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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
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San Francisco, CA 94105-3901

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MEMORANDUM

SUBJECT: Request for Designation of MS4 Discharges on the Island of Guam for NPDES Permit Coverage

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TO: Jared Blumenfeld, Regional Administrator

This memorandum recommends designation of the stormwater discharges from all municipal separate storm sewer systems (MS4s) on the Island of Guam for National Pollutant Discharge Elimination System (NPDES) permit coverage.

Pursuant to section 402(p)(2)(E) and (6) of the Clean Water Act (CWA), and 40 CFR § 122.26(a)(9)(i)(D), the EPA Regional Administrator may designate additional stormwater discharges as requiring NPDES permits where he determines that “the discharge, or category of discharges within a geographic area, contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.”

For the reasons outlined below, we conclude that stormwater discharges from MS4s serving the Island of Guam contribute to violations of water quality standards and are a significant contributor of pollutants to waters of the United States. We therefore recommend designation of stormwater discharges from all MS4s serving the Island of Guam.

## I. LEGAL BACKGROUND

As part of the Water Quality Act of 1987 (WQA), P.L. 100-4 (Feb. 4, 1987), Congress required EPA to establish permitting requirements for certain stormwater discharges, including discharges from large and medium MS4s. (WQA § 405, codified as CWA § 402(p), 33 U.S.C. § 1342(p)). Congress also gave EPA authority to designate additional stormwater discharges for permitting on a case-by-case basis. *Id.*

### A. Current Status of MS4s on Guam under the NPDES Stormwater Regulations

There are currently no regulated MS4s on Guam. EPA's Phase I stormwater regulations (55 FR 47990, November 16, 1990) required NPDES permits for large and medium MS4s, as defined at 40 § CFR 122.26(b)(4) and (7). The regulations included a list of incorporated places (cities) and counties which qualified as large or medium MS4s and required an NPDES permit. (40 CFR § 122, Appendices F through I). Guam has no "counties" or "incorporated places," as defined by the Census Bureau.<sup>1</sup> Thus, no areas of Guam qualified as medium or large MS4s under the Phase I regulations.

EPA's Phase II stormwater regulations (64 FR 68722, December 8, 1999) added a requirement for permitting of small MS4s<sup>2</sup> that are either located in an "urbanized area" under the latest Decennial Census or otherwise designated by the NPDES permitting authority. 40 CFR § 122.32(a). On May 1, 2002 (67 FR 21962), the Census Bureau published a list of urbanized

<sup>1</sup> See Census Bureau, Geographic Areas Reference Manual (Nov. 1994) at 7-19 thru 7-22, available at <http://www.census.gov/geo/www/garm.html>.

<sup>2</sup> "Small MS4" is defined as all separate storm sewers that are:

- (i) Owned or operated by the United States, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States.
- (ii) Not defined as "large" or "medium" municipal separate storm sewer systems pursuant to paragraphs (b)(4) and (b)(7) of this section, or designated under paragraph (a)(1)(v) of this section.
- (iii) This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

40 CFR 122.26(b)(16).

areas based on the 2000 census.<sup>3</sup> Hagåtña, Guam was included on the list of urbanized areas with a population of 132,000, and ordinarily this would have triggered a requirement for an NPDES permit for the MS4 serving this area. However, on August 23, 2002 (67 FR 54631), the Census Bureau reclassified Hagåtña as urban clusters.<sup>4</sup> As a result, the Hagåtña MS4 no longer required an NPDES permit in accordance with the Phase II regulations. It should be noted, however, that the reclassification was simply a result of the Census Bureau's decision not to apply its criteria for urbanized areas to Guam.<sup>5</sup>

## **B. Standard for Designation**

Small MS4s may be designated for NPDES permits pursuant to three different provisions of the stormwater regulations.

Pursuant to 40 CFR §§ 122.26(a)(9)(i)(A), 122.32(a)(2) and 123.35(b), small MS4s may be designated based upon a determination that a stormwater discharge from the small MS4 “results in or has the potential to result in exceedances of water quality standards, including impairment of designated uses, or other significant water quality impacts, including habitat and biological impacts.” 40 CFR § 123.35(b)(i).

Under 40 CFR § 122.26(a)(9)(i)(C), stormwater discharges may be designated where the Regional Administrator determines “that stormwater controls are needed for the discharge based on wasteload allocations that are part of “total maximum daily loads” (TMDLs) that address the pollutant(s) of concern . . .” 40 CFR § 122.26(a)(9)(i)(C).

Finally, under 40 CFR § 122.26(a)(9)(i)(D), the Regional Administrator may designate a stormwater discharge or category of discharges where he determines that: “the discharge, or category of discharges within a geographic area, contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.”

While this memorandum proposes designation only pursuant to 40 CFR § 122.26(a)(9)(i)(D), reference is made to the other designation provisions in order to inform the application of § 122.26(a)(9)(i)(D) to the facts in this case.

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<sup>3</sup> For Census 2000, the Census adopted the following definition of an urbanized area: “contiguous, densely settled census block groups (BGs) and census blocks that meet minimum population density requirements, along with adjacent densely settled census blocks that together encompass a population of at least 50,000 people.” 67 Fed. Reg. 11663, 11667.

<sup>4</sup> For Census 2000, the definition of an “urban cluster” is identical to that of an “urbanized area” except that the population of a cluster is at least 2,500 people, but fewer than 50,000 people.” *Id.*

<sup>5</sup> Pursuant to an agreement between the Census Bureau and the government of Guam, “all urban areas defined within Guam based on the results of Census 2000 are designated as urban clusters regardless of their total population.” 67 FR 54631.

An EPA memorandum entitled *Designation of Stormwater Discharges for Immediate Permitting* (August 8, 1990), available at: [http://cfpub.epa.gov/npdes/pubs.cfm?program\\_id=6](http://cfpub.epa.gov/npdes/pubs.cfm?program_id=6) (Designation Memo) provides guidance on designations of stormwater discharges for permitting. Although the Designation Memo was written prior to the promulgation of the Phase I and II regulations, the current standard for making a designation under 122.26(a)(9)(i)(D) is virtually identical to the standard provided for in CWA § 402(p)(2)(E), upon which the Guidance was based. The only substantive difference between the two is that section 122.26(a)(9)(i)(D) allows for designation of a “category of discharges within a geographic area” as well as designation of individual stormwater discharges, whereas section 402(p)(2)(E) only provides for the latter. Despite this difference, the Designation Memo still provides useful guidance on the appropriate factors to be considered when making a designation.

The Designation Memo recommends immediate designation of any discharges known or suspected to:

1. contribute to a violation of a water quality standard for a waterbody segment listed under section 304(l)(1)(B), or contribute significant amounts of pollutants to any waterbody segment listed under sections 304(l)(1)(A), 319(a)(1), or 314(a)(1)(F);
2. contribute significant amounts of pollutants to waters of the United States, including sensitive wetlands, drinking water sources, estuaries, lakes, scenic rivers/streams, or near coastal areas that are highly valued natural resources;
3. originate from municipal separate storm sewer systems that have, or are suspected of having, process waste or sanitary wastes discharged to them; or
4. originate from municipal separate storm sewer systems that are suspected of containing a significant contribution of pollutants.

Designation Memo at 3-4.

Further guidance on appropriate factors to be considered in designating MS4s for NPDES permitting in particular is provided by the Phase II regulations at 40 CFR § 123.35(b). As noted above, we do not specifically rely on this provision. Nonetheless, we believe it is appropriate to look at section 123.35(b)(1)(ii), EPA’s recommended designation criteria for MS4s, as guidance. In particular, when examining “other significant water quality impacts”, permitting authorities are advised to consider “discharge to sensitive waters, high growth or growth potential, high population density, contiguity to an urbanized area, significant contributor of pollutants to waters of the United States, and ineffective protection of water quality by other programs.” 40 CFR 123.35(b)(1)(ii).

## II. FACTUAL BACKGROUND

### A. General Characteristics of Stormwater Discharges from MS4s

Discharges from MS4s are comprised primarily of urban stormwater.<sup>6</sup> Such discharges typically contain elevated concentrations of pollutants that collect on impervious surfaces, such as city streets, driveways, parking lots, and sidewalks. The first national assessment of urban runoff quality was undertaken for the *Nationwide Urban Runoff Program (NURP)* study in the late 1970s and early 1980s. Overall, data from the NURP study indicated that discharges from separate storm sewer systems draining runoff from residential, commercial, and light industrial areas carried more than 10 times the annual loadings of total suspended solids (TSS) than discharges from municipal sewage treatment plants that provide secondary treatment. The NURP study also indicated that runoff from residential and commercial areas carried somewhat higher annual loadings of chemical oxygen demand (COD), total lead, and total copper than effluent from secondary treatment plants, as well as high levels of bacteria during warm weather conditions. 65 Fed. Reg. at 68725. More recently, discharge monitoring data from medium and large MS4s has been compiled in the National Stormwater Quality Database (NSQD) (Pitt, et al. 2008).<sup>7</sup> Although the NSQD data indicate significant variations in pollutant loadings among different land uses, the data affirm the significance of discharges from MS4s as contributors of pollutants to waters of the United States. For example, the median TSS concentration for all samples was 62.0 mg/L, more than double the 30-day average limit of 30 mg/L for discharges from municipal sewage treatment plants that provide secondary treatment. The median fecal coliform concentration was 4300 mpn/100 mL, which exceeds the former National Recommended Water Quality Criteria (NRWQC) for bathing waters by an order of magnitude.<sup>8</sup>

### B. General Water Quality Impacts of Urban Stormwater Discharges on Guam

The 2008 Integrated Report submitted by the Guam EPA pursuant to CWA sections 305(b), 303(d) and 314 (Guam EPA, 2008) provides an assessment of water quality in and around Guam, including current water quality impairments and sources which contribute to the impairments. The Integrated Report concludes that overall, stormwater runoff from urban areas

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<sup>6</sup> The term “urban stormwater” is not defined by regulation, nor does it appear in the text of EPA’s stormwater regulations. Consistent with EPA’s usage in the preamble to the Phase I and II regulations, the term is used in this document to refer to runoff from urban areas, including residential, commercial, industrial and mixed-use areas, which is discharged through storm sewers. See, e.g. 64 Fed. Reg. at 68725.

<sup>7</sup> Available at <http://unix.eng.ua.edu/~rpitt/Research/ms4/Paper/Mainms4paper.html> .

<sup>8</sup> See EPA’s Redbook, Quality Criteria for Water (July 1976) at 79, available at <http://water.epa.gov/scitech/swguidance/waterquality/standards/current/index.cfm>. EPA now recommends the use of enterococci, rather than fecal coliform, as a bacterial indicator, but there is insufficient data available on average levels of enterococci in urban stormwater to make a meaningful comparison between these levels and the current NRWQC for enterococci.

and construction sites is a significant contributor of pollutants to receiving waters (sections II.B.3.2 and II.B.3.4 of the Integrated Report). Further information on the overall water quality effects of urban stormwater on Guam is provided in the CNMI and Guam Stormwater Management Manual (Stormwater Manual) (Horsley Witten Group, Inc., 2006). The Stormwater Manual stresses the role of urban stormwater as a contributor of sediments (total suspended solids or TSS), nutrients (nitrogen and phosphorus), and pathogens (bacteria and viruses) to receiving waters in and around Guam.

The principal source of urban runoff in a given area is the MS4 given the definition of a municipal separate storm sewer at 40 CFR 122.26(b)(8); thus, the assessment in the Integrated Report concerning the effects of urban runoff supports the designation of the MS4s on Guam for stormwater permitting.

More information and specific water quality impacts of discharges from MS4s are discussed in section IV below.

### **C. Planned Relocation of U.S. Marines to Guam from Okinawa**

The DoD is currently planning to relocate approximately 8,600 U.S Marines and 9,000 dependents from Okinawa to Guam as part of an international agreement with Japan. Additional information is available in a final environmental impact statement (FEIS) prepared for the relocations (Navy, 2010b).<sup>9</sup> In addition, approximately 600 U.S. Army personnel and 900 dependents will be relocated. At the conclusion of the construction phase, the total population increase on Guam stemming from the relocation is estimated to be about 33,000 including military personnel, civilian military workers and workers in jobs induced by the relocation. At the height of the construction phase, the population increase is estimated at about 79,000. As noted above, the population of the urban area on Guam based on the 2000 census was 132,000; the 2000 census lists the total population of Guam as 155,000. As of 2009, the Government of Guam estimates total Island population at about 178,000.

The relocation will be accompanied by the construction of numerous new facilities (such as housing, retail, schools, utilities and training facilities) to accommodate the new personnel. New construction is expected both on and off-base. Substantial upgrades to the off-base road network on Guam will also be needed. A recent report (Parsons Transportation Group, Inc, 2010) describes the needed upgrades, which include widening and strengthening of existing roads in addition to construction of new roads. Both this construction and the ongoing intensified use of the road network would increase the quantity of pollutants discharged in stormwater from the roadways and the risks to receiving waters from the stormwater runoff.

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<sup>9</sup> The FEIS and related documents are available at <http://www.guambuildupeis.us/>.

### III. SCOPE OF PROPOSED DESIGNATION

As noted above, 40 CFR § 122.26(a)(9)(i)(D) allows for designation of a category of discharges within a geographic area, based upon a determination that the category “contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.” In this case, it is appropriate to designate all discharges from MS4s, as defined at 40 CFR § 122.26(b)(18), on Guam.<sup>10</sup> The area covered by this designation will generally coincide with areas on Guam that are urban in character, but will extend somewhat beyond the urbanized clusters as delineated by the 2000 Census. In addition, since the designation is intended to cover future MS4s as well as existing MS4s, it will include MS4s serving all future publicly owned and/or operated storm sewer systems defined as small MS4s, such as storm sewer systems to be constructed to serve new or expanded DoD facilities, and associated road networks.

The inclusion of areas of new development (i.e., future MS4s) outside of the existing urbanized clusters in the designation is important because much of the new development on the island, including many of the new DoD facilities, is expected to be located outside the existing urban clusters and would not be subject to the permit if the designation were limited to the current urban clusters. Attachment 1 shows the urban area for Guam as determined by the Census Bureau. This map also shows other urban areas as identified by the Government of Guam, existing military facilities, major roads, and rivers, streams and marine waters with impaired water quality. Attachment 2 shows the anticipated future land use in northern and central Guam (Guam Bureau of Statistics and Plans, 2009a), and Attachments 3A and 3B shows the existing and proposed military facilities on Guam. A comparison of these maps shows much of the anticipated new development is expected to occur outside the urban clusters delineated by the Census Bureau. As discussed above, the Integrated Report concluded that urban runoff which is discharged from Guam’s MS4s is a significant source of pollutants to local receiving waters, and it is important to address the discharges from the new MS4s as well as the existing MS4s. As illustrated in Attachment 1, impaired waters are located in and adjacent to urban clusters as defined by the Census Bureau, and in many other areas of Guam further from these urban clusters. This map illustrates the importance of addressing all MS4s, and not just MS4s in existing urban clusters, to protect and restore Guam’s impaired waters.

### IV. BASIS FOR DESIGNATION

While relatively little water quality information has been collected on Guam, the available data indicate that stormwater discharges from MS4s both (1) contribute to violations of water quality standards and (2) are a significant contributor of pollutants to waters of the United States, pursuant to 40 CFR § 122.26(a)(9)(i)(D).

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<sup>10</sup> Since there are no large or medium MS4s on Guam, all of the designated discharges would be considered small MS4s, as defined at 40 CFR § 122.26(b)(16)-(17).



### A. Contribution of Discharges from MS4s to Violations of Water Quality Standards on Guam

As noted above, Guam's Integrated Report lists numerous beaches and coastal areas on the CWA section 303(d) list of impaired waters due to the exceedances of bacteria standards (see Attachment 1). On March 17, 2010, EPA approved the Guam Northern Watershed Bacteria TMDLs (GNWB TMDL),<sup>11</sup> which are intended to address exceedances of water quality standards for bacteria which are currently occurring at seventeen of Guam's most popular recreational beaches. (Tetra Tech, Inc., 2009). The GNWB TMDL notes that stormwater runoff contributes to the impairment of all seventeen GNWB beaches. (GNWB TMDLs Table 5-2 at 21). Although the exact contribution of stormwater discharges varies among the individual beaches, the GNWB TMDLs emphasize the central role that stormwater discharges play in causing exceedances of the geometric mean (chronic) water quality criterion for bacteria and recommends that, "[e]fforts to achieve Northern Guam Beach TMDL targets based on the geometric mean should focus on storm water discharges to Hagåtña Bay." (GNWB TMDL at 24).

The GNWB TMDL does not distinguish among different types of unpermitted stormwater discharges, so it is not possible to ascertain the exact contribution of discharges from MS4s, as opposed to nonpoint source discharges.<sup>12</sup> However, the TMDL explicitly points out the absence of MS4 permitting requirements on Guam and notes that, "[d]esignation of the urban portions of Guam to be subject to NPDES MS4 permit requirements is an option that would strengthen the stormwater management program relative to TMDL implementation." (GNWB TMDL at 216).

Similarly, the monitoring results reported in the Integrated Report show exceedances of bacteria standards at monitoring stations both adjacent to the Hagåtña urban clusters and at other locations with MS4s as well. Appendix A of the Integrated Report shows the locations of Guam EPA's recreational beach monitoring stations. Some locations with exceedances (e.g., Tumon Bay) are adjacent to the Hagåtña urban clusters, but exceedances are also commonly reported at locations adjacent to MS4s outside this area (e.g., Inarajan Bay, Merizo Pier and Togcha Beach), which are adjacent to the MS4s serving the communities of Inarajan, Merizo, and Agat (see

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<sup>11</sup> The official title of the GNWB TMDLs is "DRAFT Development of Guam Northern Watershed Bacteria TMDLs" (Dec. 16, 2009), available at [http://www.epa.gov/waters/tmdl/docs/Guam\\_NW\\_Beach\\_TMDL\\_--\\_2009-12-16\\_%20jtc.pdf](http://www.epa.gov/waters/tmdl/docs/Guam_NW_Beach_TMDL_--_2009-12-16_%20jtc.pdf). EPA approved the GNWB TMDLs on March 17, 2010. See *Letter from Alexis Strauss to Lorilee Chrisostomo* (March 17, 2010). Although they are technically seventeen distinct TMDLs, they are referred to collectively as the GNWB TMDL in this document.

<sup>12</sup> In addition, the GNWB TMDL does not specify whether unpermitted point source stormwater discharges are subject to waste load allocations (WLAs) or load allocations (LAs). However, because the TMDL assigns the same concentration-based values to all WLAs and LAs, the actual concentration limits are the same regardless of the form of allocation.

Attachment 1). These results provide support for the broad geographic designation, as described above, of all MS4 discharges on Guam.

On November 12, 2010, EPA published an update<sup>13</sup> to its 2002 guidance memorandum concerning the incorporation of requirements of TMDLs for stormwater discharges into NPDES permits. Among other new recommendations, the updated memorandum expresses concern NPDES permitting authorities have only rarely used the designation authority provided by the CWA and NPDES regulations to permit and more effectively control pollutants in stormwater discharges which are significant enough to be assigned a load allocation in a TMDL, but are not otherwise subject to NPDES permitting under existing regulations. As described above, this is the situation for the stormwater discharges covered by the GNWB TMDL, and designation would be consistent with the guidance in the November 12, 2010 updated memorandum. This memorandum also clarifies stormwater discharges which may be considered loads allocations in a TMDL would be reclassified as wasteload allocations once they become subject to an NPDES permit.

#### **B. MS4s on Guam as a Significant Contributor of Pollutants to Waters of the United States**

In addition to identifying that discharges from MS4s on Guam are contributing to violations of bacteria standards on Guam, the available data also indicate that these discharges are collectively a significant contributor of pollutants to U.S. waters.

The most comprehensive study of stormwater pollutant loadings on Guam was conducted during the 1970s (Zolan, *et al.*, 1978a, Zolan, 1981). Urban runoff was collected over an 18-month period from ponding basins and storm drains at various locations in northern Guam and analyzed for common water quality parameters. Overall, the study concluded that urban runoff discharging into coastal areas contained (1) high levels of solids and chlorides, (2) levels of total and fecal coliform bacteria exceeding the GWQS,<sup>14</sup> and (3) concentrations of nitrate-nitrogen exceeding the GWQS nitrogen limit for nearshore waters. As noted earlier, the 2008 Integrated Report concludes stormwater discharges from MS4s continue to contain significant loadings of pollutants which are discharged to Guam's receiving waters.

A more recent study (Denton, *et al.*, 1998) focused on loadings of nutrients (nitrogen and phosphorous) and heavy metals in stormwater collected from various retention sites and one storm drain servicing a hotel in northern Guam. Despite significant spatial and temporal variations, the study found overall relatively low loadings of nutrients and heavy metals in the stormwater retention sites (in comparison to sampling results elsewhere in the world). However, samples taken from the hotel storm drain were "generally enriched in all detectable components"

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<sup>13</sup> Updated memorandum dated November 12, 2010 is available at:  
[http://cfpub.epa.gov/npdes/whatsnew.cfm?program\\_id=6](http://cfpub.epa.gov/npdes/whatsnew.cfm?program_id=6)

<sup>14</sup> The current GWQS use enterococci rather than fecal or total coliform as a bacterial indicator for all marine waters.

with some samples containing particularly high levels of phosphorus (up to 482 mg/l), which may result from landscaping practices or other activities at the hotel. In the 1998 report and in subsequent publications (Denton, *et al.*, 2005, 2007), the authors proposed that phosphorus discharges from hotel runoff may be a significant factor contributing to algal blooms in Tumon Bay. However, the authors also noted that most hotels along the bay discharge their stormwater to infiltration chambers rather than directly to waters of the United States or the MS4; phosphorus reaches Tumon Bay via groundwater transport from the infiltration basins. Nevertheless, the data provide an indication of the types and concentrations of pollutants present in urban stormwater on Guam generally and in runoff from landscaped areas in particular.

### **C. Other Considerations**

There are several other considerations that weigh in favor of designation of stormwater discharges from MS4s on Guam. As noted in section I.B above, EPA guidance recommends consideration of various factors in determining whether to designate an MS4 discharge for permitting. Of particular relevance to Guam are the following factors: discharge to sensitive waters, high growth or growth potential, contiguity to an urbanized area, and significant contributor of pollutants to waters of the United States. The overall significance of discharges from MS4s as a contributor of pollutants is discussed in section IV.B above. The remaining factors are addressed below.

#### **1. Sensitive Receiving Waters**

Coral reefs surround nearly the entire Island of Guam and are “extremely valuable in terms of marine life, aesthetics, food supply, recreation and protection of Guam’s highly erodible shorelines.” (Integrated Report, Executive Summary at 2). The Government of Guam in its Coral Reef Initiative (see <http://allislandscorals.org>) has stated the Island’s coral reefs are under stress and recommends better control of land-based sources of pollution including stormwater runoff. In a summary report on the status of coral reefs around Guam, the Guam Bureau of Statistics and Plans concludes the top threats to Guam’s reefs include sedimentation from upland soil erosion and stormwater runoff and associated pollutants (Guam Bureau of Statistics and Plans, 2009b). Sediment from stormwater runoff can smother coral while excess nutrients and freshwater itself can interfere with the life cycle of coral (Guam Bureau of Statistics and Plans, 2008). The CNMI and Guam Stormwater Management Manual (Stormwater Manual)(Horsley Witten Group, Inc., 2006) also indicates sediment from stormwater runoff is the most significant threat to the coral reefs around Guam.

As described in section II.A above, discharges of stormwater from MS4s typically contain high levels of sediment. It is therefore highly probable that stormwater discharges from MS4s on Guam are contributing to the sedimentation of coral reefs around Guam. The fact coral reefs “surround” almost the entire Island also firmly supports a broad geographic designation of the MS4s on the Island (including developing areas and the full existing MS4) to ensure adequate control of pollutants in stormwater discharges to protect the corals.

## 2. High Growth Potential

As noted above, the proposed military relocation is expected to temporarily increase the population of Guam by 79,000 at the height of the construction phase, and to permanently increase the population by about 33,000. This would constitute a substantial increase to Guam's current population of about 178,000 and clearly makes Guam an area of "high growth potential."

The relocation would also be accompanied by a large construction program. The Main Cantonment area alone for the Marines (the area where housing, retail, schools and similar facilities would be located) would be about 2,500 acres in size. Construction site runoff from sites disturbing one or more acres on Guam is regulated under EPA's general NPDES permit for construction sites (73 FR 40338, July 14, 2008); see: <http://cfpub.epa.gov/npdes/stormwater/const.cfm>. An NPDES permit issued for the MS4s on Guam would enhance the effectiveness of the sediment and erosion control program on Guam by requiring the MS4s to impose a program to control pollutants in construction site runoff within the permitted area. The authorities with jurisdiction over these MS4s are uniquely placed to impose requirements to ensure the reduction of pollutant loadings that are expected to accompany this development during construction. Given the concerns noted in the Integrated Report regarding construction site runoff, this factor provides further support for the designation.

## 3. Contiguity

The locations of the existing and proposed military facilities in relation to the existing urban clusters identified by the Census Bureau and other urban areas on Guam can be seen by comparing the map in Attachment 1 with Figures 1.2-1 and 2.1-1, respectively, in the FEIS (also reproduced in Attachments 3A and 3B). The maps also show that all the other existing and proposed facilities are either adjacent to the urban area on Guam, or in close proximity, including the largest facilities such as the existing Apra Naval Base, Anderson AFB and the proposed Main Cantonment area for the Marines. This contiguity can be expected to compound the effects of the discharges from the urban areas, the military facilities and associated street and road networks.

In particular, stormwater discharges from these newly developed areas will not only contribute pollutant loadings during the construction phase, but will also continue to contribute pollutants once built out. Designation early in the development process will enhance pollutant removal potential, as it is also widely recognized there is greater potential for incorporating stormwater BMPs into new developments than in retrofitting BMPs into developed areas (55 FR 48055, November 16, 1990).

### D. Additional Benefits of Designation

Groundwater is the principal source of drinking water on Guam, and is therefore another highly valued resource. Stormwater Management Manual at 1-17. Given the highly permeable soils overlying the principal aquifer (the North Guam Lens Aquifer which provides 70-80% of Guam's water supply and has been designated a sole source aquifer), the Manual stresses the importance of avoiding contamination of the aquifer as a result of infiltration of contaminated stormwater. The Navy in its FEIS for its Mariana Islands Range Complex (Navy, 2010a) argues implementation of the stormwater pollution prevention plan at Anderson AFB (which overlies the aquifer) has prevented extensive groundwater contamination. Nevertheless, the FEIS notes some wells were contaminated volatile organic compounds such as trichloroethylene and tetrachloroethylene, demonstrating the risks of groundwater contamination by surface water pollution should not be discounted.

Stormwater management under the NDPEs permit program may consider potential effects of discharges to surface waters, and also the potential effects on groundwater resources, especially in areas with highly permeable soils such as those in Northern Guam, or when management techniques such as infiltration are used to minimize pollutant discharges to surface waters (see EPA's menu of stormwater best management practices (BMPs) at: <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm>). Guam's 2008 Integrated Report cites urban runoff as one of the major threats to groundwater resources on Guam. We expect the MS4 permit would result in additional attention given to the potential effects of urban runoff on groundwater resources in Guam (and additional efforts to mitigate the effects), and thereby better ensure the protection of Guam's important groundwater resources.

## **V. DESIGNATION PROCEDURE AND PERMIT APPLICATION REQUIREMENTS**

Since there are a relatively small number of permittees, we believe individual permits are appropriate; the likely permittees would be Guam Department of Public Works for the non-DoD areas of the Island, while DoD agencies (the U.S. Navy and possibly other agencies as well) would be the permittees for the DoD facilities.

The statutory and regulatory provisions governing issuance and review of individual permits and related actions provide guidance as to the procedures for issuing residual designations and associated permits. Based upon these provisions, we recommend that the Regional Administrator simultaneously (1) provide public notice and take comment on a "preliminary residual designation" (this document) and (2) specifically notify and provide permit application forms to the operators of the preliminarily-designated discharges. The operators of designated discharges would then need to submit permit applications within 180 days of the receipt of this notice, unless permission for a later date is granted by the Regional Administrator. 40 CFR §§ 122.26(a)(9)(iii) & 124.52(c). After receipt of these applications, the Region would issue and take comment on draft individual permits for designated discharges under 40 CFR § 124.6(d). The comment period on the preliminary residual designation would remain open through the close of the comment period on the individual permits. The Region would then issue a final residual designation and final permits to designated dischargers, along with response to

comments. 40 CFR §§ 122.26(a)(9)(i)(C) & (D), 124.15 & 124.17. Designated dischargers (or other interested parties who commented on the preliminary designation and/or draft permit(s)) could then petition the Environmental Appeals Board (EAB) for review of the designation, the determination to require individual permits and/or the permits themselves. 40 CFR §§ 124.19(a) & 124.52(c).

Since the facilities to be permitted in this case are essentially Phase II MS4s, the permit application regulations for Phase II MS4s at 40 CFR § 122.33(b)(2)(i) provide appropriate permit application requirements; these requirements include:

1. A storm water management program (SWMP) including BMPs addressing each of the six minimum control measures set forth at 40 CFR § 122.34(b)(1) through (6), designed to reduce the discharge of pollutants to the maximum extent practicable and protect water quality;
2. Measurable goals for each of the BMPs proposed for the SWMP including, as appropriate, the time frame for implementation of the BMPs;
3. An estimate of the square mileage served by the small MS4; and
4. The person or persons responsible for implementing or coordinating the SWMP.

The permit applications must also include the information required by 40 CFR § 122.21(f) (see Attachment 4).

We anticipate requesting submittal of the applications within 180 days of notification in accordance with 40 CFR § 122.52(c). After receipt of the permit applications, we will prepare and public notice draft NPDES permits for the discharges. Permit requirements will be developed to address the impacts of the discharges on the water resources of Guam. Following review of public comments, we would issue final permits and finalize the designation.

## **VI. CONCLUSION**

For the reasons outlined above, we believe this proposed designation is appropriate under the CWA and its implementing regulations, and therefore recommend your approval. Upon approval of the designation of the stormwater discharges specified above for an NPDES permit, Region 9 will notify the dischargers that their discharges have been preliminarily designated, and require permit applications in accordance with 40 CFR § 124.52.

**VII. AUTHORIZING SIGNATURE**

Based on the analysis set forth in this memo, it is my preliminary determination that stormwater discharges from MS4s serving the Island of Guam contribute to violations of water quality standards and are a significant contributor of pollutants to waters of the United States. I am therefore issuing a preliminary residual designation of these discharges pursuant to section 402(p)(2)(E) and (6) of the Clean Water Act and 40 CFR § 122.26(a)(9)(i)(D).

February 8, 2011

/s/

\_\_\_\_\_  
Date

\_\_\_\_\_  
Approval: Jared Blumenfeld, Regional Administrator

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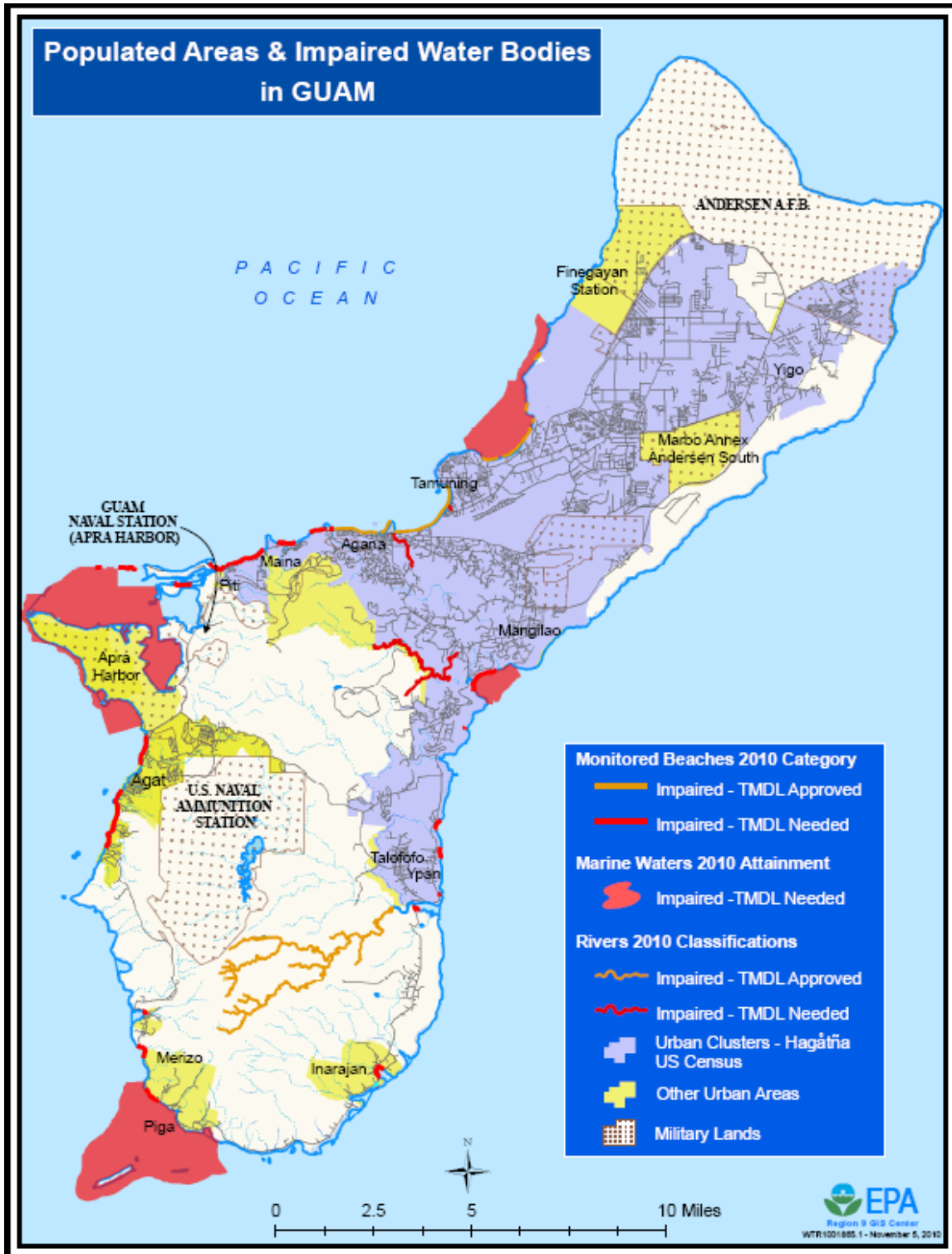
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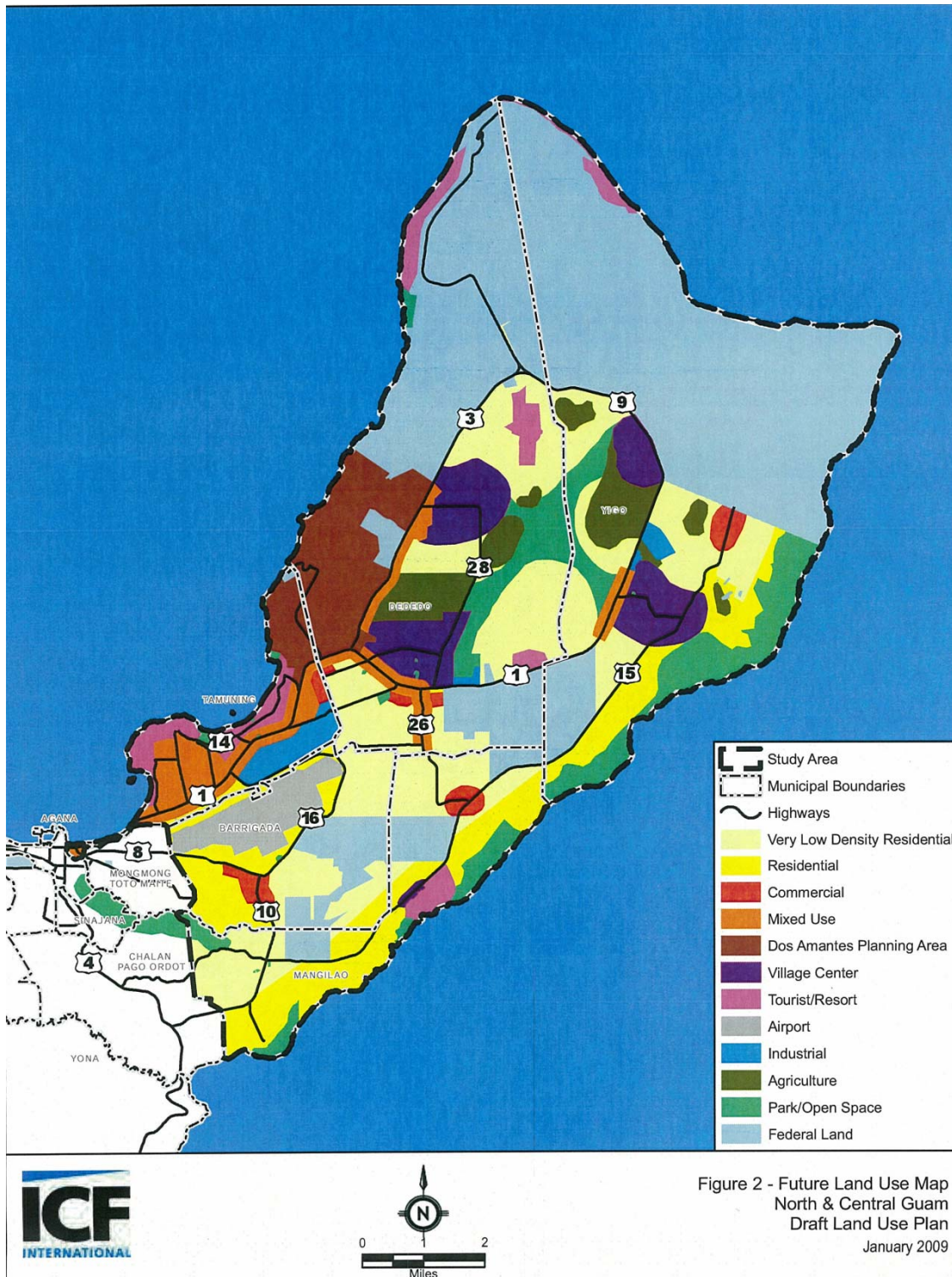
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Attachment 2 - Future Land Use in Northern and Central Guam  
(Guam Bureau of Statistics and Plans, 2009)



## Attachment 3 – Military Facilities on Guam Designated for MS4 Permitting

The FEIS accompanying DoD’s proposed relocation of U.S. Marines from Okinawa to Guam includes a list of existing and proposed military facilities on the Island. These facilities are all designated for NPDES permitting as MS4s. The list of existing and proposed facilities follows below. Figure 1.2-1 from the FEIS (Attachment A) shows the locations of the existing facilities; Figure 2.1-1 from the FEIS (Attachment B) shows the locations of the proposed facilities.

### I. Existing Facilities

#### A. Existing Navy Facilities

- 1) Naval Base at Apra Harbor
- 2) Naval Computer and Telecommunications Station (NCTS), Finegayan
- 3) Family housing/community support areas at Apra Heights, Nimitz Hill and NCTS, Finegayan
- 4) Sasa Valley and Tenjo Vista fuel farms
- 5) Naval magazine Apra Heights
- 6) Naval Hospital and adjacent high school
- 7) Military operations on urban terrain training range
- 8) Navy golf course at Barrigada

#### B. Existing Air Force Facilities

- 1) Anderson Air Force Base
- 2) Anderson South
- 3) Barrigada (Air Force)
- 4) Mount Santa Rosa communications facility

#### C. Existing Army Facilities

- 1) Training facility for Guam Army National Guard and Army reserves at Barrigada and Dededo

### II. New Facilities

#### A. Main Cantonment Area

- 1) Headquarters and administrative areas
- 2) Base operations
- 3) Bachelor’s Quarters and temporary lodging

- 4) Family housing
- 5) Educational facilities
- 6) Quality of life functions

B. Waterfront Area

- 1) Amphibious task force ship berthing
- 2) Embarkation and cargo ship inspection and staging area
- 3) LCAC/AAV laydown area
- 4) Apra Harbor medical/dental clinic
- 5) Military working dog kennels; USCG wharf and support facilities

C. Anderson AFB Area

- 1) Air embarkation
- 2) ACE beddown

D. Training Areas

- 1) Training range complex
- 2) Ammunition storage
- 3) Non-firing ranges
- 4) Aviation training
- 5) Command, control and simulation

Attachment 3A – Existing Military Facilities on Guam

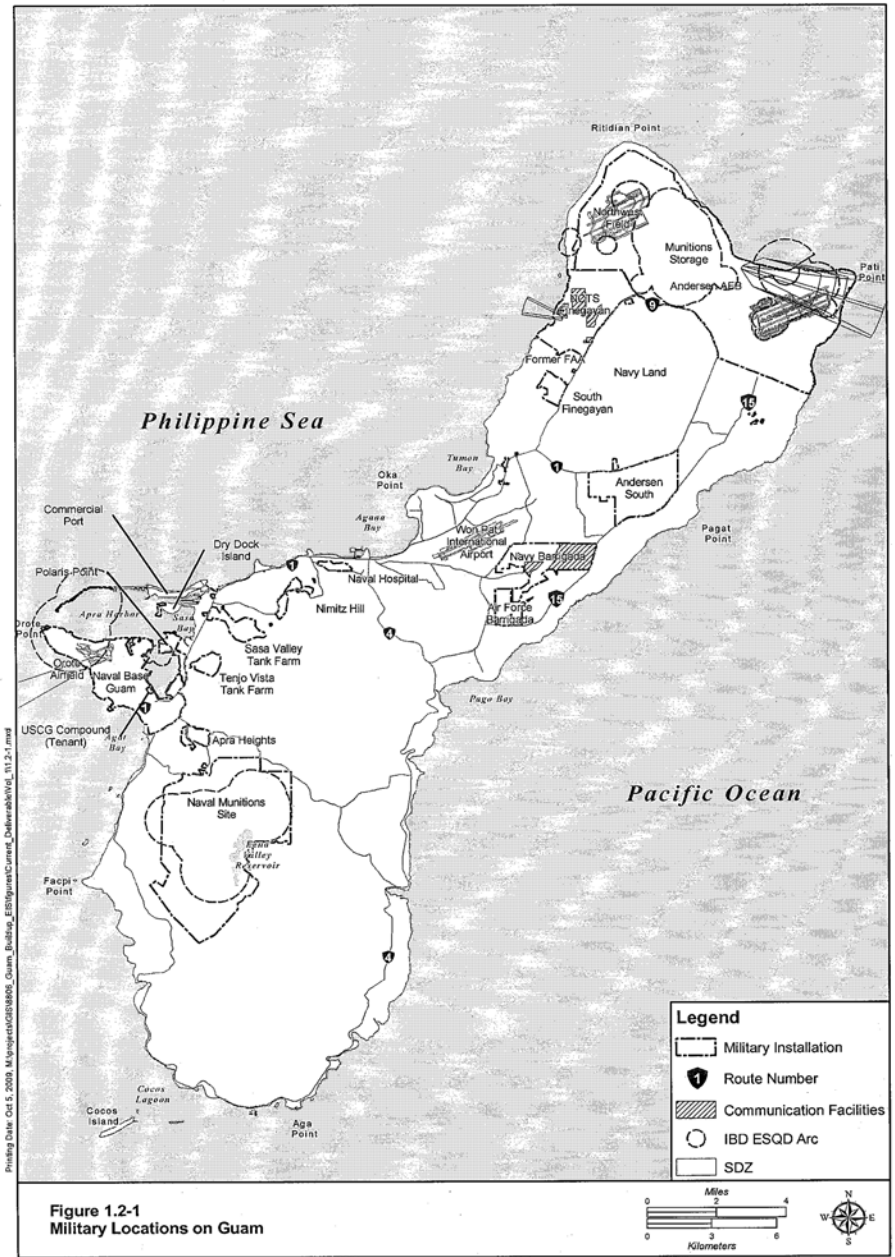
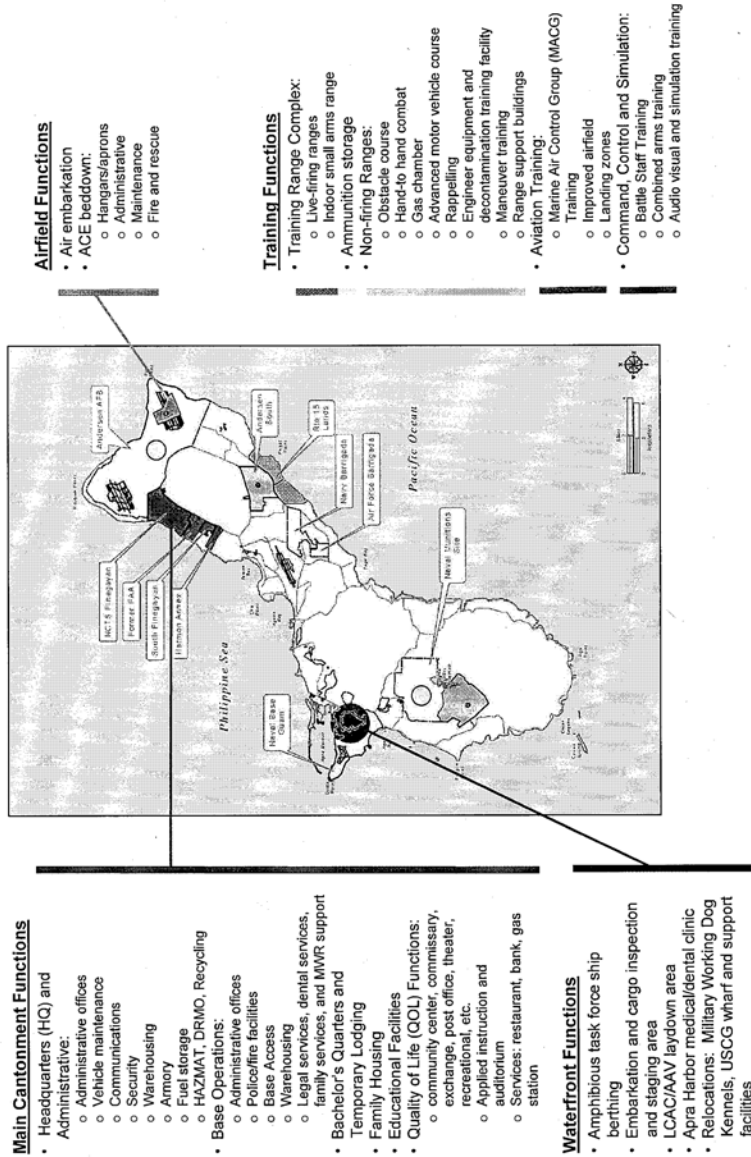


Figure 1.2-1  
Military Locations on Guam

Attachment 3B – Proposed Military Facilities on Guam

Figure 2.1-1 Overview of Proposed Facility Construction and Operations on Guam



Attachment 4 - Information Required by 40 CFR 122.21(f)

- (1) The activities conducted by the applicant which require it to obtain an NPDES permit.
- (2) Name, mailing address, and location of the facility for which the application is submitted.
- (3) Up to four Standard Industrial Classification (SIC) codes which best reflect the principal products or services provided by the facility.
- (4) The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity.
- (5) Whether the facility is located on Indian lands.
- (6) A listing of all permits or construction approvals received or applied for under any of the following programs:
  - (i) Hazardous Waste Management program under the Resource Conservation and Recovery Act (RCRA).
  - (ii) Underground Injection Control (UIC) program under the Safe Drinking Water Act (SDWA).
  - (iii) NPDES program under the Clean Water Act (CWA).
  - (iv) Prevention of Significant Deterioration (PSD) program under the Clean Air Act (CAA)
  - (v) Nonattainment program under the CAA.
  - (vi) National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the CAA.
  - (vii) Ocean dumping permits under the Marine Protection Research and Sanctuaries Act.
  - (viii) Dredge or fill permits under section 404 of CWA.
  - (ix) Other relevant environmental permits, including State permits.
- (7) A topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the source, depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage, or disposal facilities; each well where fluids from the facility are injected underground; and those wells, springs, other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant in the map area.
- (8) A brief description of the nature of the business.