4, pg. 4-33

When describing the potential impacts to physical and chemical components of the aquatic ecosystem, several relevant water quality parameters, such as the suite of nutrients that can enhance productivity, are not considered. In fact, the potential for increased nutrient enrichment as a result of construction and operations is not discussed anywhere in Volume 4. The re-suspension of fine organics that occur in the dredge area are dismissed because organics were found to make up only a small fraction (by weight) of sediments. However, when this small fraction (even if as low as 1%) is multiplied by the total volume of dredge material to be excavated (~350,000 m3), the results are the re-suspension of 3,500 m3 of organic, nutrient-rich sediment. Indeed, this re-suspension of organic sediments represents a contribution of pollution to reefs as large as initial transport from land-runoff or other upland activity (Wolanski et al. 2003). The cited

specific procedures and requirements for inspections of cargo and these will be incorporated into the EIS. Information pertaining to the MBP and general biosecurity issues are discussed in Volume 2, Chapter 10, Section 10.2.2.6 for terrestrial species, and in Volume 2, Chapter 11, Section 11.2.2.6 for marine species. Volume 2, Chapter 14 (marine transportation) has been updated to include estimated increases of cargo traffic associated with both organic growth and the military buildup.

B-018-031

Thank you for your comment. The HEA referred to (Volume 4, Chapter 11 and Volume 9, Appendix E) is a description of how mitigation could look. Through coordination with our regulatory partners the Navy will revise the HEA and develop a compensatory mitigation package that will conform to the regulatory guidance provided by USACE.

Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of

B-018-059

B-018-060

study describes such a situation for one embayment in Southern Guam, with regards to re-suspension of terrigenous and other sediments due to large typhoon-induced swells. The dredging will act on the sediments in a similar fashion, facilitating the re-suspension of large quantities of organic, nutrient-rich sediments. Increased nutrient availability from re-suspension of these particles, and associated impacts to coral reef systems within the project area must be accounted for in the FEIS. Further, no discussion is provided of the impacts of runoff from the massive aircraft carrier that will be berthed at several periods throughout the year. The impervious surfaces associated with the aircraft carrier will produce similar run-off effects as other centers of urbanization. Runoff from impervious surfaces associated with high human population densities often have high nutrient concentrations (Mallin et al. 2009) and other pollutants (e.g., petroleum-based products). While a limited discussion is provided for the impact of bilge water and associated pollutants elsewhere in the DEIS, no mention is made of generalized urban runoff from the ships. Estimates of increased delivery of nutrients and other pollutions to coastal waters as a result of berthing of large ships, and an analysis of the environmental impacts, must be included in the final EIS.

B-018-061

Vol. 4, Ch. 4, pg. 4-40
In the course of preparing this DEIS and the surveys leading to it, contentious discussions between Guam agency-based staff and US Military consultants were evident regarding artificial reefs. In response to Kilo Warf dredging, Guam's Coastal Zone Management Program, as well as many others, logged complaints with the introduction of artificial reefs as possible mitigation. Based upon these documents, and the science cited within them, it is clear that artificial reefs are not desired, not warranted scientifically, and should be removed from all discussion in the final EIS. In the event that artificial reefs remain in consideration, several sets of detailed comments are already on record, and must be responded to.

B-018-062

Vol. 4, Ch. 11, pg. 11-1, Para. 2
Based on the experiences of the GCMP Biologist on these reefs, the statement "these reefs all consist of relatively flat and shallow upper surfaces that are covered primarily with muddy sand and rubble" does appear to be not accurate. Recommend that this statement be removed or that the information be validated. Much of the top of Jade Shoals has significant coral cover, primarily Porites rus and massive Porites species, while non-coral areas are dominated by rubble and hard substrate colonized by algae. While the shallow (<3 m) top of Western Shoals seems to have less coral cover than Jade Shoals, I do not recall muddy sand being a major cover type. Instead, coral rubble and hard substrate colonized by algae (similar to Jade Shoals) dominated the top of the shoals. The GCMP Biologist is not as familiar with Big Blue Reef, but suspect the top to be similar to Western Shoals. While these shoals receive less wave energy compared to reefs outside the harbor, there is still enough wave energy acting upon these reefs to prevent the accumulation of much muddy sand, except perhaps on the eastern sides of the shoals.

Vol. 4, Ch. 11, pg. 11-1, Para. 3

elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-032

Thank you for your comment. Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-033

Thank you for your comment. Please see response to B-018-031.

B-018-062

The beginning of this paragraph states that the project area does not contain any of the shallow shoal patch reefs, but it appears as though deeper portions of Jade Shoals and the shallow shoals immediately to the north of Big Blue Reef falls within the project boundary. In addition, this statement does not take into account the indirect impact area, which encompasses large portions of all of the shallow shoals. This statement should be changed to more accurately reflect the potential impacts to shallow shoals within the vicinity of the project area.

B-018-063

Vol. 4, Ch. 11, pg. 11-1, Para. 3

The second sentence in this paragraph states that "this area was dredged in 1946…" but, even without making the changes requested in the previous comment, this statement does not seem supported by adequate evidence. While it may be true that the majority - or even most - of the area within the proposed dredging footprint was dredged in 1946, it is unlikely that all of this area had been dredged. In addition, when considering the indirect impact area, which encompasses large portions of all of the large, shallow shoals, this statement is not appropriate. It's also important to note that the entirety of a deeper (>40 ft) shoals (to the west of Jade Shoals) falls within the direct and indirect impact areas. It is not clear if this shoals had been dredged in 1946, but the remarkable reef growth on this shoals suggests that it had not. Finally, there exists a large amount of reef habitat at depths below 60 feet. The slopes of the reefs to be dredged generally possess greater coral coverage than the tops of these "mounds," likely because they were not as catastrophically impacted by the dredging in the 1940s.

Vol. 4, Ch. 11, pg. 11-3

B-018-064

The specific question to be answered by the collected scientific data is not clear. Rather, there is general reference to an "assessment being made to quantify the resource services lost." If the aim was to assess the ecological services that would be lost as a result of dredging/fill activities associated with the CVN Berthing project, it is not clear why remote sensing techniques were relied upon so heavily. It was pointed out by one technical reviewer (Dr. Katherine Fabricius) that given the relatively small size of the project area (as opposed to large reef tracts assessed and monitored by various governmental and non-governmental entities), in situ transect work could have easily been expanded to include more rigorous data collection (i.e., longer transects with replications at each site) in all of the habitats within the area of interest. The dependence upon satellite-derived data, with limited amounts of photo quadrat-based ground validation data, is a serious limitation of the impact assessment. These data were not able to differentiate between the ecological assemblages across quite different 'biotypes' (i.e., rubble, mud/sand, mixed coral-algae, patch-reef margins, etc.) known to occur within the

B-018-065

project area. Sheppard (1982) clearly describes how exposure to wind and waves, varying slope, surface current patterns, and gradients among many other environmental parameters dictate influence coral growth. In the introduction to Chapter 11, the authors state that coral growth is highest on the western edge of patch reefs compared with the eastern. This is common knowledge; yet the limited resolution of the marine surveys do not appear to be able to distinguish this basic pattern. How can these data be relied upon for an assessment of the various ecological systems within the project area? We strongly recommend including an explanation as to how/why the in situ ecological data could not

B-018-034

Thank you for your comment. Please see response to B-018-032.

B-018-035

Thank you for your comment. Please see response to B-018-031.

B-018-036

Thank you for your comment. The essential fish habitat assessment (EFHA) is provided within the DEIS and has been revised for the FEIS. The EFHA has identified that the proposed project may have an adverse affect on certain portions of the EFH within the Apra Harbor dredge area, but no adverse effect on EFH associated with Sasa Bay is anticipated.

B-018-037

Thank you for your comment. The permitting process is described in the Final EIS.

B-018-038

Thank you for your comment. The three-dimensional circulation and transport model of the project area was developed using the Environmental Fluid Dynamics Code (EFDC). The model included wind and tide forcing, and fresh water inflow into the Inner Apra Harbor; the dredge plume was simulated by loading the water column with specified quantities of suspended sediment composed of 5 different grain sizes. The sediment grain distribution was determined from bottom samples taken in the project area. The model calculated transport, dispersion and deposition of the plume suspended sediments and was verified by comparing results for a simulation of December 15 to 17, 2007 trade wind conditions with the actual instrument measurements. Use of a silt curtain was simulated based on 145 days of TSS measurements inside and outside of the silt curtain deployed for the Alpha-Bravo dredging

B-018-065

differentiate between major environmental gradients, and to rectify this deficiency by carrying out another impact assessment with methods that can accurately estimate the ecological parameters appropriate for a robust, taxonomically-detailed resource characterization and that would result in a HEA output that better compensates for the loss of the resource. The reliance upon remote sensing products to determine ecological patterns is not appropriate, and leads to subjective omission of key coral-associated habitats.

B-018-066

Vol. 4, Ch. 11, pg. 11-3, Para. 1
As described in the 3rd sentence in this paragraph, coral cover has indeed been used as an indicator metric to represent lost services in Habitat Equivalency Analyses (HEA) to scale compensatory restoration. However, the local and federal resource agencies have consistently supported a more comprehensive approach to characterizing the coral community involving size frequency distribution from the beginning of discussions with the Navy regarding coral survey methodology, HEA inputs, and compensatory mitigation. Such an approach is supported by the available literature.

B-018-067

Vol. 4, Ch. 11, pg. 11-3, Para. 1-3
All of these paragraphs repeatedly refer to Natural Resource Damage Assessments (NRDA). While it is not inappropriate to refer to NRDA in such a discussion, it is important to note differences between NRDA (specifically, the regulations under which NRDAs are conducted) and assessments required to satisfy Clean Water Act requirements, particularly the Final Mitigation Rule.

Vol. 4, Ch. 11, pg. 11-3, Para. 3
The last sentence in this paragraph states that "a nearly complete understanding of coral reef ecological services is required to objectively determine whether selected compensatory restoration projects adequately restore lost services for a given injury." However, the Viehman et al. paper actually states that a "more complete understanding of coral reef ecological services is required..." The phrases "a nearly complete" and "more complete" have very different meanings. This sentence should be changed to more accurately reflect the statement in the Viehman paper.

B-018-068

Vol. 4, Ch. 11, pg. 11-4, Sec. 11.1.1 i
See comment below about concerns regarding peer review of the study, "Assessment of Benthic Community Structure in the Vicinity of the Proposed Turning Basin and Berthing Area for Carrier Vessels Nuclear (CVN) Apra Harbor, Guam" by Dollar et al. (2009).

Vol. 4, Ch. 11, pg. 11-4, Sec. 11.1.1 iii
Here the DEIS states that the report "Habitat Equivalency Analysis (HEA) and Supporting Studies" by Navy (2009) was "peer reviewed by eight renowned coral scientists" and that the reviews are included in Volume 9, Appendix J. The peer review (see comment below for concerns regarding peer review) appears to only pertain to the study "Assessment of Benthic Community Structure in the Vicinity of the Proposed Turning Basin and Berthing Area for Carrier Vessels Nuclear (CVN) Apra Harbor,

project in Inner Apra Harbor and model computed TSS levels compared well with the Alpha-Bravo measurements. Possible worst case conditions were simulated by approximating the highest 10% TSS levels recorded outside of the silt curtain during the Alpha-Bravo dredging project, during strong trade wind conditions. This worst case scenario data generated by the model is presented as a conservative estimate of conditions that would be observed during the dredging of Inner Apra Harbor. Actual conditions are expected to be less. Specific monitoring requirements will be identified and implemented following agency coordination and permitting. Reference documents are available from a variety of sources.

B-018-039

Thank you for your comment. The EIS recommends the use of silt curtains to minimize the dispersal of suspended sediment from dredging and in-water construction. As your comment points out, silt curtains do occassionally fail, particularly in high wind and wave energy areas such as Kilo Wharf. The proposed waterfront sites under consideration for the CVN berthing are located in a more sheltered area. Nevertheless, the Navy anticipates monitoring the performance of the silt curtain system and manage the amount of turbidity during construction to minimize impacts to the aquatic environment should the proposed action be implemented.

B-018-040

Thank you for your comment. Due to the complexity of the project, there are two parts of the cumulative impact analysis: the summary of impacts for all components of the proposed action (Volume 7 Chapter 3) and an assessment of the additive impacts of the proposed action in combination with other past, present and reasonably foreseeable projects (Volume 7, Chapter 4). A systematic methodology was applied in both analyses.

B-018-068

Guam" by Dollar et al. (2009). This is a major oversight, and one that misleads readers into thinking that the HEA and all supporting studies were peer reviewed by the world's leading coral reef scientists. This is not true, and even the peer review carried out for the single study above does not address the resource agencies' main concerns about the study's methodology and the appropriateness of using the data collected by the study in the HEA.

Vol. 4, Ch. 11, pg. 11-5, Sec. 11.1.1.1
The first paragraph on this page very briefly refers to a study conducted by the U.S. Fish and Wildlife Service, Guam Coastal Management Program, University of Guam Marine Lab, and the National Marine Fisheries Service entitled, "Comparison of a Photographic and an In Situ Method to Assess the Coral Reef Benthic Community in Apra Harbor, Guam." The DEIS authors state that the data collected for this study were not used in the DEIS, and the study was relegated the study to the Appendices. The data collected as part of the study is viable, scientifically defensible and should have been incorporated into the impact analysis. At the very least, the findings of this study should be discussed in considerably more detail, especially since it calls into question the appropriateness of using the methodology employed by the Navy consultant in an impact assessment of a project of this magnitude, as well as the validity of some of the data collected using this methodology.

Vol. 4, Ch. 11, pg. 11-14
It is not clear why the work to elucidate varying ecological 'biotypes' was conducted, and not used (i.e., the habitat classes that describe sand habitats, turf algae, coral, etc.). See above comments and recommendations surrounding why field data didn't distinguish between very basic features and gradients. Multivariate data was presented in the referenced marine surveys to show how 'biotypes' were not well predicted by field data. This lack of structure in the data, even along basic environmental gradients such as wave exposure, suggest flaws in field data replication and/or taxonomic resolution (also discussed above). However, the reader is still led to believe these biotypes represent a habitat mapping scheme. But, starting on page 11-14, totally different habitat classes are now introduced, with no introduction as to how or why. There are six different classes of coral cover: 0%, 0-10%, 10-30%, 30-50%, 50-70%, and 70-90%. First, there was no discussion surrounding the spectral signatures of the initial 'biotypes' or the secondary coral cover classes. Although the extensive, non-significant analysis of multivariate data is presented for field data, these are not used in the final HEA assumptions. Recommend removing all analyses of these field data, as they are not robust enough (described above) to provide meaning on their own, and can only serve as ground validation data for the coral cover classes. In addition, the high resolution of coral cover classes is equally questionable. Very recent work using similar satellite data attempted to derive three classes of living coral cover, 11-50%, 51-75%, and 76-100%, as well as other classes with macroalgae and other invertebrates (Newman et al. 2007). This study found high overall map accuracy; however, the accuracy of the coral classes were relatively low. Only a 60% accuracy was found for the 51-75% cover of coral class, with greatest errors between the varying coral classes. It is interesting that an even higher level of resolution was used here (6 classes of coral cover instead of 3), and that no peer-reviewed support

Volume 7, Chapter 3 summarizes the combined potential impacts of all of the preferred alternatives on Guam and Tinian. The impacts of Volumes 2 through 6 are discussed by resource. At the end of Volume 7, Chapter 3.3 there is a table summarizing the combined impacts of all long-term (operational) components of the preferred alternatives.Significant impacts are identified. Trends in the resource health on Guam and Tinian since World War II are described. This section includes limited quantitative data for proposed action impacts. For example, special-status species habitat loss due to the proposed action and current amount of habitat available island wide is presented in Volume 7, Section 3.3. There is no quantitative island-wide data readily available for most of the resource areas assessed and the impact analysis is often qualitative.

Volume 7, Chapter 4, Cumulative Impacts, assesses the potential additive impact of the EIS proposed actions when combined with potential impacts of other past, present and reasonably foreseeable future actions. The period of consideration for the cumulative impact analysis is 2004 to 2019. The project list is based on best available information from DoD and the Guam Land Use Commission database. There is no National Environmental Policy Act (or similar) document disclosing project impacts for most of the cumulative projects listed; therefore, there is insufficient data on most cumulative projects listed to conduct a quantitative impact analysis. In Chapter 4 a table summarizes the potential cumulative impacts on Guam and another table summarizes the potential cumulative impacts on Tinian. Potential additive cumulative impacts are identified for a number of resources. Mitigation measures are proposed earlier in the EIS. The cumulative impacts analysis has been expanded in the FEIS, including the addition of climate change analysis and analysis of cumulative impacts to coral.

B-018-041

10 Thank you for your comment. The three-dimensional circulation and

B-018-068

for such an approach exists. This brings in to question the degree of subjectivity in the ground-truthing process of the relatively large number of coral cover classes used here. Recommend citing studies that have successfully used similar coral cover resolution in habitat mapping, and the errors associated with them. Equally important, recommend providing simple graphs of the spectral bands highlighting the degree of overlap of pixels that contain varying coral cover classes. These classes should be statistically determined from each other using multivariate statistics. If this science is not available, this classification should not be used in the DEIS. Finally, it should be noted that none of the reviewers are experts in the field of remote sensing, which formed the basis for the impact assessment carried out by Dollar et al. (2009). Additional reviews by remote sensing experts are strongly recommended to validate the selected habitat classes, and suggest if they match the capabilities offered by the 4-band imagery.

Vol. 4, Ch. 11, pg. 11-15, Figure 11.1-10
It is unclear how such a detailed image classification can be performed on relatively deep reef areas (<10m) in an area characterized by higher levels of turbidity than in more exposed reef areas. While it is difficult to assess the quality of the image presented in the figure, it does not appear as though these deeper areas are visible - and if they are, that very little detail is discernible. I understand that there are techniques to enhance an image for spectral analysis, but I am not aware of processes that allow one to differentiate 10 classes of coral cover for deeper reef areas, the rough shape of which can barely be made out from the image in this figure, if at all. Even the incorporation of lidar bathymetry data does not seem adequate enough to reach the level of detail claimed. An example is the deeper (<14m) shoals due west of Jade Shoals. A detailed classification is provided for all reef area on this shoals occurring between 60 feet and the top of the shoals (about 45 feet).

Vol. 4, Ch. 11, pg. 11-19, 6th bulletpoint under "7"
The statement that the coral habitat expected to be impacted by the proposed aircraft carrier project currently is "of marginal to modest ecological value" is highly subjective and does not appear to be supported by available scientific data. It is also not clear why such a statement would even be necessary, and suggest that it be removed. The area within the project boundaries for each alternative possesses a range of coral reef habitats, with some areas possessing significant biological diversity, structural complexity. Surveys conducted by the resource agencies as part of the methods comparison study (Appendix J) revealed reef assemblages apparently unique to Apra Harbor, and possibly unique to the general vicinity of the project boundaries. This is consistent with the findings of a Navy-funded study conducted by Paulay et al. (1997), which describes numerous species found only within the harbor. The study also described several distinct physiographic/ecological zones within the harbor, with each possessing unique environmental characteristics and supporting ecological assemblages distinct from other zones. The project area, which lies to the west of Sasa Bay, falls almost entirely within a distinct zone. While this area is described as not having as high biological diversity as areas further west in the harbor, the abundance of species vary. At several sites surveyed within the project area, coral species were found that do not appear to have previously

transport model of the project area was developed using the Environmental Fluid Dynamics Code (EFDC). The model included wind and tide forcing, and fresh water inflow into the Inner Apra Harbor; the dredge plume was simulated by loading the water column with specified quantities of suspended sediment composed of 5 different grain sizes. The sediment grain distribution was determined from bottom samples taken in the project area. A number of protective measures would be taken to minimize the distribution of the turbidity plume that would unavoidably be generated by the proposed dredging operations. These measures are noted in Chapters 2, 4, and 11 of Volume 4; in addition, Volume 9, Appendix D contains additional dredge information. Silt curtains are one example of a protective measure. Standard turbidity curtains are approximately 20-30 feet (6-9 meters) in length and have a weighted bottom to maintain the effectiveness of the curtain against the movement of currents within the water body. Since the dredge equipment is not stationary for the entire period of dredging, it is impractical to have a silt curtain extending to and being anchored to the bottom of the harbor. The length of time the silt curtains will be in place will be determined through agency coordination and permitting; however, in general terms the curtains would potentially be in place during and after dredging operations until monitoring indicates turbidity levels have returned to pre-dredging concentrations. Specific monitoring requirements will be identified and implemented following agency coordination and permitting.

B-018-042

Thank you for your comment. The HEA referred to (Volume 4, Chapter 11 and Volume 9, Appendix E) is a description of how mitigation could look. Through coordination with our regulatory partners the Navy will develop a revised HEA and compensatory mitigation package that will conform to the regulatory guidance provided by USACE.

B-018-068

reported from Guam, with some possibly undescribed species. Coral species lists and photographs were provided to the Navy consultant several months prior to the release of the DEIS. This statement also appears to neglect the existence and importance of the generally better-developed reef areas occurring on the slopes of the various shallow and deep shoals within the project area. A large amount of reef area occurs below the 60-foot depth below which a resource impact assessment was not conducted. This area is highly vulnerable to the indirect impacts of dredging, which would occur to a depth of approximately 51.5 feet and would occur immediately adjacent to these deeper slope areas.

Vol. 4, Ch. 11, pg. 11-21

This section includes misinterpretations and misuse of several peer-reviewed studies, with a consistent bias towards minimizing impacts of sediment on corals. For example, the Connell (1997) study examined responses to typhoons. Typhoons and tropical storms are acute disturbances, lasting, at most, only a few days. By referring to this study in the manner presented in the DEIS, the DEIS authors appear to classify dredging impacts as acute, despite the activity to occur over many months, possibly close to two years. Clearly, the two types of disturbances are significantly different, and comparisons between the two are not particularly informative. The reference to Connell (1997) should be removed or these very important differences should be explained. In addition, throughout the discussion on the impacts of sediment on corals, the results of several studies are referenced without placing these results into the proper context. For example, the DEIS states that the indirect impacts to corals from dredging activity would be mainly from carbonate sediments, while nearly all the studies cited examine gradients of terrestrial sediments. There are fundamental differences between these sediment types. Most notably, terrestrial sediments have a humped-shaped relation with coral growth, and often with diversity. Both metrics increase with increasing terrestrial input (i.e., food for heterotrophic growth), until a critical maximum is reached, followed by decline (Tomascik and Sander 1985, Anthony and Fabricius 2000). Carbonate sediments, which are characterized by extremely low organic content, offer less organic material for heterotrophic energy gains in corals; but respiration is required to clear these sediments, taking energy from the coral. Clearly, there are mixed effects depending upon what type of sediments are present (see discussion on nutrients above). The FEIS must clearly distinguish between the differing impacts to coral from different sediment sources/types. Another concern in this section is the inappropriate use of the findings of Randall and Birkeland (1978), which found species rich coral assemblages under somewhat high sediment loads. However, these sediments were from the Fouha River and were primarily organic in nature, feeding the heterotrophic functions of the corals. Also, the discussion presented in this section is lengthy and not necessary. However, this lengthy discussion provides insight into the authors' bias, and further adds credibility to the claim that this bias consistently minimizes the expected impacts of this project. Finally, it seems imperative that the EEP (a necessary addition to the FEIS, as suggested above) should include monitoring of sediment characteristics dynamics.

Vol. 4, Ch. 11, pg. 11-21

B-018-043

Thank you for your comment. The cumulative impact analysis in Volume 7 has been expanded in response to public and agency comments.

B-018-044

Thank you for your comment. Volume 1, Section 1.4 in the DEIS provides a Global Perspective Background, which explains the various international and military capability requirements that were considered for the realignment of military forces. This section describes how several locations were considered throughout the Pacific region for the military relocation based upon 1) response times, 2) freedom of action (the ability of the U.S. to use bases and training facilities freely and without restriction at a particular locale), and 3) international treaties and agreements with Japan and other Western Pacific allies. The U.S. locations in the Pacific region considered for the military relocation were Hawaii, Alaska, California, and Guam. Non-U.S. locations considered included Korea, the Philippines, Singapore, Thailand, and Australia, because they are allies to the U.S. and are well situated for strategic force deployment. After analyzing the international and military capability requirements for each locale mentioned above, Guam was the only location for the relocation that met all the criteria.

Kilo Wharf, as well as other locations within Apra Harbor, were seriously considered as possible alternatives but were dismissed as described in Section 2.3, Volume 4. Kilo Wharf is already near capacity without considering the aircraft carrier visits. Kilo Wharf is the only wharf in Apra Harbor that has approval for large quantities of munitions and a waiver is required for ships carrying ammunition to berth in Inner Apra Harbor. The evaluation of the capacity of Kilo Wharf is based upon the wharf's use for loading and unloading ammunition carrying ships. Smaller load-outs of ammunition to combatant ships are already accomplished at the berths in the inner harbor. No additional capacity can be created at Kilo Wharf as the capacity is based upon use of Kilo Wharf by ships not capable of performing their mission in the inner harbor. These waivers are not

B-018-068

No supporting literature is provided for the use of the spectral band ratio (NDVI) to estimate coral stress. It is common knowledge that this index will change with depth, light-levels, and many other natural factors. The reviewers (Appendix J) appear to agree with this too. This analysis does not seem necessary and could be removed from the FEIS.

B-018-069

Vol. 4, Ch. 11, pg. 11-21
Given the lack of in situ measurements, the reliance on photos, and the inability of the photo-quadrat method to collect accurate coral colony size frequency data (as identified in the comparative study carried out by the resource agencies - Appendix J, and by one of the peer reviewers, Dr. Fabricius), the size frequency analysis section must be removed from the DEIS. It has no scientific merit and therefore offers no assessment of existing conditions. Colony size data must be collected for the coral assemblage characterization using an appropriate method. These data is essential for understanding the impacts of the proposed project, the dynamics of change over time, and for determining the appropriate level of compensatory mitigation. These data must be reported in the FEIS.

B-018-070

Vol. 4, Ch. 11, pg. 11-23, 1st full paragraph
This paragraph summarizes some of the findings presented in Rogers (1990), with an emphasis on points raised in the paper that minimize the impacts of dredging on coral reef ecosystems. However, the DEIS authors neglect to include Rogers' concluding comments in the section in the relevant section in her paper. The examples of dredging projects that either had no significant impacts to coral reef ecosystems or that apparently benefitted them, are presented in same order in this paragraph in the DEIS as provided in the first paragraph of page 186 in Rogers (1990). However, after the last example involving the project to extend an airport at St. Thomas, Rogers states that "sediments are less likely to cause a problem when strong currents are present as in this case. In some of these studies, more detailed or longer investigations might have revealed detrimental effects." It is clear the point the DEIS authors are trying to make here, and it is duly noted, but a more complete analysis of the cited literature should be included in order to avoid coming to an oversimplified conclusion.

Vol. 4, Ch. 11, pg. 11-23, last paragraph
It is important to include a discussion of the important differences between study areas in the literature cited here and the CVN project area, as different factors associated with study area may make comparisons of study outcomes problematic. For example, the work conducted by Brown (1990) was conducted on a massive Porites-dominated reef flat community.

Vol. 4, Ch. 11, pg. 11-26, last paragraph
While the following comment provides no real actionable recommendations, it is included as a matter for the public record. The evolution of the disagreement regarding the use of coral percent cover and coral density and size frequency data to describe ecological function and as inputs into a HEA must be addressed publicly. From the beginning, the local and federal resource agencies have been unanimous in the conclusion that percent coral cover alone is not adequate and that colony density and size frequency

readily granted because the large quantities of explosives berthed at a wharf that is unauthorized for large net explosive weights would represent an increased safety risk to nearby populations. There are also other challenges associated with an aircraft carrier berthing at Kilo Wharf that are manageable for the short duration port visits, but would be untenable for longer transient berthing requirements that include logistics, maintenance, and Morale Welfare and Recreation (MWR) support. Dependents, vendors, commercial delivery vehicles and non-DoD personnel are prohibited from entering the explosive safety arcs around Kilo Wharf. There is limited space for MWR activities at Kilo Wharf. For these reasons, expanding Kilo Wharf or moving existing munitions operations to other wharves is not practical.

A financial cost-benefit analysis provides one such tool used in evaluating environmental consequences of a project, but was not utilized here in selecting the alternative sites considered for the CVN berthing. The site selection criteria analyzed the relationship of several unquantifiable environmental impacts, including amenities and values such as force protection and security, which are difficult to measure. For purposes of complying with NEPA, the weighting of the merits and drawbacks of the various alternatives need not be displayed in afinancial cost-benefit analysis and should not be when there are important qualitative considerations.

B-018-045

Thank you for your comment. The FEIS has been updated to provide a comprehensive assessment of all "secondary" or indirect/induced growth impacts. DoD acknowledges there could be impacts from recreational activities including harvesting of resources. Volume 7 addresses cumulative impacts anticipated to non-DoD areas on Guam based on the military build-up and associated growth.

B-018-070

data can significantly improve an assessment of ecological function and can significantly improve the HEA outputs. There didn't appear to be an issue with this approach until one of the Navy consultants claimed that it is not possible to collect colony density and size frequency data for certain reef communities - such as those within the impact area - that are dominated by corals (e.g., *Porites rus*, *Porites cylindrica*, *Pavona cactus*, staghorn *Acropora* spp.) whose growth forms make it challenging to discern individual colonies. The Navy consultant thus recommended that only percent coral cover be collected. Such an assertion was not supported by a range of experienced coral reef scientists subsequently brought in on a conference call aimed at resolving the issue. Unfortunately, the consultant in question missed a significant portion of the call and maintained his position. This is also despite the authors of a report used by consultant to support his position claimed that his position was not based on an accurate interpretation of their report, and that, indeed, coral colony density and size frequency data should be collected in order to better understand coral reef function Further, the consultant appeared to conflate the purposes of long-term coral reef monitoring and the methods often used to carry out such monitoring with the purpose of an impact assessment and the type of data and methods involved in such an endeavor. The assertion that coral size frequency data could not be collected in Apra Harbor was also undermined by the collection of such data for the study conducted by Smith (2007), and more recently by Dollar et al. (2009) (although see comments below regarding problems with the data collected using the photo-quadrat method). This disagreement was the ostensible reason why the Navy opted out of a contract with the resource agencies, which were originally slated to conduct the impact assessment. This is also after many months of conference calls aimed at developing a scope of work, identifying target ecological parameters, and settling on appropriate survey methods.

Vol. 4, Ch. 11, pg. 11-26, last paragraph

The coral size frequency presented here are unusable. As described in the report of the methods comparison study carried out by the resource agencies (Appendix J), the photo-quadrat method used by Dollar et al. (2009) did not produce reliable estimates of coral colony size and density. The decision to count all colonies partially or wholly within the quadrat, combined with a measurement of the longest colony dimension of even colonies that were only partially contained in the quadrat, would inevitably produce colony size frequency distributions biased towards smaller colonies. For example, the small (say, 10 cm) portion of a 50 cm coral colony that extended into the quadrat would be measured and counted as a whole colony. This is a major methodological flaw and these data must be discarded. Because the photo field of view does not extend beyond the quadrat frame, the measurement of any colonies not wholly within the quadrat cannot be taken. It would not be appropriate to even count only those colonies with their centers within the quadrat (one of the more common decision rules employed with in situ measurements of colony sizes), as it is not possible to tell where the colony center lies if any portion of the colony extends outside the quadrat (although somewhat reliable estimates could be made for species that typically have more symmetrical colony shapes). And because it would only be possible to collect accurate colony size measurements for colonies occurring wholly within the quadrat, only relatively small colonies would be measured because of the relatively small quadrat size used in the study. This would preclude a re-analysis of

B-018-046

Thank you for your comments. Chapter 11 of both Volumes 2 and 4, discusses potential impacts to marine resources from the proposed action. Volume 7 has been revised to include cumulative impacts to marine sources off-base. Mitigation measures will be more clearly defined in subsequesnt US Army Corps permitting actions.

B-018-047

Thank you for your comment. Sampling data indicate that the majority of the sediment (e.g., >50%) is comprised of larger grained material and, therefore is generally referred to as being “coarse” in the EIS. Sediment grain size data is presented as a percentage and is discussed as such in the EIS. The Final EIS has been updated to include a clear presentation of collected grain size data.

B-018-048

Thank you for your comment. A qualitative assessment for soft bottom communities was performed appropriate for the anticipated impacts.

Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems

B-018-070 photos using different decision rules. The great number of large Porites rus colonies known to occur within the project area, for example, would be excluded using this method. See comment below for further discussion about quadrat size.

Vol. 4, Ch. 11, pg. 11-26, last paragraph

B-018-071 The DEI authors state that *Porites lutea* colonies were never encountered with a long dimension greater than 31.5 in (80 cm). It is impossible to obtain a coral colony diameter measurement greater than 119.8 cm using the photo quadrat size employed by Dollar et al. (2009), and the chances of the quadrat falling squarely on a large colony so that occupies the entirety of the quadrat is small. Recommend removal analysis of the size-frequency data collected by Dollar et al. (2009) and strongly recommend collecting colony density and size frequency data as part of an impact assessment utilizing appropriate methods. The presence of very large (>150 cm) *Porites rus* colonies requires the use of a larger quadrat in these areas.

Vol. 4, Ch. 11, pg. 11-31, last paragraph

B-018-072 To which measure of rugosity are the authors referring in the second sentence? Presumably this refers to rugosity as measured with the standard chain-length method used in the Dollar et a. (2009) study, but a different, much coarser-scale, landscape rugosity is used for the HEA. This must be clarified.

Vol. 4, Ch. 11, pg. 11-37, 1st paragraph

B-018-073 Shouldn't the Marine Resources Biological Assessment have been included in the DEIS? This should be included in the FEIS. This and other on-going studies that seem critically important for understanding the range of impacts associated with buildup activities are not provided in the DEIS. Their absence is apparently a result of the compressed timeline, but instead of omitting this important information, it seems as though the time should instead be compromised.

Vol. 4, Ch. 11, pg. 11-37, 3rd paragraph

B-018-074 The Guam Dept. of Agriculture's Division of Aquatic and Wildlife Resources has at least 20 years of aerial sea turtle survey data; it does not appear as though this data set was used in the DEIS, and instead the only sea turtle observation data used was that collected as part of reef community surveys by Smith (2007). In this study, sea turtles were recorded if observed during the course benthic surveys, which did not focus specifically on sea turtles. In my experience, benthic surveyors miss much of what happens in the surrounding water column. It is also likely that the relatively turbid conditions within much of the impact area limited observation of sea turtles in situ. Aerial surveys would provide a much more accurate estimate of sea turtle population within the impact area. To our understanding, the Navy is aware that such data is available.

Vol. 4, Ch. 11, pg. 11-38, 1st paragraph

B-018-075 The DEIS states that "the reef area in the aircraft carrier dredge footprint does not represent a unique or unusual habitat in comparison to the entire Apra Harbor reef complex…" However, the in situ data collected by Dollar et al. (2009) really don't provide the taxonomic resolution required to make such a claim, and can only

impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-049

Thank you for your comment. The Final EIS has been updated to include a discusion of Environmental Protection Plans in Table 4.1-1 of Volume 2, Chapter 4 and in Volume 8, Table 3.1-1.

B-018-050

Thank you for your comment. Relevant quantitative criteria have been added to the Final EIS.

B-018-051

Thank you for your comment. At the current stage of project development, a timeframe of 8 to 18 months is estimated. Further refinement of the dredging timeframe will occur during the final design and permitting phase.

B-018-052

Thank you for your comment. The coral spawning period is identified in Volume 2 and 4, in Chapter 11. This comment will be evaluated and text will be supplemented as appropriate.

B-018-053

Thank you for your comment. The term "rough sea conditions" has been

B-018-075

differentiate between habitat types at the most broad taxonomic resolution (e.g., coral, algae, etc.). Such a statement also does not take into account the large size of the impact area and how this may reduce the overall availability of preferred food sources to green and hawksbill turtle populations. Were algal surveys actually conducted to assess the presence of preferred food species inside and outside the project area? If not, such a study should be conducted in order to adequately assess impacts to the preferred sea turtle food sources.

Vol. 4, Ch. 11, pg. 11-38, 1st paragraph
According to the DEIS authors, the reef area in the aircraft carrier dredge footprint does not contain an abundance of algal species that represent a major food source for sea turtles that cannot be found elsewhere in Apra Harbor. See comment above regarding the lack of appropriate data in support of such a statement. In addition, there may be additional reasons why sea turtles observed in the vicinity of the impact area may prefer this area, such as ship avoidance or some other behavior . Aerial survey data collected by DAWR should by analyzed for patterns of sea turtle distribution within Apra Harbor. It is possible that sea turtles do indeed prefer the proposed impact area.

B-018-076

Vol. 4, Ch. 11, pg. 11-45, 4th paragraph
Review Taylor Engineering, Inc. (TEI)(2009); compare selected statements with actual contents of report; reports and studies reviewed by TEI seem focused mainly on the resilience of non-coral benthic flora and fauna in non-reef environments; do not appear to address impacts to reef flora and fauna; especially concerned about impact coral-associated flora and fauna in indirect impact area where corals and other sessile organisms may be damaged or destroyed by exposure to high sediment loads

B-018-077

Vol. 4, Ch. 11, pg. 11-47, 2nd paragraph from bottom
The statement that the cleared hard surfaces made available after dredging and the added aircraft carrier wharf armor rip rap and vertical pilings will provide beneficial long-term impact for the recruitment of marine flora and invertebrates is inaccurate, not supported by literature, and should be removed. As supported by the results presented in Paulay et al., (2002), the increase in artificial substrate will very likely provide new habitat for non-native species, which tend to prefer artificial substrate to natural substrate already populated by native species. This habitat will be available to non-native, and potentially invasive, species already occurring within Apra Harbor, as well as for newly introduced species. This is does not provide a benefit, and instead will likely be detrimental to the long-term viability of the harbor's (and possibly Guam's) native coral reef ecosystems. The potentially detrimental nature of this impact should be described. The statement that the "development of the pier would provide suitable habitat for species such as benthic invertebrates including sponges, sea urchins, starfish, and mollusks, which are poorly represented within Inner Apra Harbor and the entrance channel areas" also does not take into account the preference of non-indigenous species for artificial substrate. These statements are more examples of the systematic bias resulting in a vast underestimation of the marine resource impacts.

Vol. 4, Ch. 11, pg. 11-47, last paragraph

deleted from the text. Standard turbidity curtains are approximately 20-30 feet (6-9 meters) in length and have a weighted bottom to maintain the effectiveness of the curtain against the movement of currents within the water body. Since the dredge equipment is not stationary for the entire period of dredging, it is impractical to have a silt curtain extending to and being anchored to the bottom of the harbor. The length of time the silt curtains would be in place would be determined through agency coordination and permitting; however, in general terms the curtains would potentially be in place during and after dredging operations until monitoring indicates turbidity levels have returned to pre-dredging concentrations. Specific monitoring requirements would be identified and implemented following agency coordination and permitting.

B-018-054

Thank you for your comment. Volume 4, Section 4.2.2.2/Operation/Nearshore Water contains an analysis of potential impacts from turbidity, siltation, shipboard wastes, and spills. With implementation of proposed upgrades, the existing wastewater collection system at Apra Harbor Naval Complex would be sufficient to handle the wastewater requirements of either a CVN 68 or CVN 78 for a duration of 21 days. Available nutrient and bacteria data were added to the Final EIS.

B-018-055

Thank you for your comment. The proposed site to be dredged is considered of "lower ecological value" than other "unspoiled" sites" present in Apra Harbor. This is mainly due to its previously dredged status; however, multiple other factors were identified in the EIS.

Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard

B-018-077

This statement should be revised to reflect the above-stated concerns regarding the highly questionable benefits claimed for artificial reefs substrate, given our present understanding of the preference of non-native species for artificial substrate.

Vol. 4, Ch. 11, pg. 11-49, 3rd paragraph, 2nd and 3rd bulletpoints

B-018-078

It is not clear why the study was limited to reef area shallower than 60 ft when the impacts of dredging will extend to the harbor bottom. A preliminary spatial analysis indicates that approximately 25 acres of coral reef habitat that occurs at depths below 60 feet on the slopes of reefs planned for dredging. An additional 70 acres of deeper (>60 ft) reef occur on the slopes of reefs within the arbitrary 200-m indirect impacts buffer. Personal observations indicate that some of this slope area is comprised of dense coral cover. For example, much of the reef slope down to a depth of at least 80 feet surrounding the shoals west of Jade Shoals is characterized by prolific coral growth. Coral growth diminishes significantly beyond this depth, but a significant amount of hard-bottom, sponges, and other benthic features occur at these depths. These resources, which would be the most severely impacted by the indirect impacts of dredging, are completely excluded from the impact analysis. As mentioned elsewhere in these comments, the impacts to soft-bottom communities must also be addressed. When considering the totality of coral reef habitat (hard-bottom and softbottom, coral and non-coral areas) within the direct and indirect impact areas, an estimated 440 acres will be impacted to some degree or another. This is a major flaw of the marine resource impact assessment and must be addressed in the FEIS. Since data are not available for these areas, and because much of the data for shallower reef communities are flawed and unusable, we strongly recommend that a much more robust impact assessment be conducted utilizing a range of ecological parameters collected using the appropriate methods.

B-018-079

Vol. 4, Ch. 11, pg. 11-50, 1st paragraph

B-018-080

It is important to state here that the figure presented ("35% of the proposed dredge area contains some coral coverage and virtually all of the area consists of reefs that were dredged 60 years ago...") only refers to reef area shallower than 60 feet. No data is available for reef areas deeper than 60 feet, so this figure does not accurately reflect the true extent of the reef area to be impacted by the CVN project. Also note comments below discussing the limits of the remote sensing method to accurately assess coral coverage as well as comments regarding the importance of non-coral areas.

Vol. 4, Ch. 11, pg. 11-50, 3rd paragraph

B-018-081

It is not clear how the statement, "it can be stated with high certainty that the buffer zone is indeed very conservative" is substantiated in the cited reference, Dollar et al. (2009).

Vol. 4, Ch. 11, pg. 11-50, last paragraph

B-018-082

In the last sentence in this paragraph, the DEIS authors state "in addition, breakage of coral by the dredge that is not removed from the seafloor can also result in impacts to the reef habitats that are bordering the dredge sites." Such an effect is then termed a "potential indirect impact." This is contrary to the statement on (page #) that the coral fragments created and dispersed during dredging would provide an overall benefit. The

assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-056

Thank you for your comment. A detailed compensatory mitigation plan would be submitted as part of the Clean Water Act 404 permit application for construction affecting the navigable waters of the United States (including the CVN transient wharf). Due to the ongoing review of DoD's habitat assessment methodology for coral reef ecosystems and associated uncertainties regarding the scope of mitigation required, a detailed mitigation plan has not been developed nor will one be available for incorporation into the FEIS. However, a number of mitigation options, including watershed restoration and the use of artificial reefs, are discussed in a programmatic nature in Volume 4, Section 11.2 of the FEIS. DoD recognizes that, as part of the CWA Sec. 404 permitting process, additional NEPA documentation may be required to address

B-018-082 latter statement is conflates the acute impacts of storm activity on certain coral species known to depend heavily on asexual reproduction with the long-term impacts of dredging, and is a misrepresentation of the literature.

B-018-083 **Vol. 4, Ch. 11, pg. 11-52, 1st paragraph**
Confused about apparent discrepancy between 10% release rate cited here with use of 2% release rate as worst case scenario on page 11-53. This must be clarified.

B-018-084 **Vol. 4, Ch. 11, pg. 11-52, 2nd paragraph**
The reason for limiting sediment plume analysis to 24-hour period is not clear. Also need to take into account changes in sediment release rates as a result of changing depth - if depth of bottom of silt curtain is constant and depth of dredge area changes, more or less sediment would be released into the water column. How do the depths in the CVN dredge footprint compare to Alpha-Bravo and Kilo Wharf dredging project?

B-018-085 **Vol. 4, Ch. 11, pg. 11-52, 2nd paragraph**
Recommend inclusion of results from recent water quality and ecological survey data collected during the construction of the Kilo Wharf extension.

B-018-086 **Vol. 4, Ch. 11, pg. 11-52, 2nd paragraph**
DEIS states that "none of the plume extends past the dredged boundary near Big Blue Reef," but in the figure to which the statement refers (11.2-2) depicts the plume clearly extending to the west of the project boundary. This statement should be changed to reflect this.

B-018-087 **Vol. 4, Ch. 11, pg. 11-54, 1st bulletpoint**
The statement, "plumes near the bottom would be more extensive because most of the suspended sediment would be released into the bottom layer," underscores the necessity of assessing impacts to reef areas >60ft, which include areas along the slopes immediately adjacent to dredging areas and which have been reported to possess relatively high coral abundance.

B-018-088 **Vol. 4, Ch. 11, pg. 11-54, 2nd[1] bulletpoint**
What is the reason for using the 1% and 2% sediment release rates, with the 2% release rate used to simulate the maximum environmental adverse impact scenarios? Confused about previous reference to a 10% release rate (=90% retention rate) referred to on page 11-52. How does altering the silt curtain effectiveness (how is this measured?) by a factor of 4 affect the model results? Why was this value used? Is this explained in the full report? If so, this description must be included here.

B-018-089 **Vol. 4, Ch. 11, pg. 11-56, 1st paragraph**
It is not clear how the cumulative sediment deposition total was calculated, and the reason for the need to extrapolate as opposed to running the model across the duration of the dredging activity (except that perhaps computational power was limited). Please clarify.

specific permitting requirements and implementation of required compensatory mitigations.

B-018-057
Thank you for your comment. Please see response to B-018-055.

B-018-058
Thank you for your comment. The FEIS text has been modified as appropriate. DoD acknowledges that silt curtains and other BMP's are not 100% effective but, if employed and maintained properly, can be extremely effective at minimizing impacts. It should also be pointed out that Kilo Wharf is located in a part of Apra Harbor with signficant wave action/exposure.

B-018-059
Thank you for your comment. Available nutrient and bacteria data were added to the Final EIS. The Final EIS reflects an analysis of potential impacts from the re-suspension of nutrients and bacteria.

B-018-060
Thank you for your comment. Volume 4, Section 4.2.2.2/Operation/Nearshore Water contains an analysis of potential impacts from turbidity, siltation, shipboard waste, and spills. With implementation of the proposed upgrades, the existing wastewater collection system at Apra Harbor Naval Complex would be sufficient to handle the wastewater requirements of either a CVN 68 (Nimitz Class) or CVN 78 (Ford Class) aircraft carrier for a duration of 21 days. Proposed improvements to the wastewater system at Naval Base Guam, which have been previously discussed, would result in a minor beneficial impact to the treatment of wastewater and thus nearshore receiving waters. The Final EIS includes a discussion of runoff from the surfaces of ships.

B-018-090

Vol. 4, Ch. 11, pg. 11-56, 2nd paragraph, 2nd bulletpoint
The DEIS makes reference to Brown et al. (1990), which suggests that relatively slow current speeds (<3cm/second) are often sufficient to remove the small aggregates from the tops and flanks of mound-shaped and branching corals. However, some of the coral species present within the impact area, including the most dominant coral species (*Porites rus*), cannot be characterized as being either mound-shaped or branching, so the appropriateness of this reference to the situation within the impact area is limited. Porites rus, especially at greater depths, is composed primarily of horizontal plates, the surfaces of which are uneven, with concave areas that collect sediment and result in tissue loss (as mentioned in the 3rd bulletpoint on page 11-56).

B-018-091

Vol. 4, Ch. 11, pg. 11-56, 2nd paragraph, 3rd bulletpoint
The DEIS states that while the relatively steep reef slopes along the margin of the reefs targeted for dredging are among the areas of highest coral cover, "indirect impacts from suspended sediment would be mitigated by downgradient flow with little accumulation on the steep reef face (MRC 2009c). Much of the coral cover on the steep reef slopes is comprised of *Porites rus*, which exhibits a plate growth form. This morphology provides for a larger surface area exposed to light. However, this morphology also readily accumulates sediment. The horizontal Porites rus plates, even on relatively steep reef slopes, will collect significant amounts of sediment. This section must be altered to reflect this point.

B-018-092

Vol. 4, Ch. 11, pg. 11-57, 1st paragraph
The claim that dredging activity will result in the expansion of coral coverage should be removed entirely. This statement conflates the acute impacts of storm activity on certain coral species known to depend heavily on asexual reproduction with the long-term impacts of dredging, and is a misrepresentation of the literature.

B-018-093

Vol. 4, Ch. 11, pg. 11-57, last paragraph
The DEIS states that "anticipated effects from the dredging associated with the proposed aircraft carrier project are not expected to exceed the "normal" conditions observed over several days in the Inner Apra Harbor Channel," and goes on to state that "there are distinct water quality differences (i.e., turbidity zones) in Apra Harbor...field observations during surveys indicated substantially higher turbidity in the Inner Apra Harbor Entrance Channel than in the proposed aircraft carrier turning basin dredge area. It was also observed that ships transiting through the Inner Apra Harbor Entrance Channel created plumes of resuspended sediment that reached the surface directly over the area occupied by "dense coral communities" within the Inner Apra Harbor Entrance Channel. Hence, these communities support the expectation that minimal indirect impacts would occur as a result of the proposed dredging." As stated above, turbidity levels are generally higher in the Entrance Channel than in the proposed turning basin dredge area. While dredging may not cause water quality to exceed "normal" turbidity levels experienced by coral communities occurring in the Inner Apra Harbor Entrance Channel, the conditions in the Entrance Channel and in the proposed turning basin are not equivalent. Therefore, it is not appropriate to infer that dredging will not cause conditions to exceed what is "normal" in the proposed turning basin.

B-018-061

Thank you for your comment. A detailed compensatory mitigation plan would be submitted as part of the Clean Water Act 404 permit application for construction affecting the navigable waters of the United States (including the CVN transient wharf). Due to the ongoing review of DoD's habitat assessment methodology for coral reef ecosystems and associated uncertainties regarding the scope of mitigation required, a detailed mitigation plan has not been developed nor will one be available for incorporation into the FEIS. However, a number of mitigation options, including the use of artificial reefs, are discussed in a programmatic nature in Volume 4, Section 11.2 of the FEIS. DoD recognizes that, as part of the CWA Sec. 404 permitting process, additional NEPA documentation may be required to address specific permitting requirements and implementation of required compensatory mitigations.

B-018-062

Thank you for your comment. Please see response to B-018-055. The FEIS has been revised to reflect the most up-to-date information available.

B-018-063

Thank you for your comment. See comment B-018-055. No revision to text; the statement appropriately describes the affected environment within the proposed project areas as a previously disturbed site.

B-018-064

Thank you for your comment. Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would

B-018-094

Vol. 4, Ch. 11, pg. 11-57

In general, this section appears to consistently underestimate the indirect impacts of dredging. As John McManus, one of the peer reviewers pointed out, "Coral communities tend to develop to the limits of environmental perturbation and stress characteristics of a particular site. Additional loading of sediments can easily overwhelm the sediment removal mechanisms of the existing corals, especially in places which are somewhat shielded from strong current flow. Thus, in our study of sediment impacts associated with mining in the central Philippines, the massive *Porites* colonies and other corals were forced to release large amounts of mucous to remove the unusually high loads of sediment. The currents were not strong enough to remove this heavy mass of sediment-laden mucous, and nearly all corals in the impacted area basically 'smothered' to death. That area had been similarly inhabited by moderately sediment-tolerant corals." The analysis of indirect impacts to coral reef resources should be presented in a more objective manner, and should consider the input of expert input such as that from Dr. McManus

Vol. 4, Ch. 11, pg. 11-58, 1st full paragraph

The conclusion that coral recruitment is limited by the availability of hardbottom, and not by suspended sediment levels, is completely unsubstantiated. The limited coral recruitment rates observed on Guam over the last couple decades (see work by National Park Service at Asan and Birkeland's work at Luminao and other sites) are likely limited by larval supply, and also by pre- and post-settlement factors. More recent literature should be discussed here. In addition, the presence of coral does not necessarily mean the reefs are healthy. This is one of the main reasons why size frequency data is much more heavily relied upon than percent coral cover in ecological assessments and monitoring.

B-018-095

Vol. 4, Ch. 11, pg. 11-58, 2nd full paragraph

DEIS states that "the area of potential effects comprises a relatively small fraction of the total live reef area mapped in Apra Harbor," but does not specify what fraction of area this represents. This statement appears to be entirely unsubstantiated, yet is the basis for many claims of less than significant impacts to various resources. Recommend including this value, and let readers decide if it is a significant fraction of the harbor or not.

B-018-096

Vol. 4, Ch. 11, pg. 11-58, 2nd full paragraph

The DEIS states that "long-term, localized impacts to coral and coral reef habitats would not result in a significant change to the existing EFH condition in Apra Harbor and would also not likely result in decreased reproductive potential (i.e., coral spawning) of the Apra Harbor reef community as a whole." However, this statement relies on the assumption that the communities of coral reef organisms are the same or similar across the entire harbor. This is not the case, as different parts of the harbor host different assemblages, depending on a variety of factors (depth, proximity to anthropogenic impacts, water quality, hydrographic regime, etc.). Also, none of the surveys conducted for this DEIS provide data that support the assumption. On the contrary, surveys condcuted by the resource agencies as part of the methods comparision study (Appendix J) suggest that coral species not previously recorded anywhere on Guam (in Apra Harbor or beyond)

be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-065

Thank you for your comment. The Navy coral surveys were conducted in-situ at the sites of the proposed project area. As noted previously the Navy has used a scientifically recognized and defensible survey methodology. Further, the analysis was performed by recognized experts from the University of Hawaii and the National Coral Reef Institute.

B-018-066

Thank you for your comment. Please see response to B-018-055.

B-018-067

Thank you for your comment. Text has been modified as appropriate.

B-018-096

occur within the impact area. The taxonomic resolution of the resource agency surveys allows an accurate comparision between reef communities. It would be necessary to conduct surveys using this or a similar method with the same level of taxonomic resultion across the harbor to properly evaluate the assumption that the impact area does not possess unique EFH, or that if if the area does not support unique species or assemblages (and thus non-unique EFH), what fraction of the total area of a given EFH type within Apra Harbor do the communities within the impact area represent. This type of data would also be required to support the statement that the impacts to the reef communities in the proposed turning basin and wharf would result in decreased reproductive potential of the larger Apra Harbor community. It is hard to believe that there will be no decrease in reproductive potential when such a large area reef containing corals and other organisms will be dredged, with an additional, large area impacted by degraded water quality associated with dredging. It may end up that the decrease is not that large, but a better understanding of the reef assemblages in the impact area and the larger harbor are required before evaluating the significance of such a decline in reproductive potential.

B-018-097

Vol. 4, Ch. 11, pg. 11-58, last paragraph

The statement that "based on the most environmentally adverse scenario model run, none of the projected contours of sediment deposition extend to the large patch reefs characterized as benthic communities with high coral coverage" appears to be incorrect, as associated figures depict contours extended to some of the shallow shoals. Also, see comment above on inadequacy of coral cover to value coral reef ecosystem function.

B-018-098

Vol. 4, Ch. 11, pg. 11-58, last paragraph

The DEIS states that "…the coral community in the potentially affected area is not comprised of unique species; almost two thirds (63%) of the area to be dredged contains coral coverage of less than 30%, the project area is previously disturbed, having been dredged in 1945, and although not "unhealthy," the coral in the project is sediment-laden and not as healthy as coral at the shoal area further away from the channel (Dollar 2009)." With regard to unique species, as is mentioned in previous comments, data collected by the Navy consultants is not adequate to make the categorical claim that no unique species occur in the affected area. It does not appear as though the individuals conducting the surveys possessed the required knowledge of Apra Harbor's marine flora and fauna to make such a statement. The detection of several coral species during the resource agency surveys that appear to be species not previously reported from Guam, at the very least, suggest that such a comment not be made until adequate data be collected. This data was provided to the Navy consultant several months prior to the release of the DEIS, along with the rest of the data collected during the field work for the comparison study carried out by the resource agencies. Even if a given species is not "unique" to the affected area, the presence of a species that is rare or uncommon demands special consideration, and should require additional mitigation, such as translocation or other protection measures. Such a statement also does not take into account the potential for unique assemblages. The presence of unique assemblages within the project area is not surprising, as this area represents a distinct physiographic/biological zone within the harbor. It is likely that these assemblages are distinct from those occurring in other areas within the harbor, as the project area is located at a relatively large distance from the

B-018-068

Thank you for your comment. Text revised to reflect the peer review was limited to survey methods appropriate to for capturing baseline reef ecosystem function.

B-018-069

Thank you for your comment. Please see response to B-018-055 and B-018-065.

B-018-070

Thank you for your comment. Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-098

harbor mouth and thus is less influenced by wave and current action and would possess fewer species common to environments outside the harbor; is further protected from wave action by the large, shallow shoals surrounding it; and is likely more heavily influenced by the nutrient-rich organic matter provided nearby rivers and the extensive mangrove system in Sasa Bay.

The second part of the statement assumes that reef areas with <30% live coral cover are not particularly valuable and thus impacts to these areas are not as detrimental as one might think. The focus on living coral cover as the sole determinant in a reef's function and value is not appropriate, and usupported by the literature (see comment above), as even the healthiest of reefs can differ significantly from each other in the amount living coral and the relative composition of coralline algae, turf algae, macroalgae, sponges, and other organisms that comprise the benthic communities.

As discussed in the comment above, while it is likely that a large portion of the project area was dredged in the 1940s, the exact footprint of the historical dredging activity is not know. Data and observations from surveys conducted in the affected area would suggest that there are significant reef areas that likely were not dredged in 1945. Such a statement also does not take into account the additional area of reef habitat below 60 feet, much of which would have been directly impacted by historical dredging activity. And although these reef areas certainly would have been indirectly impacted by dredging, the underlying structure would have remained and the remaining living benthic communities would have been able to recover more quickly than reef communities that would have had to re-establish in the areas directly impacted by dredging. Also, as noted above, the slopes of the flat-topped deeper reef areas, in general, possess more significant reef growth than the tops of these reefs.

Vol. 4, Ch. 11, pg. 11-59, 1st paragraph

B-018-099

It is not clear why sedimentation rates of 1000 and 40 mg/cm2 1/4 in (6 mm) are focused upon so heavily. Please clarify the use of these values.

Vol. 4, Ch. 11, pg. 11-59, 2nd paragraph

B-018-100

In the second sentence of this paragraph, it is stated that "the area of coral within the indirect impact area that is shallower than 60 ft is assumed to be temporarily lost due to indirect dredging impacts…" However, there is no consideration of impacts to reef communities below 60ft, which would certainly be impacted by sediment, and possibly by larger debris, released during dredging.

Vol. 4, Ch. 11, pg. 11-59, 3rd paragraph

B-018-101

The assumption that indirect impacts from Alternative 1 would be "short-term and localized, and that recovery would be expected within five years" is not adequately supported. Indeed, the sum of many of these comments strongly suggests otherwise. Recommend altering this statement to reflect this.

Vol. 4, Ch. 11, pg. 11-59, last paragraph

B-018-071

Thank you for your comment. The Navy collected a robust data set to include coral distribution, benthic cover, fish biomass, and fish and invertebrate species abundance. A standard functional assessment technique that accurately characterized and quantifies losses and gains of coral aquatic resource functions, would ideally be used. However, functional assessment methodologies are an evolving science and the adequacies of existing methodologies are heavily debated in the scientific community. Further, the Compensatory Mitigation Rule recognizes the evolving nature of science on this issue and does not mandate any particular assessment methodology. The Navy assessment used a historically approved methodology followed by the USACE and NMFS for quantifying impacts to coral reef ecosystems. For well over 30 years coral reef ecosystem monitoring and impact assessments have been based on percent coral cover. Due to the complexity of this ecosystem percent coral cover has been identified as "the best current available science" standard (or proxy) to attempt capturing the thousands of elements that comprise a coral reef ecosystem. In light of the continued dispute on what parameters need to be collected to fully capture the impact to coral reefs, the Navy's assessment is currently under review by USACE . Upon completion of that in-depth review, if USACE feels additional information is warranted the Navy will seek additional data and revise its analysis appropriately.

Text has been revised to acknowledge the limited value of size-frequency distribution in determining coral assessments.

B-018-072

Thank you for your comment. The text has been clarified as appropriate.

B-018-073

Thank you for your comment.

B-018-102

Here the DEIS authors state that "implementation and enforcement of appropriate BMPs and potential mitigation measures would reduce the effects of dredging, possibly from adverse to no adverse impacts." However, BMPs are not described in sufficient detail (find other references to BMPs). Committments to certain BMPs and an analysis of their effectiveness must be made in the DEIS and especially in the ROD.

B-018-103

Vol. 4, Ch. 11, pg. 11-59, last paragraph

The final sentence in this paragraph states that "no adverse effects to EFH are expected from indirect impacts of sedimentation to coral habitat and other benthic habitat with appropriate implementation of dredging BMPs and potential mitigation measures. However, without detailing the BMPs and mitigation measures, including evaluating the effectiveness of each, such a statement remains unsupported. In addition, this statement appears to be in contrast to information provided in the previous paragraphs.

B-018-104

Vol. 4, Ch. 11, pg. 11-62, 1st paragraph

The DEIS states that "the seasonal spawning of scalloped hammerhead sharks, although reported to be extremely rare (Navy 2009c) and seasonal high concentrations of adult bigeye scad, may also be temporarily disturbed by increased vessel traffic and dredging activties." However, the lack of data regarding the scalloped hammerhead data, and especially the heavy reliance on a single, unsubstantiated personal communication, does not mean that their occurrence is rare. Indeed, it appears as though the authors have made a serious error in conflating "spawning" with "pupping." Apparently very little effort has been made to document the scalloped hammerhead pupping activity, and the result is that all know about is the result of a personal observations (mainly, the catch of young individuals within the area on a seasonal basis). In addition, the impact on these PHCRT species by vessel traffic and dredging activities should not be limited to concerns about collisions between vessels and adult fish or impacts to EFH. Disruption to movement and behavior of these species should also be discussed. Such impacts would be of particular concern for the scalloped hammerheads, which may be especially susceptible to disruptions in behavior during spawning activities.

Vol. 4, Ch. 11, pg. 11-62, 3rd paragraph

Here the DEIS states that the presence of back fill and pilings installed during wharf construction would add benthic habitat suitable for colonization by sessile organisms. Indeed, these structures would be colonized by a variety of sessile organisms and would be inhabited by associated fishes and invertebrates, but these communities are distinct from natural reef communities and should not be considered beneficial. This is especially true when considering that artificial reef habitat (especially wharves and other structures near heavy ship traffic) is known to host a disproportionately high number of non-native species (Cite Gustav). Instead these structures should be considered detrimental, as they provide havens for non-native species that have the potential to become invasive and thus threatening native reef communities. This threat is acknowledged in the "Non-Native Species" section on page 11-67.

Vol. 4, Ch. 11, pg. 11-62, last paragraph

B-018-074

Thank you for your comment. Sea turtles have been assumed to be common around Guam and in some cases concentrated (e.g. Apra Harbor), we are not sure what extra value the ariel survey data would provide. The photos would not be able to differentiate between foraging, resting or transit areas for sea turtles. The Navy has prepared a BA and is in Section 7 consultation with NMFS for potential in-water impacts to sea turtles.

B-018-075

Thank you for your comment. Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-104

See comment above regarding the claimed benefits of the installation of artificial structures. This statement should be removed entirely or altered.

Vol. 4, Ch. 11, pg. 11-64, 2nd paragraph, last bulletpoint

B-018-105

See comment above regarding the claimed benefits of the installation of artificial structures. This statement should be removed entirely or altered.

Vol. 4, Ch. 11, pg. 11-64, 3rd paragraph

B-018-106

BMPs are not described in sufficient detail (find other references to BMPs) to make such a statement. Commitments to certain BMPs and an analysis of their effectiveness must be made in the DEIS and especially in the ROD. Recommend removal of this statement unless BMPs are described in detail. See comment above.

Vol. 4, Ch. 11, pg. 11-67, 2nd paragraph

B-018-107

The second sentence in this paragraph presents a misreading of the cited paper (Paulay et al. 2002). The 5500 species noted in the Paulay et al. paper include all known native and non-native reef-associated species on Guam. Paulay et al. (2002) report numerous non-native species, the majority of which were restricted to Apra Harbor. This change must be reflected in the FEIS.

Vol. 4, Ch. 11, pg. 11-67, 3rd paragraph

B-018-108

Instead of arriving at the more sensible, logical, and scientifically-defensible conclusion that the presence of non-native species pose a very real threat to native reef communities (as described just a few sentences earlier in the DEIS), the authors state that the recruitment of some non-native species from the inner harbor area to the new aircraft carrier wharf pilings may "enhance the community assemblage and diversity of the area." While diversity may increase in the short-term with the recruitment of non-native species, it is...Statements such as this are misleading. This statement should be removed and instead the detrimental effects of non-native species should be included in the analysis. This statement is an example of the consistent bias towards underestimating the impacts associated with the CVN Berthing project, and even goes so far as to claim benefits of activities that are actually detrimental.

Vol. 4, Ch. 11, pg. 11-67, 6th paragraph

B-018-109

This paragraph states that less than significant impacts would be expected to marine flora and invertebrates as a result of CVN operations. While it is acknowledged that increased vessel traffic may disturb organisms living in the upper water column or in or on the sediments due to propeller wash and resuspension of sediments, and that the impacts to marine flora and invertebrates would be long-term, the impacts are minimized and considered episodic and minor, considering the existing condition. However, no evidence is provided to support this claim. Observations of overturned, damaged sponges, other reef organisms (see comment X for discussion of impacts to corals) suggest that the propeller wash of large ships have very real, long-term impacts on the marine flora and invertebrates. It is not clear what types of ships cause this type of damage, but it is likely that the massive aircraft carriers brought into the harbor by the Navy are responsible for at least some of the damage. An increase in vessel traffic

B-018-076

Thank you for your comment. Coral flora and fuana impact analysis are discussed under the EFHA. The studies mentioned are focused mainly for infaunal-type soft bottom communities.

B-018-077

Thank you for your comment. One could argue the beneficial and negative impacts for a newly established sessile community on hard substrate, which may provide habitat for native and non-native species, replacing an area of mostly rubble and soft bottom habitat. The Mariana Biosecurity Plan to be prepared by the Navy may address some of these issues. Text has been revised appropriately.

B-018-078

Thank you for your comment. Please see response to B-018-070.

B-018-079

Thank you for your comment. The soft bottom community has been qualitatively addressed in the EFHA contained within the FEIS. The acreage of soft bottom community identified in the comment appears to be greatly exaggerated and redundant to communities already identified. Text has been revised as appropriate.

B-018-080

Thank you for your comment. The EIS assumes adverse impacts to an area 40 ft. (12 m) outside the dredged areas.

Please see response to B-018-070 in regards to habitat assessment methodologies.

B-018-081

Thank you for your comment. The text has been clarified as appropriate.

B-018-109

associated with the buildup (not just CVN traffic) will certainly increase the level of impact to marine flora and fauna. While marine flora would likely be more resilient to such impacts, slower-growing invertebrates, such as sponges, would be more vulnerable. In addition, even episodic impacts have the potential to alter the reef communities along the paths of vessel traffic by the regular or semi-regular impacts to flora, invertebrates and associated EFH, with more resilient species replacing less resilient species as the impacts increase in frequence and intensity. While such impacts are speculative, a conservative approach to evaluating these impacts should be adopted in the place of adequate scientific evidence to the contrary.

B-018-110

Vol. 4, Ch. 11, pg. 11-67, last paragraph
The first sentence of the last paragraph on page 11-67 states that "there would be long-term, localized, and mitigation for indirect operational impacts? Please clarify.

B-018-111

Vol. 4, Ch. 11, pg. 11-67, last paragraph
This paragraph states that "tugboats would disturb bottom sediments that could potentially be deposited on corals in and near the turning basin, including Big Blue Reef" but goes on to minimize these impacts by claiming that because the majority of sediment grab samples and cores consisted of relatively large-grained (=not silt) material, the extent and duration of impact of resuspended materials would be minimized. This paragraph also refers to an earlier section of the DEIS that cites research suggesting that corals exposed to sandy, nutrient-poor sediments experience fundamentally different outcomes than those exposed to silt-sized sediments rich in organic matter and nutrients. However, both of these points do not discuss the disproportionate impact of silt on corals and other marine organisms, even when it comprises only 10% or 17% of bottom sediments. This issue is addressed in other comments.

B-018-112

Vol. 4, Ch. 11, pg. 11-68, 2nd full paragraph
The last sentence in this paragraph states that "the indirect impacts of ship traffic within the proposed aircraft carrier channel on nearby coral shoals would be comparable to existing impacts for current ship traffic, which are minor and short-term." No evidence is cited to support the claim that current impacts are minor and short-term. Anecdotal evidence suggests that the coral reef communities on the periphery of ship navigational channels are indeed impacted by the direct physical impact of propeller wash (in the form of overturned sponges, corals, etc.) and possibly by the indirect impacts of sediment resuspension. Recommend collection of data in an attempt to quantify this impact; possibly incorporate sampling design aimed at answering this question into large impact assessment, which should be re-done (see other comments).

B-018-113

Vol. 4, Ch. 11, pg. 11-68, last paragraph
Here the DEIS authors appear to suggest that any indirect impacts to EFH as a result of CVN operations would be offset by the long-term benefits conferred by the additional habitat provided in the form of the aircraft carrier wharf vertical pilings and rip rap. In no way should artificial reef structure be considered an appropriate offset of impacts to natural reef communities. This is especially true in Apra Harbor, where artificial

B-018-082

Thank you for your comment. Coral directly impacted during dredging and not removed from the water, may still survive, this is still considered an adverse impact occurring within the direct dredge area. Text will be reviewed and revised as appropriate.

B-018-083

Thank you for your comment. The document has been clarified regarding sedimentation as appropriate.

B-018-084

Thank you for your comment. Text has been clarified as appropriate.

B-018-085

Thank you for your comment. Recent data has been included in the FEIS as appropriate.

B-018-086

Thank you for your comment. This line represents the 200 m coral study boundary. Text/Figures have been revised to clarify this.

B-018-087

Thank you for your comment. An adverse indirect impact has been assumed to 40ft (12m) beyond the direct impact area that accounts for this bottom plume.

B-018-088

Thank you for your comment. The document has been clarified regarding sedimentation as appropriate.

B-018-113 substrates appear to be preferred by non-native species, and thus contribute to an elevated risk of impact of marine invasive species to natural reef communities.

Vol. 4, Ch. 11, pg. 11-69, 1st paragraph

B-018-114 Again, the DEIS authors acknowledge potential impacts to fish within the Apra Harbor channel and associated nearby shoals and nurseries (Sasa Bay) by increased aircraft carrier and MEU embarkation and commercial ship movements through underwater noise or physical disturbances and resuspension of sediments from proposed dredging or propeller wash, but appear to claim that these impacts would be offset by the additional recruitment potential of juvenile finfish from Sasa Bay to the aircraft carrier wharf . No evidence is provided to support the claim that juvenile finfish from Sasa Bay or other nearby nursery areas would recruit to these structures. Furthermore, as stated in the above comment, the installation of artificial structures should in no way be considered mitigation for impacts to natural reef communities. This is especially true in Apra Harbor, where artificial substrates appear to be preferred by non-native species, and thus contribute to an elevated risk of impact of marine invasive species to natural reef communities.

Vol. 4, Ch. 11, pg. 11-69, 2nd paragraph

B-018-115 The claim that "the deeper channel resulting from dredging activities would cause decreased turbidity during current operations and would offset the potential increase in turbidity from carrier operations" completely unsubstantiated. Please remove or provide appropriate support for such a statement.

Vol. 4, Ch. 11, pg. 11-69, 4th paragraph

B-018-116 The DEIS authors conclude that there would be no adverse effects to EFH from operation, and that Alternative 1 would result in less than significant impacts to EFH from standard Navy operating procedures and BMPs to protect marine resources. It is not clear how such a conclusion is reached when a list of long-term impacts is provided immediately preceeding this statement. Recommend changing this section to reflect information provided in comments above pertaining to EFH impacts.

Vol. 4, Ch. 11, pg. 11-73, 1st full paragraph

B-018-117 The Regional Biosecurity Plan and the associated analysis of marine biosecurity risks will contain information critical for assessing the potential risk of impacts from marine invasive species. This information should be included for review prior to the release of the FEIS.

Vol. 4, Ch. 11, pg. 11-73, last paragraph, 1st bulletpoint

B-018-118 The two dredging/filling restrictions during coral spawning periods call for different levels of protection, with the first calling for cessation of dredging operations during the period of peak coral spawning in July in consultation with the Guam DAWR and the second point calls for the prohibition of dredging or filling of tidal waters during hard coral spawning periods, usually around the full moons of June, July, and August. Based on the requirements adopted by the CNMI DEQ based on the recommendations of Dr. Peter Houk, we recommend the adoption of a revised version of the second proposed

B-018-089

Thank you for your comment. The majority of the sediment (e.g., >50%) is comprised of larger grained material and, therefore is generally referred to as being “coarse” in the EIS. Sediment grain size data is presented as a percentage and is discussed as such in the EIS. The EIS will be updated to include a clear presentation of collected grain size data. The three-dimensional circulation and transport model of the project area was developed using the Environmental Fluid Dynamics Code (EFDC). The model included wind and tide forcing, and fresh water inflow into the Inner Apra Harbor; the dredge plume was simulated by loading the water column with specified quantities of suspended sediment composed of 5 different grain sizes. The sediment grain distribution was determined from bottom samples taken in the project area.

B-018-090

Thank you for your comment. The reference is still appropriate - no text revisions were made.

B-018-091

Thank you for your comment. The DEIS also states that significant adverse impacts would be seen up to 12m away from the dredged area from excessive cumulation (>6mm) of sediment deposition. These slope areas would receive Navy compensatory mitigation as decided by the USACE. Text has been revised as appropriate to clarify.

B-018-092

Thank you for your comment. The text was reviewed and revised as appropriate. Please note that the direct and indirect activities were already identified as adverse. The Navy has not received any "beneficial credit" in this statement.

B-018-118 action. See comment above for more information regarding the prohibition of dredging operations around the period of coral spawning.

B-018-119 **Vol. 4, Ch. 11, pg. 11-73, last paragraph**
Guam Department of Water Resources (GDAWR) should be "Guam Department of Agriculture - Division of Aquatic and Wildlife Resources)

B-018-120 **Vol. 4, Ch. 11, pg. 11-75, last paragraph**
The use of percent coral cover plus rugosity to capture the 3-D complexity of the reef does not address the concerns of the resource agencies (federal and local - should mention local resource agencies, as expressed in earlier discussions and comments and in a letter from the Governor of Guam). The resource agencies have consistently advocated for the use of coral colony density and size class data as more appropriate HEA inputs, and do not support the use of coral percent cover alone. While the use of rugosity is, in theory, more informative than percent coral cover alone, there are a number of reasons why colony density and size class data are more robust HEA inputs and why the type of rugosity data used in the DEIS is not appropriate. Rugosity, as used in the HEA calculations, is a coarse-scale, landscape rugosity derived from bathymetric data. This type of rugosity, is not really what most ecologists consider rugosity, which is a measure of topographic complexity at the scale of local sites (and as influenced by the shape conferred to the reef by coral colonies and other topographic features). Instead, the "rugosity" used here is actually just a measure of the slope of the reef and does not capture the local-scale topographic complexity that is known to influence, or be associated with, various local ecological characteristics and aspects of ecological function (fish diversity and abundance, macroinvert diversity and abundance, etc.). For example, the landscape rugosity measurement would not be able to discriminate between a coral community dominated by encrusting corals or other low-relief features (i.e. low rugosity) and one dominated by massive corals and other higher-relief structures (i.e., high rugosity). This would be the type of information appropriate for a HEA, as it provides a much better understanding of the ecological characteristics and functions specific to a given reef area. The use of bathymetry is more appropriate for determining 3D-D reef area, which is larger than the planar area of a reef. Interestingly, rugosity data collected using the well-accepted chain-length method was collected during surveys carried out by Dollar et al. (2009). It is not clear why these data were not used. But also note the low statistical power of this study and the lack of data for areas deeper than 60 feet.

Vol. 4, Ch. 11, pg. 11-77, 2nd paragraph, 2nd bulletpoint
The coral habitat index is essentially a more complex version of the "100% coral cover equivalent" method, the validity of which had been rejected by the resource agencies because it is based on the assumption that the only valuable reef is that with 100% coral cover. Such an assumption does not take into account the variable nature of even pristine coral reefs, which can have varying amounts of coral cover and are also often comprised of coralline algae, fleshy algae, sponges, and other benthic organisms. The coral habitat index appears to assign an index value to each pixel based on a variety of factors, including percent coral cover. Pixels with lower percent coral cover values will be

B-018-093
Thank you for your comment. Text has been revised as appropriate.

B-018-094
Thank you for your comment. Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-095
Thank you for your comment. Text has been modified as appropriate.

B-018-120

assigned lower coral habitat index values. When these values are used as inputs into the HEA, the result is that compensatory mitigation is not appropriately scaled.

Vol. 4, Ch. 11, pg. 11-77, 4th paragraph
The use of three-dimensional area value, as presented here, is preferred over 2D estimates, as it more accurately estimates the actual surface area of reef habitat. However, reef habitat with no coral coverage should not be excluded from consideration, as some of this area may be comprised of hard-bottom habitat that provides ecological functions and which is also potential habitat for coral recruitment.

B-018-121

Vol. 4, Ch. 11, pg. 11-78, 5th paragraph
"The shape of the recovery curve, the period over which losses are calculated, expected project timing and an appropriate discount rate" is critical information for understanding how the HEA was carried out and appears to be missing (but recognize that it is presented in the relevant appendix). This should be included in the main body of the FEIS.

B-018-122

Vol. 4, Ch. 11, pg. 11-78
It is critical that the most recent references documenting the current rates of coral recruitment on Guam be incorporated into the impact analysis and the HEA. It appears as though the most recent reference regarding coral recruitment rates on Guam is to a study from the 1980s that looked at reef recovery following a catastrophic Acanthaster outbreak. These data are nearly 30 years old. Since then, the work of Chuck Birkeland, the National Park Service, and others have shown a 1-2 order of magnitude decline in recruitment rates. This has large implications for the recovery potential of damaged reefs or in the development of coral communities at mitigation sites. There is also the larger

B-018-123

issue of assuming uniformity among recovery rates between the past, the present, and the future, with no consideration of cumulative impacts such as climate change and local anthropogenic stressors. If it is too late to assess coral recruitment rates (in consideration of recovery rates for compensatory mitigation projects), should consider use of more recent studies of coral recruitment in assessing recovery rate – even then, coral recruitment in Apra Harbor may be substantially different (higher or lower, not sure) when compared to the study areas.

Vol. 4, Ch. 11, pg. 11-80, Table 11.2-9
The statement, "for simplicity (and in the absence of field data warranting a different approach), a linear recovery rate is utilized for HEA purposes" is the exactlywh y coral size frequency data was requested.

B-018-124

Vol. 4, Ch. 11, pg. 11-81, 2nd paragraph
The DEIS states that "although the HEA assumes permanent loss of habitat due to dredging, in reality there would be coral re-growth that would provide minor functions/services in the dredged areas. This could offset losses of habitat on which artificial reefs are placed." These statements contradict statements made on page 11-78, "areas directly impacted by dredging are considered permanently injured, and therefore experience a 100% loss in ecological services in perpetuity (i.e., no recovery). Any

B-018-096
Thank you for your comment. Please see response to B-018-094.

B-018-097
Thank you for your comment. Text/figures depicting coral study and indirect sedimentation boundaries have been revised. Please see response to B-018-094 for information regarding habitat assessment.

B-018-098
Thank you for your comment. Please see response to B-018-094.

B-018-099
Thank you for your comment. These sedimentation rates are described in detail in the EIS and HEA (Volume 9, Appendix J). Text has been clarified as appropriate in EIS.

B-018-100
Thank you for your comment. Indirect impacts out to 40 ft (12 m) from the dredged areas are considered adverse - the depth may vary.

Please see response to B-018-094 regarding habitat assessment methodologies.

B-018-101
Thank you for your comment.

B-018-102
Thank you for your comment. Text has been modified based on this comment. Location of BMPs have been identified in the text.

B-018-124 recovery would be lost during future maintenance." Recommend removing the statement on page 11-81.

Vol. 4, Ch. 11, pg. 11-83, 3rd paragraph

B-018-125 We are concerned that artificial reef structures remain under consideration as a viable compensatory mitigation method, despite the repeated objections by regulatory agencies. We feel that this type of mitigation is not appropriate compensation for the reef system that will be lost or compromised. The scientific literature, taken as a whole, does not appear to support the use of artificial reefs to replace lost reef ecosystem function and instead casts doubt on the rationale for using artificial reef structures as potential mitigation for the destruction of a natural reef system, particularly when such artificial reefs structures would be in close proximity to natural reef systems.

B-018-126 Several prominent authors have also expressed their doubts about the ability of artificial reefs to mimic natural reef systems. For instance, the International Coral Reef Initiative (ICRI) put forth a Resolution on Artificial Coral Reef Restoration and Rehabilitation in 2005, in which the signatories of the resolution, including Gregor Hodgson, Clive Wilkinson, and Richard Kenchington, agreed that artificial systems cannot replace a natural coral reef and do not function as effectively as a living reef. We believe that the scare resources available for natural resource management be used to reduce threats to natural systems instead of deploying artificial reef structures, especially when the artificial reefs would be placed in an area (i.e. Outer Apra Harbor) that will likely see an increase in threats and a reduction in environmental quality in the coming years.

B-018-127 In addition to the uncertainty in the scientific community regarding the ability of artificial reef structures to increase production or to attract and aggregate mobile reef organisms, or uncertainty about the ability of artificial reefs structures to provide the full range of ecological services provided by natural reefs, there is anecdotal evidence suggesting that placing artificial reef structures in Outer Apra Harbor would not be appropriate. For example, at present there are numerous planned and unplanned artificial reef structures scattered throughout the harbor, from ship and airplane wrecks to discarded appliances and a hand-full of "Reef Balls" (i.e., dome-shaped, hollow concrete structures that were illegally placed in Apra Harbor). The relative paucity of benthic colonizers on these various artificial reef structures does not support the assumption that artificial reef structures placed in Outer Apra Harbor can mimic natural reefs, even after many decades. Structures that have been in Outer Apra Harbor for more than 50 years, (e.g., the Tokai Maru and the SMS Cormoran), for example, exhibit very little recruitment by corals and other macrobenthic organisms. These ships occur within the depth range proposed for the deployment of the artificial reef modules (60 to 120 feet), with both ships resting in 120 feet of water and the shallowest portion of the Tokai Maru and the SMS Cormoran reaching 40 feet and 80 feet, respectively. It appears as though the reduced light availability from the relatively high turbidity of the surrounding water, the impact of sediments, or some other factor or combination of factors may inhibit settlement by corals and other benthic organisms on these structures. Another consideration is the frequency of typhoons and tropical storms around Guam and the potential for these storms to move, damage, or destroy artificial reef structures

B-018-103

Thank you for your comment. The text and EFHA has been revised for the FEIS.

B-018-104

Thank you for your comment. The NOAA citation (2005b) stated the event incorrectly as "spawning" and has been corrected to "pupping" in the FEIS. However, the information regarding this subject is very limited. If the commenter is aware of additional information regarding this subject, please provide it to the Navy.

B-018-105

Thank you for your comment. To compensate for the loss in ecological service provided by coral reef ecosystems, upland reforestation (to improve nearshore water quality), artificial reefs (to provide increased fish habitat) or a combination of these and other compensatory mitigation alternatives will be considered by the Navy to comply with federal laws that protect coral resources. As identified in the 10 April 2008 Federal Register, 40 CFR Part 230, the final USACE compensatory mitigation rule, permit applicants are required to mitigate to no net loss of ecological services and function. Ultimately, the compensatory mitigation is subject to approval by the USACE under the CWA through the Section 404/10 permit requirements.

B-018-106

Thank you for your comment. Text has been added to identify location of BMPs. See previous response to comment above.

B-018-107

Thank you for your comment - the text has been modified as appropriate.

B-018-127

(particularly small artificial reef modules) or any benthic organisms that may be present on them.

We also suggest that the proposed concrete artificial reef modules would not be attractive to divers, especially when natural reef systems such as those at Western Shoals, Gab Gab, Finger Reef, and others are in such close proximity. So in addition to doubts about the ability of artificial reefs to provide the full range of ecological services as natural reefs, we also doubt that the economic services provided by natural reefs, such as attracting divers, or indirect ecological services such as reducing the impact of divers on nearby natural reefs, will be achieved with the artificial reef modules.

While we understand that the U.S. Navy prefer that mitigation activities occur near the reefs damaged or destroyed by the Kilo Wharf Expansion, we are also concerned that any mitigation activities (artificial reefs, coral transplantation, etc.) in Outer Apra Harbor, even if successful, may be affected by the direct impacts of future federal (e.g., U.S. Navy) or territorial (e.g., commercial port) activities, or the cumulative effects of various federal and territorial projects that are currently proposed for Outer Apra Harbor or that may be proposed in the future.

Our concerns regarding the use of artificial reefs have been discussed in detail in our comments on the Kilo Wharf DEIS and FEIS. Please refer to those comments for more information regarding our position.

Vol. 4, Ch. 11, pg. 11-85, 5th paragraph
According to the DEIS, as described in this paragraph, the Cetti Bay watershed restoration project was not successful because land use was not totally controlled and management agreements could not be concluded. While the project has run into management issues, it is far to early to claim that the project failed. Even if the project fails, this should not preclude the implementation of other watershed restoration projects. It only means that a different approach may be warranted.

B-018-128

Vol. 4, Ch. 11, pg. 11-90, 2nd paragraph
Should implement coral translocation as BMP, especially for rare species, but it should be not considered compensatory mitigation because of the often poor long-term success rates of translocation projects.

B-018-129

Vol. 4, Ch. 11, pg. 11-92, 2nd full paragraph
Dredging acreages different than on page 11-50. Please clarify.

B-018-130

Vol. 4, Ch. 11, pg. 11-99, 6th full paragraph
DEIS states that "dive surveys indicate that overall coral community composition within the dredge area are of marginal to modest ecological value, based upon eight criteria…" Many of the indicators provided here appear to rely on faulty data, and do not reflect the true value of the reef communities within the project area. For example, while it is agreed that a substantial portion of the project area is dominated by *Porites rus*, *P. cylindrica*, and other *Porites* spp. (not necessarily a bad thing) it is also important to note that the

B-018-108
Thank you for your comment. This comment was discussed and responded to in a previous response. There is no scientific evidence that states non-native macro-invertebrate species that have been introduced by in Apra Harbor are a very real threat to native reef communities, of which are not that native.

There was no differentiation regarding colonization of non-native vs. native. The text has been revised to state this, and that based on Paulay et. al. (2002) non-native species may be the majority of settlement. Still, one could argue that increased diversity and community, albeit potential for non-native sessile macro-invertebrate colonization, is better than nothing at all. These species will still provide a much needed habitat and forage in the currently devoid Polaris point area. As I'm sure the commenter is aware, the main potential sources of non-indigenous species to Guam are purposeful introductions for fisheries...aside from Pearl Harbor barges being transferred to Apra Harbor. In any case, the Navy is preparing a Micronesia Biosecurity Plan, which will help address these issues.

B-018-109
Thank you for your comment. This comment was addressed in a previous response. Large vessels are assisted by tugs and tug transported events will increase by three times a year. The EIS performs an appropriate impact analysis for this operational impact.

B-018-110
Thank you for your comment. The text has been clarified as appropriate.

B-018-130

photo quadrat method employed by the Navy consultant significantly underestimated the number of colonies of more cryptic taxa (e.g., *Leptoseris incrustans*, *Stylocoeniella armata*, *S. guntheri*, *Montipora* spp., *Acanthastrea* spp., *Astreopora* spp., *Cyphastrea* spp., *Favia* spp., *Leptastrea* spp.. *Tubastrea* spp., etc.) by limiting the analysis to a planar view and preventing a detailed examination of the entire 3-D reef surface. The results of the comparison study (Appendix J) provide a detailed explanation - and quantification - of this underestimation. Species counts arrived at through the work of Smith (2007) also appear to be quite low compared to that observed in the resource agency comparison study, and may be a result of a limited methodology or limited taxonomic expertise. While not presented in the comparison study report in detail, the GCMP biologist recorded at least approximately 80 coral species (and possibly up to 90 or more) within the project area. Photographs were taken of every species observed at every survey site. These photos were provided to the Navy consultant. This is not an insignificant degree of species richness, and must be considered in the impact analysis. And, as mentioned above, some of the corals observed do not appear to have been recorded elsewhere in Guam, including the harbor. Certainly, the diversity of coral and other organisms is an important factor in assessing the ecological value of a given reef community, so the use of data that significantly underestimates the true diversity would understandably de-value the reef community. Also, it is important to ask to which other reef communities are these qualitative estimation of ecological value diversity deemed to be low in comparison? If any comparison were to occur, it should be made between reefs occurring within the direct (and indirect) impact areas and other reefs in Apra Harbor occurring at a sufficient distance away from the project area and which share similar basic physical parameters (slope, depth, area of hard substrate, etc.).

Vol. 4, Ch. 11, pg. 11-105, 2nd full paragraph
The DEIS states that there is no evidence to suggest that the CVN impact area hosts unique marine species. This is a completely unsubstantiated statement, especially considering the apparently limited taxonomic expertise of the Navy consultants. Indeed, it appears as though the opposite is true. During coral reef surveys carried out by government and UOG Marine Lab biologists last spring found several corals, sponges, and possibly other marine organisms that appear to have not yet been found elsewhere in Apra Harbor. In addition, such a statement does not take into account the presence of rare species in the impact area; while these species may occur elsewhere in the harbor, their populations may be significantly impacted by the dredging activity because there are so few of them anywhere in the harbor. In addition, this statement does not take into account. Recommend consulting with local experts regarding this matter, and also recommend that a study on the distribution of rare corals, sponges, and other marine taxa throughout the harbor. This section, and sections containing similar statements, must be revised accordingly. Also recommend reviewing the Navy-funded work carried out by Paulay et al. (1997), which designates the vicinity of the impact area as a distinct physiographic/biological zone within Apra Harbor.

Vol. 4, Ch. 11, pg. 11-105, 3rd paragraph
The DEIS states that "impacts on most reef populations would be short-term and localized" and that "it is anticipated that associated coral communities (should be coral-

B-018-111

Thank you for your comment. There are several factors that will determine sedimentation impacts, including but not limited to: depth, particle size, frequency of disturbance, distance from disturbance, habitat being disturbed, etc. Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-112

Thank you for your comment. Apra Harbor is a working commercial and Navy port. A qualitative analysis based on the negligible extra trips performed over the no-action alternative is an appropriate analysis. As stated in the EIS, vessels remain in the center of the channel with

B-018-130

associated biological communities?) (i.e., marine flora, invertebrates, fish, etc.) would repopulate or move back into the areas after in-water dredging activities cease." While it is acknowledged that "some mortality may be seen in site-attached species (e.g., damselfishes) that have lost their habitat," these statements underestimate the impacts to associated biological communities. The removal of EFH within the dredge footprint and the indirect impacts to nearby EFH will certainly impact fish and other communities. The remaining rubble and accumulated soft-sediment will only accommodate certain reef organisms, and certainly will not be inhabited by the full suite of reef organisms that currently occur in these areas. Previous statements in the DEIS indicate that the habitat lossees within the dredge footprint will effectively be lost in perpetuiy, with maintenance dredging removing regrowth on a regular basis. These statements also do not take into account the effect of the loss of site-attached species on other trophic groups (e.g., reduction in predator populations and release of prey).

Vol. 7, Ch. 2

B-018-131

Unless specified in ROD, mitigation actions described in DEIS may not occur. According to CEQ guidelines, "The reasonable alternative mitigation measures and monitoring programs should have been addressed in the draft and final EIS. The discussion of mitigation and monitoring in a Record of Decision must be more detailed than a general statement that mitigation is being required…The Record of Decision should contain a concise summary identification of the mitigation measures which the agency has committed itself to adopt. 40 CFR Section 1505.2(c)" In continuing, it states that "The Record of Decision must also state whether all practicable mitigation measures have been adopted, and if not, why not." The guidelines also state that "The Record of Decision must identify the mitigation measures and monitoring and enforcement programs that have been selected and plainly indicate that they are adopted as part of the agency's decision. If the proposed action is the issuance of a permit or other approval, the specific details of the mitigation measures shall then be included as appropriate conditions in whatever grants, permits, funding or other approvals are being made by the federal agency (Section 1505.3(a),(b))." Finally, the guidelines state that "If the proposal is to be carried out by the [46 FR 18037] federal agency itself, the Record of Decision should delineate the mitigation and monitoring measures in sufficient detail to constitute an enforceable commitment, or incorporate by reference the portions of the EIS that do so. " However, because of the large magnitude of the proposed actions relative to the land/sea area of Guam, the size of the current population, and the limited capacity of the local government, we strongly recommend that detailed description of all mitigation measures must be included not only in the ROD but also in the FEIS and that DoD must commit to carrying out or supporting (e.g., funding, technical capacity, etc.) these mitigation measures within the FEIS.

Vol. 7, Ch. 4

B-018-132

In general, it must be stated that the cumulative impacts analysis is one of the more egregious failings of the DEIS. Considering the magnitude of the buildup, the limited state of the already degraded natural resources, and the limits of the local government to deal with the myriad buildup impacts, an adequate cumulative impacts analysis and the mitigation developed to address these impacts is critical. The combined impacts of the

minimal impacts to the adjacent shoal ares. See response to other comments.

B-018-113

Thank you for your comment. FEIS text has been revised based on this comment.

B-018-114

Thank you for your comment. The EFHA within the EIS has been clarified. See previous comment responses.

B-018-115

Thank you for your comment. A deeper channel would decrease resuspension of material, however text has been revised regarding the off setting of CVN operations. See previous comment responses.

B-018-116

Thank you for your comment. The EFHA within the FEIS has been clarified and modified as appropriate.

B-018-117

Thank you for your comment. In addition to continuing to implement existing standard operating procedures and DoD requirements covering the inspection and transport of material and personnel from Guam to other locations, the Navy is also funding and coordinating the preparation of a Micronesia Biosecurity Plan (MBP). This MBP will address all aspects of the potential for the transport of the brown treesnake, and all potential non-native marine and terrestrial invasive species, to other Pacific Islands and from other locations to Guam due to the military activities originating on Guam. The MBP will not be available until post ROD.

B-018-132

buildup projects, other military projects, and non-military projects will have a larger impact on Guam's people and the environment than the impacts of any individual project. The cumulative impacts of all of the projects (DoD and non-DoD) affecting a given resource must be thoroughly examined. Instead, the cumulative impacts section presented here is comprised of a few pages of introductory text, a large table containing various projects, another table that crudely illustrates the additive effects of the projects to various resource categories, and a single page of analysis results for Guam and one page for Tinian. The cumulative impacts analysis should be carried out similarly to that of the direct and indirect effects analysis, but it "should entail a more extensive and broader review of possible effects (USEPA, 1999)." A major example of the inadequacy of the cumulative impacts analysis is that absolutely no cumulative impacts are expected to the marine biological resources in Apra Harbor, despite the preferred CVN berthing alternative expected to result in the permanent loss of the large portion of a distinct harbor biological zone and indirect impacts to an even larger area. Add to these impacts the permanent and temporary loss of reef resources associated with the Kilo Wharf extension and other recent, on-going and planned activities within the harbor, and it is impossible to conclude that there will be no significant impact to the reef resources in the harbor. This section must be completely revised, and an extensive analysis of the cumulative impacts must be carried out. Quantitative does (or will soon) exist for some of the projects, and should be used in the analysis when available. For example, water quality and marine ecological data from Kilo Wharf extension construction site should be available for inclusion in the FEIS. The impact analysis presented in the MIRC FEIS should also be available prior to the release of the Buildup FEIS. Also recommend carrying out a spatial analysis, specifically with regard to impacts of development and other activities on the quality and capacity of the Northern Aquifer and on the availability of adequate, contiguous critical habitat for the recovery of threatened and endangered species. The USEPA (1999) reference above and the brief CEQ document, "Considering cumulative effects under the National Environmental Policy Act" (see below for full reference), and other resources should provide guidance on how to carry out an adequate cumulative impacts analysis.

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The DEIS contains no mention of climate change and the expected impacts of climate change. Examples of such impacts may include: 1) impacts to agricultural production, 2) loss of coastal infrastructure and natural habitats, such as beaches, mangroves, etc., 3) possible increase in frequency and severity of extreme weather events, 4) increased frequency and severity of coral bleaching events, 5) ocean acidification, 6) impacts to drinking water resources, and others. These impacts must be incorporated into the cumulative impacts analysis and should also be included in sections of the EIS addressing impacts of specific projects to marine resources. For example, instead of using expected coral reef recovery rates for reefs damaged or destroyed by a given project based on data from decades ago or from other parts of the world, recovery rates should reflect concern over the ability of Guam's coral reefs to withstand the impacts of climate change over the coming decades. The rate of recovery can have a significant impact when determine how much reef area should replace a damaged or destroyed reef.

B-018-118

Thank you for your comment. The FEIS text will be standardized and this mitigation measure will be identified in the DA permit special conditions.

B-018-119

Thank you for your comment. The text has been changed.

B-018-120

Thank you for your comment. The EFHA provided within the EIS has been clarified and modified regarding impacts to live/hard bottom and SAV habitat.

Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits

Vol. 9, Appendix J

B-018-136 There are several concerns regarding the peer review of the study "Assessment of Benthic Community Structure in the Vicinity of the Proposed Turning Basin and Berthing Area for Carrier Vessels Nuclear (CVN) Apra Harbor, Guam" by Dollar et al. (2009). The idea to conduct a peer review of a study that is relied upon so heavily in the DEIS was a good one, but unfortunately the peer review does not address the resource agencies' primary concerns with regard to the study's methodology and the appropriateness of using the data collected by the study in the HEA. This problem could have been avoided by involving federal and local resource agency biologists in the process, including the selection of the peer reviewers, the formulation of questions, and an analysis of the reviews. While we would agree that the individuals selected to conduct the peer review are highly respected in their fields, few appear to have much experience with Habitat Equivalency Analysis and it appears as though little or no background information was provided. Indeed, it appeared as though most reviewers carried out their review as if it

B-018-137 were a coral reef monitoring method, and not as an assessment of the ecological function of the reef in the study area and a basis for scaling compensatory mitigation, as required by the Army Corp Mitigation Guidelines. In addition, the questions posed to the peer reviewers are not the appropriate questions for soliciting professional opinions regarding the resource agencies' concerns. It is therefore not appropriate for Mr. Hesse to state in an email at the beginning of the peer review section of the DEIS to "please note that not a single expert suggested that coral colony size frequency or coral colony density (the resource agency argument) would be a better means of capturing "coral reef ecological function" or provide a more meaningful input into a HEA." In none of the questions did the Navy specifically ask reviewers to evaluate the relative benefits of using coral cover or colony density/size frequency data as metrics for estimate reef ecosystem function or as HEA inputs. In fact, one of the five questions asked was "How would you define and measure coral reef ecosystem function?", and the replies were centered upon calcification (i.e., production) rates, and ecological metrics that encompass corals, algae, and non-coral invertebrates. None of the reviewers answered that coral cover alone could measure coral reef ecosystem function. This further supports our stance the FEIS include the results of a new impact assessment carried out using methods accepted by the resource agencies, and that these data be incorporated into a new Habitat Equivalency Analysis. Additionally, coral colony density and size frequency data were collected as part of the study, so in answering question 6 the peer reviewers would have assumed that coral cover as well as colony density and size frequency data would all be used in a HEA. Unfortunately, it appears as only one reviewer addressed the concern raised by the resource agencies that the survey protocol used in collecting colony density and size frequency data resulted in highly biased, unacceptable data. Although it would be possible to re-analyze the photo quadrats to derive more accurate colony counts and size frequency data, this data would still be significantly biased towards smaller colonies (the largest colony that could be measured would be 119 cm in diameter, and the colony center would have to fall within the center of the quadrat). It is clear that most reviewers did not delve that deeply into dissecting the survey protocols, or if they did they may have incorrectly assumed that the method would have accurately collected colony density

B-018-138 and size frequency data. Still, Dr. Katarina Fabricius did note that the survey method employed by Dollar et al. (2009) did not allow the accurate measurement of large coral

under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-121

Thank you for your comment. A detailed compensatory mitigation plan would be submitted as part of the Clean Water Act 404 permit application for construction affecting the navigable waters of the United States (including the CVN transient wharf). Due to the ongoing review of DoD's habitat assessment methodology for coral reef ecosystems and associated uncertainties regarding the scope of mitigation required, a detailed mitigation plan has not been developed nor will one be available for incorporation into the FEIS. However, a number of mitigation options, including watershed restoration and the use of artificial reefs, are discussed in programmatic nature in Volume 4, Section 11.2 of the FEIS. DoD recognizes that, as part of the CWA Sec. 404 permitting process, additional NEPA documentation may be required to address specific permitting requirements and implementation of required compensatory mitigations.

B-018-122

Thank you for your comment. The information provided in the DEIS on coral resilience and stress tolerance were based in part on the HEA report, which was reviewed and commented on by resource agencies with Navy response. Additionally information was provided during the "spring survey" second report. Most of the older references (1970 - 1990s) are backed up by more recent references (2005 and earlier). And just because the commenter thinks they are "old" doesn't make them invalid. If there are other key references the commenter has become aware of, please forward those to the Navy POC for review and potential incorporation into the FEIS.

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colonies and that the method is limited to determining only the density of small colonies. Colony size frequency and density data, while certainly have their advantages and disadvantages, as does any metrics of ecological function or metrics used for a HEA, were metrics requested by consensus among all local and federal resource agency biologists. These data are increasingly recognized as necessary for accurately describing coral reef ecosystems and predicting trajectories of different reef communities, which is important information for Habitat Equivalency Analyses. Percent coral cover alone has very limited value, and does not provide the necessary ecological information. In order to address resource agency concerns and to satisfy the requirements of the Clean Water Act, and fulfill the Army Corps Compensatory Mitigation Guidelines, we strongly recommend that a new impact assessment be conducted, but if DoD continues to rely on Dollar et al. (2009), we recommend that a peer review of both the study above as well as the HEA report as a collaborative effort between the Navy and federal and local resource agency biologists. Considering that image classification was relied upon so heavily in Dollar et al. (2009), it also seems appropriate that remote sensing experts be included in the peer review process. None of the reviewers are experts in the field of remote sensing, which formed the basis for the impact assessment. Additional reviews by remote sensing experts are strongly recommended to validate the selected habitat classes, and suggest if they match the capabilities offered by the 4-band imagery.

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Cooper, T. F., J. P. Gilmour, et al. (2009). "Bioindicators of changes in water quality on coral reefs: review and recommendations for monitoring programmes." Coral Reefs 28(3): 589-606.

Council on Environmental Quality (1997) Considering cumulative effects under the National Environmental Policy Act.

B-018-123

Thank you for your comment. Please see response to B-018-120.

B-018-124

Thank you for your comment. The statement is correct, but has been modified for clarity. The impact analysis assumes a permanent loss, however habitat regrowth (some coral, SAV, and live/hard bottom) with limited vertical relief would be established and remain providing some ecological service.

B-018-125

Thank you for your comment. Please see response to B-018-121.

B-018-126

Thank you for your comment. See previous comment responses regarding artifical reefs as well as B-018-121 on the compensatory mitigation plan.

B-018-127

Thank you for your comment. Please see response to B-018-121.

B-018-128

Thank you for your comment. Please see response to B-018-121.

B-018-129

Thank you for your comment. In the DEIS, the dredging acreage of Alternative 2 is provided on page 11-92 while the dredging acreage of Alternative 1 is provided on page 11-50.

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B-018-130

Thank you for your comment. The EFHA found within the EIS has been clarified and modified to include live/hard bottom and SAV habitats. Please see response to B-018-120 for more information regarding habitat assessment methodologies.

B-018-131

Thank you for your comment. The Navy is required to consider the Coral Reef Preservation Act, and has supported many of the Section 2.2 Purposes of this Act. However, the U.S. Army Corps of Engineers (USACE) Compensatory Mitigation Rule, is more appropriate in this situation. The primary goal of the USACE regulatory program is to protect the nation's aquatic resources. This is accomplished through the issuance of permits for projects that have undergone careful evaluation in light of applicable laws, regulations and policy to insure that no action authorized by the USACE program will have an adverse impact on the overall public welfare. It is their mission to provide strong protection of the Nation's aquatic environment, including wetlands and coral reefs; to enhance the efficiency of the USACE administration of its regulatory program; and, to ensure that the USACE provides the regulated public with fair and reasonable decisions. USACE permits will likely contain requirements for silt curtains, biological monitoring, restrictions in dredging activities during potential coral spawning months, and compensatory mitigation projects. To compensate for the loss in ecological service provided by coral reef ecosystem, upland reforestation (to improve nearshore water quality), artificial reefs (to provide increased fish habitat) or a combination of these and other compensatory mitigation alternatives will be considered by the Navy to comply with federal laws that protect coral resources. In addition, land-based construction BMPs will be implemented to reduce run-off/sedimentation to the ocean, thus protecting the reefs and associated marine resources. The final conceptual determination would not be made until the Record of Decision on this EIS. More detailed identification of potential mitigation

United States Environmental Protection Agency (1999) Consideration of cumulative impacts in EPA review of NEPA documents. EPA 315-R-99-002.

Wolanski E, Richmond RH, Davis G, Bonito V (2003) Water and fine sediment dynamics in transient river plumes in a small, reef-fringed bay, Guam. Estuarine Coastal and Shelf Science 56:1029-1040

would be done during the USACE permit process. Both artificial reefs and watershed management projects would be considered as potential compensatory mitigation, and it is possible that a combination of those potential mitigation efforts that are listed below would be appropriate. As identified in the 10 April 2008 Federal Register, 40 CFR Part 230, the final USACE compensatory mitigation rule, permit applicants are required to mitigate to no net loss of ecological services and function. Ultimately, the compensatory mitigation is subject to approval by the USACE under the CWA through the Section 404/10 permit requirements.

Mitigation for impacts of the proposed action will rely on Best Management Practices (BMPs) and mitigation measures. Volume 7, Chapter 2 summarizes the proposed BMPs and mitigation measures that are mentioned in Volumes 2 through 6 under the various resource sections. The intent of mitigation measures and BMPs is to avoid minimize, reduce, eliminate or compensate for potential impacts due to the proposed actions. The BMPs are actions implemented by DoD as a standard practice and will be implemented for the proposed action.

The summary lists of BMPs and mitigation measures in Volume 7 were updated based on comments received during the public comment period and will continue to be updated after the Final EIS is published, during agency consultation and construction permit application processes. The Final EIS does not commit to mitigation measures. BMPs are required by policy and law and will be implemented. Mitigation measures listed in the Record of Decision or attached as conditions to a permit will be implemented.

The mitigation measures identified in the Record of Decision will be incoporated into a mitigation monitoring plan that will be developed and managed by Joint Region Marianas. There are proposals to adaptively manage the construction phase impacts as described in Volume 7 Chapter 2. Volume 6 describes the ongoing efforts with Guam agencies

to effectively monitor and manage impacts on utilities during construction.

B-018-132

Thank you for your comment. Due to the complexity of the project, there are two parts of the cumulative impact analysis: the summary of impacts for all components of the proposed action (Volume 7 Chapter 3) and an assessment of the additive impacts of the proposed action in combination with other past, present and reasonably foreseeable projects (Volume 7, Chapter 4). A systematic methodology was applied in both analyses.

Volume 7, Chapter 3 summarizes the combined potential impacts of the preferred alternatives for the entire proposed action on Guam and Tinian. This is the aggregate analysis that you request in your comment. The impacts of Volumes 2 through 6 are discussed by resource. At the end of Volume 7, Chapter 3.3 there is a table summarizing the combined impacts of all components of the preferred alternatives. Significant impacts are identified. Trends in the resource health due to anthropogenic and non-anthropogenic factors that impact resource health on Guam and Tinian since World War II are described. This section includes limited quantitative data for proposed action impacts. For example, special-status species habitat loss due to the proposed action and current amount of habitat available island wide is presented in Volume 7, Section 3.3. There is no quantitative island-wide data readily available for most of the resource areas assessed and the impact analysis is often qualitative.

Volume 7, Chapter 4, Cumulative Impacts, assesses the potential additive impact of the EIS proposed actions when compared to potential impacts of past, present and reasonably foreseeable projects. The period of consideration for the cumulative impact analysis is 2004 to 2019. The project list is based on best available information from DoD

and the Guam Land Use Commission database. There is no National Environmental Policy Act (or similar) document disclosing project impacts for most of the cumulative projects listed; therefore, there is insufficient data on most cumulative projects listed to conduct a quantitative impact analysis. There is a table at the end of Chapter 4 that summarizes the potential cumulative impacts. Potential significant cumulative impacts are identified for some resources. Mitigation measures are proposed earlier in the EIS.

B-018-133

Thank you for your comment. It is assumed that the compensatory mitigation, identified in Army Corps of Engineers dredging permits, would restore coral communities impacted by dredging. The restoration may target coral regrowth in other watersheds. The Kilo Wharf mitigation is designed to improve Cetti Bay water quality to encourage regrowth of coral. The compensatory mitigation for the proposed action in this EIS may include artificial reefs in Apra Harbor or watershed management projects. The requirement for compensatory mitigation also applies to the loss of wetlands. All future dredging projects by DoD or Port Authority of Guam would require a compensatory mitigation plan. Once the coral in the restoration areas recover, there is no cumulative impact from historical and future dredging.

B-018-134

Thank you for your comment. The cumulative impacts analysis has been expanded in response to public and agency comments.

B-018-135

Thank you for your comment. The Navy acknowledges there is potential for marine resources and aquifers to be affected by sea level rise, inundations from more extreme storm events and other consequences of climate change. The impacts may be both adverse and beneficial. The

current level of scientific knowledge can predict trends in sea level rise based on historic data but there are no established methods for assessing and quantifying potential impacts on marine resources or aquifers.

The University of Guam provides analysis of the aquifer responses to sea level change and recharge in a November 2007 study. Climate change may impact the success of production wells in the future (e.g., the placement of the well screen may not be optimal if the sea level rises or falls). Given the uncertainty of climate models including lack of information that is directly applicable to northern Guam and lack of specificity regarding the time and degree of impacts to conditions that could impact the aquifer, the DoD wells would be installed based on current conditions and regulatory requirements. Monitoring would be conducted during well operation. If production or water quality declines over time, DoD would take actions to mitigate the impacted wells.

B-018-136

Thank you for your comment. Habitat assessment methodologies which evaluate the function of affected aquatic resources, such as coral reef ecosystems, are an evolving science and the adequacies of existing and new methodologies are heavily debated in the scientific community. Ideally, a standard assessment technique that accurately characterizes and quantifies losses and gains of coral reef ecosystem functions would be used. However, rulemaking for the Compensatory Mitigation Rule recognizes the wide variety of aquatic resources present in the United States and the evolving nature of science regarding aquatic ecosystem restoration make the establishment of standard assessment methodologies impracticable. The assessment for this EIS used an historically approved methodology (percent coral cover), supplemented by other methods such as the use of Light Detection and Ranging (LIDAR) satellite photos, for quantifying impacts to affected coral reef ecosystems impacted by the proposed transient CVN wharf and

associated dredging. DoD believes that use of the percent coral cover methodology, supplemented by use of LIDAR satellite photos, is the "best currently available science" to attempt to capture the thousands of elements that comprise the function of a coral reef ecosystem. DoD's assessment is currently under review by the US Army Corps of Engineers, the agency charged with implementing dredge and fill permits under CWA Section 404, and other Federal agencies. The FEIS will be updated to reflect the latest developments in this review.

B-018-137

Thank you for your comments. The report you refer to is a final report and will not be edited. There may be updates to the report to support the Army Corps of Engineers permits, but they would be considered new reports with new information.

B-018-138

Thank you for your comment. Please see response to B-018-136.

B-018-139

Thank you for your comment. A detailed compensatory mitigation plan would be submitted as part of the Clean Water Act 404 permit application for construction affecting the navigable waters of the United States (including the CVN transient wharf). Due to the ongoing review of DoD's habitat assessment methodology for coral reef ecosystems and associated uncertainties regarding the scope of mitigation required, a detailed mitigation plan has not been developed nor will one be available for incorporation into the FEIS. However, a number of mitigation options, including watershed restoration and the use of artificial reefs, are discussed in programmatic nature in Volume 4, Section 11.2 of the FEIS. DoD recognizes that, as part of the CWA Sec. 404 permitting process, additional NEPA documentation may be required to address

specific permitting requirements and implementation of required compensatory mitigations.

P | N | D
ENGINEERS, INC.

February 17, 2010

JGPO c/o NAVFAC Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, HI 96860-3134
Attention: GPMO

RE: Public Comments to Draft Environmental Impact Statement/Overseas Environmental Impact Statement
Guam and CNMI Military Relocation

Dear GPMO:

B-019-001

Thank you for the opportunity to comment on the Draft EIS. The analysis of alternatives did not include a detailed review of a lesser cost and more sustainable design that is similar to a cellular sheet pile diaphragm dock design (UFC 4-152-01). The alternative system has a series of circular arches and is not solid or "closed" on the back and is referred to as cellular sheet pile bulkhead dock (CSPBD). Instead it uses an extended tail wall system to serve as tie backs. As a result, it is analyzed as a reinforced earth retaining wall structure and the length of the tail walls adjusted to force the global slip plane failure surface into a stable configuration that can resist extremely large surcharge and earthquake loads. There are over 165 examples of these types of docks around the world and they are fast becoming the industry standard over other conventional docks that are subjected to extreme conditions such as large loads 800 psf and greater, seismically active earthquake zones exceeding .4 g's and tall faces 40-90 feet in height. Examples of these types of docks are currently in use in Louisiana for transferring 5,000 ton oil field modules, in the Alaskan arctic as an oil production platform subjected to 40-feet of ice pile up, and in Umm Qsar, Iraq for a cost effective and a secure dock facility for the Iraqi Navy that is impenetrable to attacks (currently under construction).

Many advantages will be realized using a CSPBD instead of the steel pile supported wharf that was selected in the Draft EIS. These include:

- **Local Labor.** Pile supported wharfs are very complex structures with many structurally critical welds that must be performed by highly skilled workers that are generally imported by the construction contractor and requires detailed fabrication of components at overseas locations using offsite labor. The alternative CSPDB has only two parts that are threaded together, can be constructed with very few if any critical welds and can uses local crews that can be trained on the job.
- **Security.** Pile supported docks are relatively easy to destroy by terrorists with strategically placed charges and are difficult to secure because the underside of the dock is unlighted and offers hiding places. CSPBDs are virtually indestructible and offer no hiding places for terrorists if they should happen to penetrate the security.
- **Sustainable.** The alternative CSPBD is more environmentally sustainable because it reuses dredge material, uses flat sheet pile from recycled steel, collects contaminated stormwater

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B-019-001

Thank you for your comment. The pile supported wharf that is referenced in the EIS would allow open water habitat below the wharf. Similar wharf designs to the one referenced in your comments have been evaluated and are viable options. However, the pile supported wharf type is the preferred alternative in the EIS.

B-019-001

with a standard collection system for treatment and reduces the amount of time and fossil fuels required to construct the dock. It reduces the overall carbon footprint because it is more durable and is constructed on site with local labor.

- **Loads.** Mobile crane loads of 2,140 tons is extremely large and will drive up the costs of the steel pile supported wharf. CSPBDs are documented of supporting up to 5,000 ton loads and are much better suited for large surcharge loads and unanticipated loads from ship collisions, explosions or tsunamis.
- **Beneficial Reuse.** The alternative CSPBD will allow beneficial reuse of the dredged material behind the dock and can be hydraulically placed to reduce costs. The fill material will be stabilized with deep vibro-compaction methods to prevent liquefaction during earthquakes and prevent long term settlement.
- **Utilities.** Most pile supported docks do not have a stormwater collection system for contaminated runoff and require expensive utility corridors. CSPBDs utilize utility systems that are buried in the stabilized structural fill and fitted with access hatches as required.
- **Costs.** Based on experience with similar projects, CSPBDs have recognized a cost savings between 1/3 to 1/2 the costs of pile supported wharf structures while recognizing all the above added benefits for increased value at reduced costs.

CSPBDs with extended tail walls are specialized method of dock construction used by PND Engineers, Inc. For additional information see the below publications, abstracts and conference proceedings:

1. OPEN CELL® Bulkheads. Nottingham, P.E., Dennis. PORTS '95 Proceedings, Sponsored by the Committee on Ports and Harbors of the Waterway, Port, Coastal, and Ocean Engineering Divisions/ASCE, held March 13-15, 1995, Tampa Florida.
2. OPEN CELL Bulkhead Development. Nottingham, P.E., T.S..Abstract accepted for upcoming Earth Retention Conference 3, August 1-4, 2010, Bellevue, Washington.
3. OPEN CELL Bulkhead: An Economical Port Expansion Solution. Nottingham, Todd and Pierce, David. Port Technology International, Twenty Eight Edition. www.porttechnology.org.
4. Iraqi Navy to Have State of the Art Pier Facility; Construction Begins in March. Dalrymple, Nicole. US Army Corps of Engineers News Release. February 12, 2009.

Again, thank you for the opportunity to comment.

Sincerely,
PND Engineers, Inc. | Seattle Office

Gary Watters, P.E., Principal

Cc: Fle

Comments on the Guam Military Buildup Draft Environmental Impact Statement (DEIS)

Mariana eight spot butterfly, *Hypolimnas octocula marianensis*, male. Image from *Butterflies of Micronesia* by Ise H. Schreiner & Donald M. Nafus, University of Guam 1997.

Prepared by
Dr. Aubrey Moore & Dr. Ross H. Miller
Entomologists
Western Pacific Tropical Research Center
University of Guam

Comments on Chapter 10. Terrestrial and Biological Resources

Potential Impact on the Mariana Eight Spot Butterfly, an Endangered Species Living on Route 15 Lands

[NOTE: Blue font is used wherever we quote directly from the DEIS.]

B-020-001

We are commenting on potential impacts to the Mariana eight spot butterfly, Hypolimnas octocula marianensis, by construction of firing ranges in the area referred to as "Route 15 lands". This rare butterfly inhabits Guam's limestone forest habitat. It is a special-status species recognized as a candidate for listing under the federal Endangered Species Act and it is listed as a species of greatest conservation need (SOGCN) by the by the Government of Guam (Guam Comprehensive Wildlife Strategy 2006; available online at http://www.wildlifeactionplans.org/pdfs/action_plans/gu_action_plan.pdf). In addition to the Mariana eight spot butterfly, the Route 15 Lands contain important habitat for other endangered species: "Nine ESA-listed or candidate species have been observed or habitat is present within the Route 15 lands(Table 10.1-14, Figure 10.1-19). Limestone forests are an important habitat for these species." (DEIS-Voume 2, Chapter 10, page 10-50). Route 15 lands contain essential habitat for the Mariana fruit bat and the Micronesian kingfisher and a designated recovery zone for the Marianas crow (See DEIS Figure 10.2-11).

B-020-001

Thank you for your comments. Page 2, paragraph 2: the eight-spot butterfly observed during the vegetation surveys was an incidental observation. Photos were taken and verification of the species was done by the NAVFAC Pacific entomologist, USFWS biologists, and Ilse Schreiner. Pg 2, paragraph 5 1st bullet: we acknowledge that the Chamorro term ababang is generic for all species of butterflies but have been told that it is acceptable to use this term for any species of butterfly especially since there is no Chamorro name for the specific species. 2nd bullet: according to the USFWS, the full species name of the Mariana eight-spot butterfly is *Hypolimnas octucula mariannensis* (see the species profile webpage at http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=I0R7http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=I0R7 and the 2008 Species Assessment and Priority Listing Assignment Form for the Mariana eight-spot butterfly available at http://ecos.fws.gov/docs/candforms_pdf/r1/I0R7_I01.pdf" http://ecos.fws.gov/docs/candforms_pdf/r1/I0R7_I01.pdf A decision was made to follow USFWS naming within the EIS for consistency. However, we acknowledge the misspelling of the species name in Appendix G, Chapter 2, Section 2.2, Species List, pg 2-1. Thank you for pointing this out and it has been corrected in the FEIS to octucula in accordance with USFWS naming; and the subspecific name has also be added. Pg 2, paragraph 6 1st bullet: there are numerous accepted spellings of Chamorro names and we have seen both ‘ababang’ and ‘ababbang’ used to refer to butterfly. Per your request, we have changed all to ababang. 2nd bullet: see response to the 1st bullet in previous paragraph. 3rd and 4th bullets: see response to 2nd bullet in previous paragraph. 5th bullet:Thank you for the correction. A correct picture of a Mariana eight-spot butterfly has been inserted. Pg 2, paragraph 7: Hypolimnas octucula is only misspelled in the table of species names and this has been corrected. In all other occurrences within the DEIS (the scientific name only occurs in Vol 9, Appendix G), the species name

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According to the DEIS, data on the Mariana eight spot butterfly were collected during surveys of Route 15 lands undertaken in 2008 and 2009. Details on the 2008 surveys are in the Natural Resources Survey Report which is unpublished and unavailable. Details of the 2009 surveys are in Campora and Lee (2009) of which we have a copy.

One of us (AM) learned from personal communication with one of the biologists who participated in the 2008 survey that this was a vegetation survey and the sighting of a single adult Mariana eight spot butterfly during this survey was an accidental observation. We cannot confirm this without access to the Natural Resources Survey Report.

In contrast to the 2008 vegetation survey, the objective of the 2009 survey, performed between July 15 and July 24 by Campora and Lee, was to collect data on all life stages of the Mariana eight spot butterfly and distribution of its two documented host plants on Route 15 lands. The survey was performed along three linear transects: Route 15 North, Route 15 South, and the Pagat Cave Trail. These transects covered only a minute part of the Route 15 lands proposed for location of firing ranges for the U.S. Marines. Much of the Route 15 lands is limestone forest habitat identified as essential habitat for the Mariana fruit bat, the Micronesian kingfisher, the Marianas crow, several native plant species including the Guam-listed endangered tree, *Heretia longiprtiolata,* and the two larval host plants of the Mariana eight spot butterfly, *Elatostema calcereum* and *Procris pendunculata*. The Mariana eight spot butterfly or its immature stages were detected in all three transects.

Authors of the DEIS kindly provided a technical reference for species mentioned in the DEIS (Volume 9, Chapter 2). Unfortunately, information provided in this appendix is inaccurate and badly in need of review by competent biologists with some experience with the Guam flora and fauna. The Navy employs several experts in this area. Here are a few errors we noticed concerning the Mariana eight spot butterfly.

Volume 9, Chapter 2, Page 2.1

- "ababang "is not the Chamorro name for this species, "ababang " is simply the generic name for all butterflies
- *octicula* is misspelled; should be *octocula*

Volume 9, Chapter 2, Fact Sheet for Mariana Eight Spot Butterfly, no page number provided

- "ababbang" is misspelled; should be "ababang"
- "ababang "is not the Chamorro name for this species, "ababang " is simply the generic name for all butterflies
- *octucula* is misspelled; should be *octocula*
- *mariannensis* is misspelled; should be *marianensis*
- The image is wrong. This is a photo of a *Hypolimnas bolina* female, a very common butterfly on Guam. If one reads the species description section of the fact sheet, it becomes obvious that the image is wrong.

Note: While misspelled scientific names may be regarded as inconsequential typos by some, they are not. Scientific names are intended as globally unique identifiers that allow biologists to access all known information about a taxon of interest. Since *Hypolimnas octocula* is not spelled correctly anywhere in the DEIS, this important document will not show up in digital searches for information on this endangered species. Please check and correct scientific nomenclature for all species before publishing the EIS.

is spelled correctly in accordance with the USFWS. Pg 4, General Comment #1. Although alternatives A and B for the live-fire range complex on Guam are proposed in the same general area, they would not be constructed within the same footprint nor would they require the exact same lands. Under Alternative A, all proposed live-fire ranges would be contained within the northern half of the depicted Route 15 lands in Fig 10.2-10. Under Alternative B, the machine gun range would be located further to the south in the Sasajyan area and the other ranges would be reconfigured differently in the northern area of the Route 15 lands and within Andersen South. A detailed discussion of the selection of alternatives for the proposed live-fire ranges on Guam is presented in Volume 2, Chapter 2, Sections 2.3.2.1 and 2.3.2.5, particularly Section 2.3.2.5. Due to the large safety danger zones (SDZs) that would be associated with the proposed live-fire ranges, alternatives within Andersen AFB or the Naval Magazine (or NMS) would not meet minimum safety requirements. Although Tinian is proposed for some live-fire ranges, the ranges proposed for Guam are necessary to meet initial and basic live weapons firing training requirements, and these basic training ranges need to be sited on Guam in proximity to the other basic training facilities and activities. Tinian ranges would be used for more advanced training and maneuvers. Pg 4, General Comment #2 The Natural Resources Survey Report is still in preparation. The report is expected to be available in late spring well before the publication of the Final EIS. Once the report has been prepared and reviewed by Navy biologists, a copy will be provided to all interested parties for review and comment. Pg 4, General Comment #3: The DoD carefully considered all requests to extend the length of the comment period beyond the 45-day minimum required by NEPA. In evaluating multiple options, DoD leadership determined that a 90-day comment period best balanced the need for sufficient time to review a complex document with the requirement to reach a timely decision regarding the proposed military buildup on Guam. Pgs 4 and 5, Comments on Impacts to Mariana eight-spot butterfly Comment #1: The loss of limestone forest due to the

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Background Provided in the DEIS

MARIANAS EIGHT-SPOT BUTTERFLY.
Two populations have been reported in the Pagat area of the Route 15 lands; however, the specific location was not given (Scheiner and Nafus 1996 as cited in USFWS 2007b). During December 2008 surveys at the site, one individual was observed at the southern location shown in Figure 10.1-20 (NR Survey Report in preparation). In July 2009, surveys were conducted for all life stages of the Mariana eight-spot butterfly and its two documented host plant species (Elatostema calcareum and Procris pedunculata) along three transects within the Route 15 Lands (Campora and Lee 2009). Host plants were generally sparsely distributed except for two areas which contain large groups of both plant species. One adult eight-spot butterfly was seen within one of the large host plant areas at the northern location shown in Figure 10.1-20. The previous adult eight-spot sighting in December 2008 at the southern location was within the other large host plant area. Other life stages (e.g. egg, larvae, pupae) were found on host plants in all three transects; however, without rearing these stages to the adult form they cannot be identified with complete certainty as Mariana eight-spot butterflies (Campora and Lee 2009).(DEIS-Volume 2, Chapter 10, page 10-52)

Impacts during Construction (Alternative A)

MARIANAS EIGHT-SPOT BUTTERFLY. This candidate species was observed in a mixed host plant area approximately 300 ft (91 m) from the Alternative A proposed machine gun range footprint during 2008 site-specific surveys (see Figure 10.2-11). Scattered individuals of its two host plants were also observed within the machine gun range footprint. An individual butterfly was also observed in a mixed host plant area approximately 50 ft (15 m) northeast of the proposed northern-most fenceline (see Figure 10.2-11). Scattered individuals of its two host plants were also observed within the proposed fenceline and access road footprints. Because only scattered host plants would be removed and the large mixed host plant areas would remain, impacts would be less than significant. (DEIS-Volume 2, Chapter 10, page 10-112).

Impacts during Operation (Alternative A)

MARIANAS EIGHT-SPOT BUTTERFLY. This candidate species was observed near the Alternative A machine gun range area during 2008 site-specific surveys (NR Survey Report in preparation). Its two host plants were also observed in that area, and in areas within the machine gun range footprint. The eight-spot butterfly is unlikely to be affected by noise and activity in nearby ranges. Impacts would be less than significant.(DEIS-Volume 2, Chapter 10, page 10-114)

Impacts during Construction (Alternative B)

MARIANAS EIGHT-SPOT BUTTERFLY. This candidate species was observed in a mixed host plant area approximately 500 ft (152 m) from the Alternative B UD range area during 2008 site-specific surveys (see Figure 10.2-13). No host plants or butterflies have been documented within or near the range footprints. Impacts would be less than significant. (DEIS-Volume 2, Chapter 10, page 10-117)

Impacts during Operation (Alternative B)

MARIANAS EIGHT-SPOT BUTTERFLY. This candidate species was observed near the Alternative B UD range area during 2008 site-specific surveys (NR Survey Report in preparation). Its two host plants were also observed in that area, and in areas within the UD range footprint. The eight-spot butterfly is unlikely to be affected by noise and activity in nearby ranges. Impacts would be less than significant. (DEIS-Volume 2, Chapter 10, page 10-120)

construction and operation of the live-fire ranges on Rte 15 Lands would not result in a significant loss of existing limestone forest on Guam when considered in the context of the total amount of limestone forest remaining on Guam. Although the construction of the proposed ranges would result in the loss of limestone forest, the operation of those ranges and the fencing of the associated restricted safety area would result in the protection of a greater area of limestone forest that was previously not protected. Comment #2: Before implementation of any of the proposed alternatives, the Navy would conduct more comprehensive pre- and post-construction surveys within the proposed range areas to better determine the presence of host plants, larvae, and adult butterflies within the project area. Additional periodic surveys would be conducted once the ranges are operational to provide long-term monitoring of the status and presence of listed and candidate species within the Rte 15 Range Complex. Comment #3: Before implementation of any of the proposed alternatives, the Navy would conduct more comprehensive pre- and post-construction surveys within the proposed range areas to better determine the presence of individual host plants and clumps of host plants, larvae, and adult butterflies within the project area. Comment #4: Additional information regarding the potential for noise associated with the proposed action to impact butterflies and caterpillars has been incorporated into the FEIS impact analysis. Given the distance from the range firing area to any potential caterpillars or adult butterflies, the intensity of the noise associated with the weapons proposed for use, the frequency of the noise, and the intermittent nature of proposed range activities (i.e., weapons firing is not a continuous operation and the associated noise is also not continuous), it is highly unlikely that weapons firing within the ranges would acoustically impact caterpillars or adult butterflies. Comment #5: Thank you for pointing out the inconsistency and the incorrect statement on page 10-117. The FEIS has been revised accordingly to reflect that butterflies and host plants were observed within the vicinity of the proposed ranges. Pg 5, Conclusion, 2nd paragraph: Before implementation of any of the

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General Comments

1. The DEIS describes two alternatives for construction of firing ranges for training US Marines on "Route 15 Lands". However, Alternatives A and B are not substantively different (See Figures 10.2-10 and 10.2-12 in the DEIS). Both alternatives would be constructed on the same footprint and both would require procurement of additional, non-DoD land from private land owners and the Government of Guam. The DEIS does not explain why other alternatives were not considered, such as expansion and improvement of existing firing ranges on Andersen Air Force Base or construction of firing ranges in the Naval Magazine area or on Tinian. We wonder if some of these options were rejected because of interservice rivalry among the Marines, Air Force and Navy.

2. According to the DEIS Volume 2, Chapter 10, page 14: "Survey methods are provided in detail in the *Natural Resources Survey Report* (NR Survey Report, in preparation, estimated completion in November-December 2009)." This report is cited 58 times in Volume 2, Chapter 10 although it is missing in the list of references for this volume of the DEIS. One of us (AM) requested a copy of the report and were informed that it is not available (see email exchange with NAVFAC in Appendix 1). Without detailed information on survey methods, geographic coverage, and sampling effort, it is impossible to evaluate validity of conclusions based on the natural resources surveys. In our opinion it is unethical for NAVFAC to withhold their Natural Resources Survey Report until after the end of the DEIS public comment period. Surely a draft of this report exists and data from it were used to write the DEIS. This draft should be shared with those interested in reviewing of the DEIS.

3. The 90 day comment period for the 11,000 page DEIS was too short. There are several other environmental issues which concern us, especially inadequate plans to prevent introduction of invasive species. However, time does not permit us to provide comments on all of our concerns.

Comments on Potential Impacts to the Endangered Mariana Eight Spot Butterfly

1. Alternative A and B for construction of firing ranges on Route 15 lands will destroy and fragment limestone forest habitat which is critical for the survival of the Mariana eight spot butterfly and several other species of endangered, endemic plants and animals. The minimum habitat size for these species is unknown and loss of even a small area could wipe out the existing population.

2. The 2009 survey (Campora and Lee 2009), intended to evaluate the status of the Mariana eight spot butterfly, detected the presence of the Mariana Eight Spot butterfly within all three linear transects even though sampling effort was minimal:
   - The survey lasted only 10 days, July 15 through July 24, 2009. Thus the survey results in a "snapshot" which provides no information on seasonal temporal or spatial changes in the distribution of Mariana eight spot butterflies living on Route 15 lands.
   - The transects covered only a minute proportion of the Route 15 lands (See Figure 1in this document)
   - The North transect extended onto the footprint of the proposed project by only a few meters, and only on one day, July 15, 2009 (See Figure 2 in this document)
   - The South transect extended into the area within the footprint for the proposed machine gun firing range on one day, July 16, 2009.(See Figure 3 in this document)

   Because of the small area covered and limited sampling effort, it is not surprising that this rare butterfly was not detected within the footprints of the proposed firing ranges, even though individuals may be living within these areas. The adult observed in 2008 was only 91 m from the Alternative A proposed machine gun range and the adult observed in 2009 was only 15 m northeast of the proposed northern-most fenceline. Adult butterflies require resources in addition to host plants for oviposition,

proposed alternatives, the Navy would conduct more comprehensive pre- and post-construction surveys within the proposed range areas to better determine the presence of host plants, larvae, and adult butterflies within the project area. Additional periodic surveys would be conducted once the ranges are operational to provide long-term monitoring of the status and presence of listed and candidate species within the proposed Route 15 Range Complex.

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such as flowers as nectar sources and puddles for minerals. These resources may be ephemeral and widely dispersed within the habitat. Most butterflies are highly mobile and cover large areas during daily foraging. Minimum habitat size for sustaining a population of Mariana eight spot butterflies is unknown.

3. The DEIS states that "Scattered individuals of its two host plants were also observed within the proposed fenceline and access road footprints. Because only scattered host plants would be removed and the large mixed host plant areas would remain, impacts would be less than significant." (DEIS-Volume 2, Chapter 10, page 10-112). It is a mistake to assume that large clumps of host plants are more valuable to this species than individual plants scattered over larger areas. Survival on isolated plants could may be higher .because of lower predation and parasitism. Presence of host plants may not be sufficient for larval survival. Many species of caterpillars can only utilize young leaves which have not hardened and which do not contain high levels of plant toxins. For these species, a large area of habitat is required to ensure that there are enough plants with young foliage to nourish caterpillars.

4. The DEIS states that "The eight-spot butterfly is unlikely to be affected by noise and activity in nearby ranges. Impacts would be less than significant.."(DEIS-Volume 2, Chapter 10, page 10-114) We don't think there is any science to support this statement. One or more studies of the impact of noise on butterflies need to be cited. It is possible that noise, such as that from guns, will disrupt the behavior of caterpillars which use acoustic communication.

5. In discussion of the Alternative B for construction of firing ranges on Route 15 lands, the DEIS claims that "No host plants or butterflies have been documented within or near the range footprints." (page 10-117) and it claims that "This candidate species was observed near the Alternative B UD range area during 2008 site-specific surveys (NR Survey Report in preparation). Its two host plants were also observed in that area, and in areas within the UD range footprint." (page 10-120). Obviously, one of this statements is false but there is no way to find out which is correct without access to the Natural History Survey Report.

Conclusion

We strongly disagree with the statement that "Impacts would be less than significant." in regards to proposed construction of firing ranges on Route 15 lands (both Alternative A and Alternative B). (We note that this stock phrase "Impacts would be less than significant." is repeated 42 times in Volume 2, Chapter 10, regardless of data to the contrary.)

Available information clearly shows that habitat destruction associated with alternatives A and B will negatively impact the Mariana eight spot butterfly and other endangered species living on Route 15 lands. If plans for the firing ranges go ahead, it is likely that the Mariana eight spot butterfly and other endangered species living in the limestone forest habitat will be locally extirpated on Route 15 lands. It is unlikely that this unfortunate ecological event will be documented because there are no plans to allow access to the the proposed range complex for monitoring biological resources.

For these and other reasons, we support the NO ACTION ALTERNATIVE for construction of firing ranges or any other military installation on Route 15 lands.

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APPENDIX 1:

Original Message-:

From: Aubrey Moore [mailto:amoore@uguam.uog.edu]
Sent: Friday, January 15, 2010 1:35
To: Pepi, Vanessa E CIV NAVFAC PAC
Cc: Campora, Cory E CIV NAVFAC PAC
Subject: DEIS - NR Survey Report

Hi Vanessa,

A lot of data presented in the DEIS Vol 2 Ch 10 comes from a document referred to as the "NR Survey Report , in preparation". Unfortunately, "NR Survey Report" is not listed in the references at the end of the chapter. I'm finding it hard to evaluate some of the info presented in the DEIS without access to the survey methods. Where can I get a copy of the "NR Survey Report"?

All the Best,

Aubrey Moore

Reply:

Subject: RE: DEIS - NR Survey Report
From: "Pepi, Vanessa E CIV NAVFAC PAC " <vanessa.pepi@navy.mil>
Date: Mon, 18 Jan 2010 01:54:40 -1000
To: "Aubrey Moore" <amoore@uguam.uog.edu>
CC: "Campora, Cory E CIV NAVFAC PAC" <Cory.Campora@navy.mil>

Hello Aubrey,

The NR survey report is not completed yet. Surveys have been ongoing and the report couldn't be included within the DEIS. As soon as we have it, we can send it to you.

Thanks,

Vanessa

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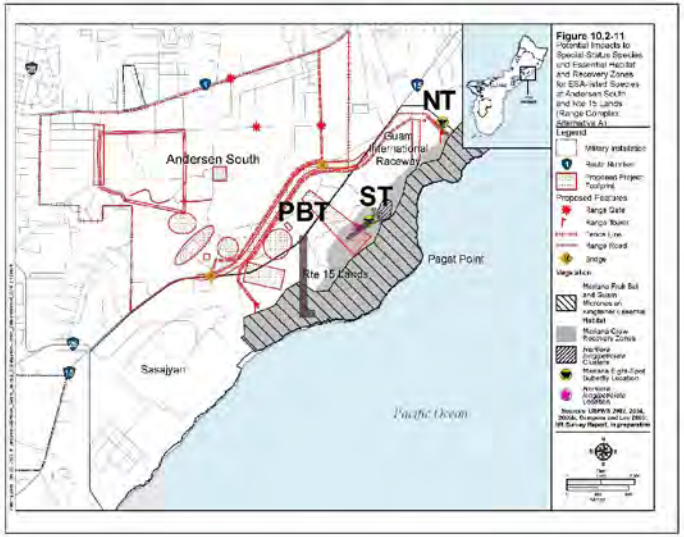

Figure 1. Transect locations from Campora and Lee (2009) overlaid onto map of Anderson South and Route 15 lands from the DEIS (Volume 2, Chapter 10, Figure 10.2.11, Page 10-111)

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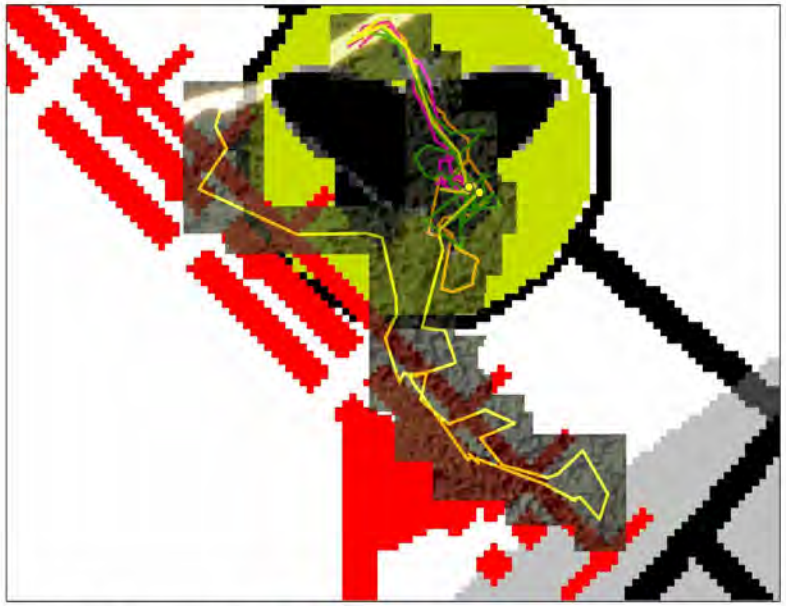

Figure 2. North Transect showing GPS tracks from Campora and Lee (2009). Yellow dots indicate locations of an adult and several immature Mariana eight spotted butterflies observed between July 15 and July 23, 2009. Note that the survey extended onto the footprint of the proposed project by only a few meters, and only on one day, July 15, 2009.

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Figure 3. South Transect showing GPS tracks from Campora and Lee (2009). Yellow dots indicate locations of several immature Mariana eight spotted butterflies observed between July 16 and July 24, 2009. The butterfly symbol indicates the location of a single adult Marianas eight spotted butterfly observed during vegetation surveys in 2008. Note that the area within the footprint for the proposed machine gun firing range, indicated by red stippling, was surveyed only briefly on one day, July 16, 2009.

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Figure 4. Pagat Cave Trail showing GPS tracks from Campora and Lee (2009). The yellow dot indicates location of three immature Mariana eight spotted butterflies feed on *Elatostema calcareum*, one of the two host plants for this species. The trail was surveyed only once, on July 22, 2009.

Draft Environmental Impact Statement (DEIS) /
Overseas Environmental Impact Statement (OEIS)
Comment Sheet
Guam Community College

NAME: Mary A.Y. Okada, Ed.D. PHONE NUMBER: 671-735-5700
President

ORGANIZATION: Guam Community College E-MAIL: mary.okada@guamcc.edu

ISSUE: Mandated by Title 17 of the Guam Code Annotated, Division 4, Chapter 30, of the Community College Act of 1977, Guam Community College (GCC) is Guam's State Agency for adult education (Workforce Investment Act, Title II) and career and technical education (Carl D. Perkins Act). As such, GCC continues to move progressively towards developing a seamless system for individuals to matriculate from the classroom to the workforce in one of two ways. First, by transitioning from secondary to postsecondary Career and Technical Education (CTE) and ultimately into high-wage, high-demand careers. Second, by providing individuals 16 years or older without a high school diploma the opportunity to obtain a GED or an adult high school diploma and transition into postsecondary CTE and ultimately into high-wage, high-demand careers. GCC is well poised to provide quality education and job training to individuals on Guam and around the region, thus providing them with the opportunity to advance from low wage occupations and/or to acquire high-skill, high-wage occupations.

Volume	Page Number	Comment Area	Recommendation Area
B-021-001 #1	ES-6 Table ES-1	DOD Civilian Workforce from off island 1,836 workers are needed.	The Draft EIS will promote the island's effort to be self-sufficient by having GCC provide the required academic and technical skill training.
#1	2.1.3	DoD civilian workforce: 75% would be coming from off island and 25% would be current Guam residents. It is also assumed that 25% will live on base (because they are military dependents) and 75% will live off base.	GCC is mandated to provide adult and career and technical education on Guam at both the state and local levels. Accordingly, the Draft EIS must affirm that workforce training will take place at GCC to promote capacity building.
#2	ES-6 Table ES-1	DoD Civilian Workforce from off island: 1,836	The Draft EIS must identify the specific types of civilian workforce jobs needed in order for GCC to better prepare for the island's workforce development needs.
#2	Fig 2.1.1 2-4	Main Cantonment Functions are up north-west of Guam to include Child Development/daycare facilities, Elementary, Middle and High schools	To promote capacity building, the Draft EIS must commit to have Guam's local workforce trained at GCC and employed at these facilities.

B-021-001

Thank you for your comment. Your recommended mitigation measures have been taken under consideration. Expanded mitigation discussion is available in the FEIS.

	Volume	Page Number	Comment Area	Recommendation Area
B-021-002				Additionally, have students from GCC's Education program volunteer or intern at the facilities – again promoting capacity building.
	#2	16-8	As of 2000, Guam's industrial employment composition was quite different than that of the U.S. as a whole. Guam's economy was more government- and service-oriented and less production-oriented. Table 16.1-8 shows that GovGuam is the major employer on Guam. Furthermore, it shows that the percentage of Guam's payroll employment in the Government sector is high compared to the U.S. overall.	The Draft EIS must reflect the impact of the buildup on government services such as the issuance of health certificates and EPA certification for hazardous materials management, and commit to increasing the local government's capacity to provide those services through certification and other types of training at GCC.
	#2	P12-37	Construction of housing and education facilities would impact areas on South Finegayan. However, site 811 (Latte Stone Park) would be avoided.	To promote capacity building, the Draft EIS must commit to have Guam's local construction-related workforce train at GCC through its Apprenticeship Training Program – approved and registered with the Bureau of apprenticeship and Training, US Department of Labor.
	#2	P16-8	Table 16.1-9 shows the industrial employment composition of Guam's economy. Between 2000 and 2009 the number of construction jobs increased. Over the same period, the number of jobs in the retail trade industry declined, possibly due to lower spending by Guam residents coping with decreasing price adjusted incomes (see subsequent discussion).	The Draft EIS must recognize Executive Order (2000-10) which requires contractors to hire at least one apprentice for every 10 employees should the contractor be awarded a GovGuam contract exceeding $100,000 and bring in H-2 workers.
	#2	P16-12	As of July 2008 there were 1,619 H-2B workers on Guam (Guam Department of Labor 2008b). The H-2B temporary worker program is for –temporary service or labor if unemployed persons capable of performing such service or work cannot be found in this country.‖ (8 U.S. Code (USC) 1101(a) (15) (H))	The Draft EIS must recognize Executive Order (2000-10) which requires contractors to hire at least one apprentice for every 10 employees should the contractor be awarded a GovGuam contract exceeding $100,000 and bring in H-2 workers.
	#2	P. 16-20	Overall, data from the 2000 Census show a fairly high level of educational attainment on Guam although this attainment is slightly lower than the national average, as shown in Table 16.1-21.	Recognizing the high level of educational attainment on Guam, the Draft EIS must utilize GCC to provide required academic and training needs for both local and stateside individuals in various career and technical education areas so that they remain competitive in the workforce.
B-021-003				On April 3, 2009, JGPO representative Captain Neil Ruggiero participated in a public forum at GCC hosted by the Criminal Justice and Social Sciences Department. Over 250 individuals (predominately GCC students) attended the 2.5 hour session. Students from the department also administered a 9-question survey instrument (attached) between February and March 2009;
	#2	P. 16-20	GCC ... and UoG are both full accredited by the Western Association of Schools and Colleges.	

Draft Environmental Impact Statement (DEIS) / Overseas Environmental Impact Statement (OEIS)
Comment Sheet – Guam Community College

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B-021-002

Thank you for your comment. As the construction portion of the proposed action winds down, it is expected that the number of total jobs on Guam will stabilize at a level above the current situation. The fluctuation in the number of jobs is expected to be greatest in the construction industry. Job training for work in the construction industry would be beneficial to Guam's workforce overall. There are a number of other industries which currently have labor shortages and are expected to have bigger shortages than at present; job seekers on Guam should diversify the industries for which they seek training and entry. For example, the Socioeconomic Impact Assessment Study (Appendix F of the DEIS), notes that the health care industry is currently short of workers, and that the need for workers after the proposed action is expected to be stronger than at present. This is also the case for other industries, such as the wholesale trade industry, where job opportunities in occupations such as sales, truck driving, computer/administrative services and clerking are expected to increase above the present level.

The EIS identifies approximate numbers of civilian employees to be hired by the DoD. However, specific hiring procedures are not addressed in the DEIS. If these jobs are under the U.S. Civil Service, then regulations relating to civil service jobs would apply.

The FEIS has been updated to include mention of GovGuam Executive Order 2000-10.

B-021-003

Thank you for your comment. The EIS provides information as requested. The socio-economic chapters in each volume and the Socio-economic Analysis Impact Study in the appendix address issues raised in the student surveys.

Volume	Page Number	Comment Area	Recommendation Area
B-021-004			2871 individuals responded. Of those that responded, 51% positively indicated that the "impact of the military buildup on Guam will have a more positive consequences" for the people of Guam; 58% are concerned about the "loss of Guam's local culture as a result of the military buildup"; an overwhelming number indicate violence against women, price increases, and strain on utilities as problems as a result of the "increased military presence." The Draft EIS must address the concerns expressed by the students as reflected in their survey results (see attached student comments) because of the direct impact the military buildup will have on our students.
B-021-005 #8	P.6	Long-term changes would include the direct loss and disturbance of ... and historic buildings on Guam ...	The Draft EIS must include that members of the DOD civilian workforce from off island enroll in HU 120 (Pacific Cultures) and HU220 (Guam Cultures & Legends) courses at Guam Community College to have a better appreciation of the island's people, heritage, and cultural environment. The college can also package these courses to be delivered to certain groups under GCC's Continuing Education and Workforce Development department.

B-021-004

Thank you for your comments. The issues on concern expressed by the students have been addressed in the DEIS. Crimes and violence against women and price increases (inflation)are addressed in the socioeconmic chapters of the DEIS as well as the Socioeconomic Impact Assessment Study (SIAS) that is Appendix F of Volume 9 in the DEIS. Impacts to the utilities are discussed in Volume 6 of the DEIS under the specific utility. The EIS process provides information on environmental impacts (this includes the human environment); however, there is a limit to the specific details of the impacts because the information used is based on the continuation of existing trends and behaviors. While it is not an exact science, the EIS process along with the comments received provide information to the decision makers on the anticipated impacts of the proposed action.

B-021-005

Thank you for your comment. DoD will work with local stakeholders on these suggested issues should the proposed military relocation program be implemented.

GCC

GUAM COMMUNITY COLLEGE

Kulehon Kumunidát Guáhan

Date: April 3, 2009

Place: Multipurpose Auditorium
Guam Community College

Time: 10:00 a.m.

The Center For Civic Engagement and the Criminal Justice and Social Sciences Dept. are hosting a Community Forum regarding the buildup of military forces on Guam. Presenting will be the Joint Guam Program Office (JGPO)

Joint Guam Program Office

The Joint Guam Program Office (JGPO) was established by the Department of Defense (DoD) to facilitate, manage, coordinate, and execute certain DoD actions on Guam

Please Join us for the

Military Buildup Community Forum

GUAM COMMUNITY COLLEGE
CENTER FOR CIVIC ENGAGEMENT
Department of Criminal Justice and Social Sciences
The Impact of the Military Buildup
March 2009

students of Guam Community College are conducting this survey of the community regarding the buildup of military forces on Guam. Please select the single best answer. Do not respond if you have previously answered this survey.
nk you for participating in this survey.

1. Do you think the impact of the military buildup on Guam will have more positive consequences or negative consequences for the people of Guam?
O Positive O Negative

2. Are you concerned about the loss of Guam's local culture as a result of the military buildup?
O Yes O No

3. What benefits will the increased military presence provide to the people of Guam?
(Check all that apply.)
O Jobs O Security O Stability

4. What problems will the increased military presence create for Guam?
(Check all that apply.)
O Strain on utilities O Violence against women
O Price increases O Loss of the Chamoru culture

5. What infrastructural costs should the revenue from the military buildup provide?
(Check all that apply.)
O Landfill O Power O Water
O Health O Education O Roads

6. Who benefits most from the military buildup on Guam?
O Guam O Military O Okinawa

7. Are you in favor of leasing government of Guam lands to the military?
O Yes O No O Unsure

8. Will Guam become a better place to live because of the military buildup?
O Yes O No O Unsure

9. Are you in favor of the impending military buildup on Guam?
O Yes O No O Unsure

Total Number of Responses
to the
Survey

2871

Survey Question One

1. Do you think the impact of the military buildup on Guam will have more positive consequences or negative consequences for the people of Guam?

   O Positive O Negative

Survey Question One Response

1. Do you think the impact of the military buildup on Guam will have more positive consequences or negative consequences for the people of Guam?

O Positive O Negative

RESPONSE

Positive: 51% Negative: 49%

Survey Question Two

2. Are you concerned about the loss of Guam's local culture as a result of the military buildup?

O Yes O No

Survey Question Two Response

2. Are you concerned about the loss of Guam's local culture as a result of the military buildup?

O Yes O No

RESPONSE

Yes:58% No:42%

Survey Question Three

3. What benefits will the increased military presence provide to the people of Guam?

(Check all that apply.)

O Jobs O Security O Stability

Survey Question Three Response

3. What benefits will the increased military presence provide to the people of Guam?

(Check all that apply.)

O Jobs O Security O Stability

RESPONSE

JOBS was the number one response chosen.

Survey Question Four

4. What problems will the increased military presence create for Guam?

(Check all that apply.)

O Strain on utilities

O Violence against women

O Price increases

O Loss of the Chamoru culture

Survey Question Four Response

4. What problems will the increased military presence create for Guam?

RESPONSE

(Check all that apply.)

O Strain on utilities
O Violence against women
O Price increases
O Loss of the Chamoru culture

Violence against women
Price increases
Strain on utilities

Survey Question Five

5. What infrastructural costs should the revenue from the military buildup provide?

(Check all that apply.)

O Landfill O Power O Water

O Health O Education O Roads

Survey Question Five Response

5. What infrastructural costs should the revenue from the military buildup provide?

O Landfill O Power O Water
O Health O Education O Roads

All choices received a similar number of responses.

Survey Question Six

6. Who benefits most from the military buildup on Guam?

O Guam O Military O Okinawa

Survey Question Six Response

6. Who benefits most from the military buildup on Guam?

O Guam O Military O Okinawa

RESPONSE
Guam: 37%
Military: 48%
Okinawa:15%

Survey Question Seven

7. Are you in favor of leasing Government of Guam lands to the military?

O Yes O No O Unsure

Survey Question Seven Response

7. Are you in favor of leasing Government of Guam lands to the military?

O Yes O No O Unsure

RESPONSE
Yes: 26%
No:36%
Unsure:37%

Survey Question Eight

8. Will Guam become a better place to live because of the military buildup?

O Yes O No O Unsure

Survey Question Eight Response

8. Will Guam become a better place to live because of the military buildup?

O Yes O No O Unsure

RESPONSE

Yes:28%

No: 32%

Unsure: 39%

Survey Question Nine

9. Are you in favor of the impending military buildup on Guam?

O Yes O No O Unsure

Survey Question Nine Response

9. Are you in favor of the impending military buildup on Guam?

O Yes O No O Unsure

RESPONSE

Yes: 29%

No: 31%

Unsure: 39%

Reflection of Student Surveyors

The students who conducted the survey felt the majority of their respondents did not have enough information as to the plans of either the Government of Guam or the U.S. Department of Defense.

Guam Community College Faculty

Criminal Justice and Social Science

Professor John Armstrong
Professor Donna Cruz
Professor Brian San Nicolas
Professor Jose U. Munoz