

CHAPTER 20.

ENVIRONMENTAL JUSTICE AND THE PROTECTION OF CHILDREN

20.1 INTRODUCTION

This chapter focuses on the potential for racial and ethnic minorities, low income populations, or children to be disproportionately affected by project-related impacts. Normally, an analysis of environmental justice is initiated by determining the presence and proximity of these segments of the population relative to the specific locations that would experience adverse impacts to the human environment. The situation on Guam is unique because racial or ethnic minority groups (as defined by the United States [U.S.]) comprise a majority of the Guam population. Plus, the proportions of people living in poverty or who are under 18 years of age are also substantially higher than in the general U.S. population.

The analysis is further complicated because Guam is a relatively small and isolated island, and certain types of impacts would be experienced islandwide. Accordingly, the analysis of environmental justice described in this chapter acknowledges the unique demographic characteristics of the island population and assumes that the project effects could disproportionately affect low-income populations and children. Proposed mitigation measures would be expected to effectively mitigate potential environmental justice impacts. If a resource area did not have significant impacts, or if the impact was mitigable to less than significant, as analyzed in each individual chapter in Volume 6, then the resource was not further analyzed in this chapter. These resources are geology and soils, water resources, air quality, airspace, land use, recreation, biological resources, cultural resources, visual resources, marine transportation, and hazardous materials and waste.

For a description of the affected environment with respect to environmental justice, refer to Volume 2, Chapter 19. This chapter focuses on potential disproportionate impacts to racial minorities, low-income populations, and children from the construction and operation of utilities and roadways associated with the military relocation on Guam. For an analysis of potential islandwide impacts to these populations, see Volume 6, Chapter 17.

20.2 ENVIRONMENTAL CONSEQUENCES

20.2.1 Approach to Analysis

20.2.1.1 Methodology

Volume 6 of this Final Environmental Impact Statement (EIS) examines the potential impacts that each alternative would potentially have on various environmental and human resources. Based on the conclusions reached in each resource chapter, the analysis of environmental justice sought to identify the adverse impacts that would disproportionately affect racial minorities, children, and/or low-income populations, based on the following assumptions:

- Environmental Justice and Protection of Children policies require a federal agency to analyze whether its proposed action would adversely affect a minority, low-income, and child population disproportionately to the rest of the community. The island of Guam is unique because a majority of the population of Guam meets the criteria for being an Asian Pacific minority group in the context of the overall U.S. population. As a result, where the EIS

identifies significant impacts for a particular resource, there would be a corresponding, islandwide adverse effect to minority populations on Guam, compared to the U.S. population. However, because of international agreements that require the proposed action to focus on Guam and not other locations within the U.S., the evaluation of environmental justice would be on whether there are disproportionate adverse effects within the context of alternatives for facility location on Guam. Because of this, it would be impossible for there to be a disproportionate effect from an identified adverse impact based solely on the impact affecting a minority population. Therefore, the analysis for environmental justice on Guam must consider whether there is a disproportionate adverse effect on a low-income population or children. For example, if a low-income population is being affected by a potential reduction in Public Health and Social Services, that impact would be considered a significant impact because the population, as a given, is a minority population and it is being disproportionately affected because it is a low-income population. As a result, some resource areas may have effects on a minority population, but because they do not impact a low-income or child population in a disproportionate manner, they will not be considered as causing an environmental justice adverse effect.

- The region of influence (ROI) is defined as the area in which the principal effects arising from the proposed construction of utilities and roadways are likely to occur. Those who may be affected by the consequences of utilities and roadway construction and operation are often those who reside or otherwise occupy areas immediately adjacent to the project locations.
- Because the proposed actions are related either to construction or operations, impacts to the ROI would likely be either “spill over” effects that extend beyond an installation’s boundary line into the surrounding community, or impacts that directly affect minority populations in the ROI.

The analysis applied the three tiers of criteria to assess the environmental justice implications for each significant impact identified in the relevant resource chapters. In some cases if the analysis shows that the requirements for the specific criteria have not been met, then a discussion on the next tier may not be required. For instance, if an applicable disadvantaged group is not disproportionately affected in Tier 2, then a discussion on significant effects under environmental justice would not be warranted.

- Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?
- Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed actions?
- Tier 3: Would the disproportionate adverse effects be significant?

20.2.1.2 Determination of Significance

According to Section 1508.27 of the Council on Environmental Quality Regulations for Implementing National Environmental Policy Act (Council on Environmental Quality 1979), determining the level of significance of an environmental impact requires that both context and intensity be considered. These terms are defined in Section 1508.27 as follows:

- “Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.”

- “Intensity. This refers to the severity of the impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:
 - Impacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect would be beneficial.
 - The degree to which the proposed action affects public health or safety.
 - Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
 - The degree to which the effects on the quality of the human environment are highly uncertain or involve unique or unknown risks.
 - The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
 - Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
 - The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
 - The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined critical under the Endangered Species Act of 1973.
 - Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.”

Federal Highway Administration (FHWA) Guidance for Preparing and Processing Environmental and Section 4(f) Documents (FHWA 1987) addresses the assessment of roadway projects and their potential for disproportionately affecting any social group and mitigation measures to address those impacts. This document’s guidance has been followed to assess the roadway projects for the proposed alternatives relative to environmental justice.

20.2.1.3 Issues Identified during Public Scoping Process

Issues related to environmental justice that were raised during the public scoping process are discussed in Volume 2, Chapter 19. Also discussed in Volume 2, Chapter 19 are public involvement efforts that were undertaken during the development of the EIS to ensure that racial and ethnic minority and low-income populations had the opportunity to provide comments on the military relocation to Guam.

20.2.2 Power

As discussed in Volume 6, Chapter 3, Section 3.2.2, the predicted direct Department of Defense (DoD) and indirect population growth on Guam induced by the proposed DoD relocation would increase demands on the electrical system, with the peak year being 2014. Potential environmental justice impacts related to this increased demand would be associated with the following:

- Changes in air emissions
- Changes to electrical customer user fees
- Changes in the reliability of Guam Power Authority’s (GPA) power supply islandwide

These three areas are assessed below for each power alternative.

20.2.2.1 Basic Alternative 1 (Preferred Alternative)

Basic Alternative 1 would utilize existing GPA baseload power facilities to meet the increased power demands, recondition up to five existing Combustion Turbines (CTs) for required peaking and reserve power, and upgrade Transmission and Distribution (T&D) systems. No new construction or enlargement of the existing footprint of the facilities would be required. These reconditioned CTs would have the necessary reliability to serve as reserve capacity to ensure reliable operation of the Island-Wide Power System (IWPS). They would serve as peaking and reserve units. This work would be undertaken by the GPA on its existing permitted facilities and would potentially utilize an SPE to obtain funds, recondition the CTs, install the T&D upgrades, and operate the CTs for a fee to enable repayment of the financing. Reconditioning would be made to existing permitted facilities at the Marbo, Yigo, Dededo (2 units), and Macheche CTs. These CTs are not currently being used up to permit limits. T&D system upgrades would be on existing aboveground and underground transmission lines. This alternative supports Main Cantonment Alternatives 1 and 2 and Main Cantonment Alternatives 3 and 8 would require additional upgrades to the T&D system.

Changes in Air Emissions

Reconditioning existing CTs would result in the existing permitted CTs being available for use as peaking and standby units. Their use would be expected to not exceed 500 hours per year per CT total increase from the baseline as discussed in Volume 6, Chapter 7. Currently, these units are not routinely used except for intermittent periods and emergencies. This alternative would result in more pollutants emitted into the air than experienced today because the CTs would be used for intermittent periods and reserve requirements. Other existing generating units, known as baseload units, would be operated for longer periods of time than the current baseline. All generating units would be operated within constraints of their current permits. The current air permits for the islandwide power generating facilities allow for some level of pollutants to be emitted; these allowable levels are based on U.S. Environmental Protection Agency's National Ambient Air Quality Standards. National Ambient Air Quality Standards protect public health, including the health of "sensitive" populations such as children, asthmatics, and the elderly. They also protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Because the overall permitted capacity and the operational scheme for the islandwide generating facilities would not change, the resulting potential air quality impact would remain the same as the current permitted conditions established previously during each facility permitting process, which are protective of human health and sensitive populations. Because Basic Alternative 1 would not result in an increase of air emissions at these facilities under the permitted condition, reconditioning these CTs and utilizing the islandwide permitted sources complies with applicable Clean Air Act air quality standards and would result in less than significant air quality impacts. Therefore, Basic Alternative 1 would not result in any disproportionately high and adverse effects on low-income populations or children.

Changes to Electrical Customer Fees

As discussed in Volume 6, Chapter 17, potential effects on electrical customers are unknown at this time. However, under power Basic Alternative 1, only existing power generation facilities owned and operated by GPA would be reconditioned and new T&D lines installed. Cost to bring these existing GPA assets into peaking and reserve service could be arranged by the DoD or provided directly by the GPA, with reimbursement via a new utility service contract, which would replace the existing customer service agreement between the GPA and DoD. The DoD-increased demand would result in a cost share across a

much larger user base than currently exists, and would likely result in unchanged or lower user fees for all power customers than might occur in the absence of the proposed DoD relocation. Basic Alternative 1 would not result in adverse impacts to electrical customer fees and therefore would not cause disproportionately high and adverse effects on children or low-income populations related to electrical fees.

Changes to Power Supply Reliability

As discussed in Volume 6, Chapter 3, reconditioning the GPA's CTs would increase the reliability of the IWPS and provide reliable sources of power generation to support the existing and future off base populations. Mitigation measures described in Volume 6, Chapter 3 include efforts to jointly plan for system upgrades to ensure that the reliability of the IWPS would not be degraded to the detriment of all users. Mitigation measures also include the availability of new 5-plus megawatt of capability at Marine Base Finegayan that could be used to shave peak power during daily high-demand periods, if requested by the GPA. Mitigation measures also include force flow reductions and/or adaptive program management of construction procedures described in Volume 7, which would reduce population increases and thus reduce power demand increases. These proposed mitigation measures may not be necessary for power, but could be used should unexpected power issues develop. Significant impacts to power supply are not expected, and therefore would be no disproportionately high and adverse effects on low-income populations or children related to power supply reliability.

20.2.3 Potable Water

20.2.3.1 Basic Alternative 1 (Preferred Alternative)

Basic Alternative 1 would provide additional water capacity of 11.3 MGd (42.8 MLd), which is anticipated to be met by an estimated 22 new wells at Andersen Air Force Base (AFB), rehabilitate existing wells, interconnect with the Guam Waterworks Authority (GWA) water system, and associated treatment, storage and distribution systems. Two new 2.5 MG (9.5 ML) water storage tanks would be constructed at ground level at NCTS Finegayan. Up to two new elevated 1 MG (3.8 ML) water storage tanks would be constructed at Finegayan within the Main Cantonment footprint. These actions would increase availability of the DoD potable water for the DoD facilities, and their implementation is considered a direct impact.

The actions would also generate construction-related noise and traffic that may adversely affect the villages of Dededo and Yigo, which lie adjacent to Andersen AFB. Heavy construction equipment would be used for at least 6–9 months during construction. This would generate some noise. However, Volume 6, Chapter 8, does not anticipate that the noise would be loud enough off base to have a significant effect on the surrounding community. Noise would also be generated by construction vehicles along Routes 9, 1, and 15, but with the implementation of mitigation measures in Volume 6, Chapter 8, the impact would be reduced to less than significant. The impact is not assessed further in this chapter.

Construction-related travel and the transport of materials and equipment are anticipated to increase traffic along Routes 9, 1, and 15, which provide access to Andersen AFB. According to Volume 6, Chapter 4, implementation of the proposed actions would not increase traffic to the level of unacceptable Levels of Service by 2014. Therefore, the impact would be less than significant and is not assessed further in this chapter.

Indirect impacts would be experienced by the GWA water system because of the construction workforce required to implement the proposed action, induced civilian population growth, and anticipated regular civilian growth. These impacts would be significant to the overall population, but specific locations of the

impacts are difficult to determine because the information available to the DoD is not comprehensive or detailed enough to allow the specific affected areas on Guam to be identified.

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

With 15 percent (%) or less of their populations being Caucasian, Dededo and Yigo both have high levels of racial and ethnic minorities. The poverty rates in Dededo and Yigo are similar to those of other villages on Guam. Dededo and Yigo have high percentages of children (U.S. Census Bureau 2000).

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Low-income populations and children of low-income families living in Yigo and Dededo near Andersen AFB, as well as those living in other villages supplied by the GWA, may experience disproportionate impacts related to potable water supply because these groups are likely to be more susceptible to the consequences of potable water supply impacts. Children in general would not be disproportionately affected.

Tier 3: Would the disproportionate adverse effects be significant?

During the operational period, the planned DoD water system would fully meet the projected future DoD demand as discussed in Volume 6, Chapters 2 and 3. Also, the Northern Guam Lens Aquifer would be able to meet the total demand. Therefore, the proposed military relocation would have less than significant direct impacts on the potable water supply.

Indirect impacts would be experienced during the operational period by the GWA water system because of the water demands of the overall construction workforce required to implement the proposed action, induced civilian population growth, and anticipated regular civilian growth. Low-income populations would experience significant impacts from projected water supply shortfalls in the GWA system considering the existing supply and the planned well expansion defined in GWA's draft Capital Improvement Plan for 2010-2014 (GWA 2009). The increased demand of the construction workforce and induced civilian growth would occur fairly rapidly and would require the GWA to implement their expansion plans in a very short time without any water supply sources from the DoD. If potable water shortfalls occur in the GWA system, water outages or low pressure conditions could result in parts of the water system. Water outages or low water pressure can result in microbiological and other contaminants entering the distribution system, potentially resulting in illness. Water outages or low water pressure can potentially prevent effective fire fighting and degrade the basic sanitary needs of the population. Water rationing may be implemented. The adverse public health and health care services impacts would fall disproportionately on low-income populations, including children of low-income families, and would be significant.

Proposed Mitigation Measures

To mitigate significant indirect potable water supply impacts, the DoD and the GovGuam would implement measures discussed in Volume 6, Chapter 3. The DoD could transfer excess water production capacity to the GWA to offset water shortfalls during the construction time frame. The DoD proposes to construct water distribution lines to facilitate transfer of water from DoD sources to the GWA islandwide distribution system. Volume 7, Chapter 2, describes two additional mitigation measures: force flow reduction and adaptive program management of construction. Implementing either or both of these mitigation measures could further reduce indirect impacts to the potable water utility by lowering peak

population levels during construction and slowing the permanent population increases, allowing more time for GWA to improve and upgrade their water system. The DoD acknowledges the existing sub-standard conditions of infrastructure and public health services on Guam and the desire by many for the DoD to fund improvements to these systems and services. The DoD also recognizes the constraints on the GovGuam to be able to address these indirect impacts of the proposed military relocation. The Council on Environmental Quality has facilitated interagency meetings with the DoD and appropriate federal agencies to identify funding sources to meet this need. The DoD is seeking approximately \$580 million from the Government of Japan (GoJ) for water and wastewater improvement projects pursuant to the terms of the Realignment Roadmap Agreement, described in Volume 1. The Economic Adjustment Committee (EAC) is evaluating overall Guam civilian hard (e.g., facilities) and soft (e.g., manpower, operations & management) infrastructure needs, including those associated with the proposed DoD military relocation. As part of this evaluation the EAC is specifically examining federal funding options for water and wastewater infrastructure improvements that may not be funded through GoJ financing.

Although the construction noise impacts are considered less than significant, construction Best Management Practices are specified in Volume 6, Chapter 8.

20.2.3.2 Basic Alternative 2

Basic Alternative 2 would provide additional water capacity of 11.7 MGd (44.3 MLd), which is anticipated to be met by an estimated 20 new wells at Andersen Air Force Base (AFB) and 11 new wells at Air Force Base Barrigada, rehabilitate existing wells, interconnect with the Guam Waterworks Authority (GWA) water system, and associated treatment, storage and distribution systems. Two new 1.8 MG (6.8 ML) water storage tanks would be constructed at ground level at NCTS Finegayan and one 1 MG (3.8 ML) water storage tank would be construction at Air Force Base Barrigada. Up to two new elevated 1 MG (3.8 ML) water storage tanks would be constructed at Finegayan within the Main Cantonment footprint. Villages that lie adjacent to Andersen AFB are Dededo and Yigo; villages located adjacent to Navy Barrigada include Barrigada and Mangilao.

New wells, rehabilitation of existing wells, T&D system upgrades, interconnection with the GWA, and construction of the additional water storage tanks would increase overall potable water availability for DoD use. Therefore, direct impacts would be less than significant.

Construction-related noise and traffic may have adverse impacts on the surrounding communities. Construction-related traffic on Routes 9, 1, and 15 may increase, as well as Routes 8, 16 and 15 that provide access to Navy Barrigada. Heavy construction equipment would be used for at least 6–9 months during construction. This equipment would generate some noise. However, Volume 6, Chapter 8, concludes that the noise would not be loud enough off base to have a significant effect on the surrounding community. Noise would also be generated by construction vehicles along Routes 9, 1, and 15, which provide access to Andersen AFB, and along Routes 8, 16, and 15, which provide access to Navy Barrigada. However, with the implementation of noise abatement measures in Volume 6, Chapter 8, the impact would be reduced to less than significant and is not assessed further in this chapter.

Construction-related travel and the transport of materials and equipment are anticipated to increase traffic along Routes 9, 1, and 15, which provide access to Andersen AFB, and along 8, 16, and 15, which provide access to Navy Barrigada. According to Volume 6, Chapter 4, implementation of the proposed actions would not increase traffic along Route 9, 1, and 15 in northern Guam to the level of unacceptable Levels of Service by 2014. Therefore, the impact would be less than significant and is not assessed further in this chapter.

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

With 15% or less of their populations being Caucasian, Dededo and Yigo both have high levels of racial and ethnic minorities. The poverty rates in Dededo and Yigo are similar to those of other villages on Guam. Dededo and Yigo have high percentages of children (U.S. Census Bureau 2000).

Barrigada and Mangilao have high percentages of racial minorities. Mangilao's poverty rate is consistent with other Guam villages, while Barrigada's is slightly lower. Barrigada and Mangilao have similar percentages of children.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Low-income populations and children of low-income families living in Yigo and Dededo near Andersen AFB, as well as those living in other villages supplied by the GWA, may experience disproportionate impacts related to potable water supply because these groups are likely to be more susceptible to the consequences of potable water supply impacts. Children in general would not be disproportionately affected.

Low-income populations, and children who live or attend school near the construction sites or near Routes 9, 1, and 15 for Andersen AFB and Routes 8, 16, and 15 for Navy Barrigada would experience disproportionate construction-related noise and traffic impacts.

Tier 3: Would the disproportionate adverse effects be significant?

Direct and indirect impacts on the DoD and GWA water systems, respectively, under Basic Alternative 2 would be similar to those described for Basic Alternative 1.

Significant indirect impacts to the GWA system would occur because of the demands of the overall construction workforce required to implement the proposed action, induced civilian population growth, and anticipated regular civilian growth. Adverse public health and health care services impacts would fall disproportionately on low-income populations, including children of low-income families, and would be significant. However, with the implementation of the proposed actions, traffic along Routes 15 and 16 in central Guam that service Navy Barrigada are anticipated to increase to unacceptable Levels of Service. For more information, see Volume 6, Chapter 4, which uses a volume to capacity (v/c) ratio to determine the anticipated level of traffic congestion by 2014. If a v/c ratio is greater than 1, the increased traffic is anticipated to reach a level that would be unacceptable. The v/c ratios of Routes 15 and 16 in central Guam are projected to be greater than 1 by 2014. Therefore, there would be a significant traffic impact along these routes. However, with the implementation of the mitigation measures in Volume 6, Chapter 4, these impacts would be reduced to less than significant.

Proposed Mitigation Measures

Measures that could be taken by the DoD and GovGuam to mitigate potable water supply impacts are discussed in Volume 6, Chapter 3. To mitigate indirect water shortfall impacts, the DoD could transfer excess water production capacity to the GWA, if requested. Volume 7, Chapter 2, describes two additional mitigation measures: force flow reduction and adaptive program management of construction. Implementing either or both of these mitigation measures could further reduce indirect impacts to the potable water utility by lowering peak population levels during construction and slowing the permanent population increases, allowing more time for the GWA to improve and upgrade their water system.

Although the construction noise impacts are considered less than significant, construction Best Management Practices and mitigation measures are specified in Volume 6, Chapter 8. Traffic-reduction measures are described in Volume 6, Chapter 4.

20.2.4 Wastewater

20.2.4.1 Basic Alternative 1a (Preferred Alternative) and 1b

Basic Alternative 1a combines the upgrade to the existing primary treatment facilities and the expansion to secondary treatment at the Northern District Wastewater Treatment Plant (NDWWTP). When the proposed treatment facility upgrades/expansion are complete, the surrounding area would benefit from the increased sewer treatment capacity. However, short-term increased wastewater flows would slightly exceed the design capacity of the plant during this time. The difference between Alternatives 1a, which supports Main Cantonment Alternatives 1 and 2, and Alternative 1b, which supports Main Cantonment Alternatives 3 and 8, is the requirement for a new sewer line from Barrigada housing to NDWWTP for Alternative 1b.

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Racial minorities, low-income populations, and children of north and central Guam are present within the areas affected by the facility upgrades/expansion, the increased wastewater flows from the proposed military relocation, and the indirect effects of increased construction worker and induced civilian populations.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Implementation of Basic Alternative 1a, which is the Preferred Alternative, would accomplish the required refurbishment of the NDWWTP primary treatment system to accept the projected increase in wastewater flows such that there would be no impact on the NDWWTP ability to physically handle the increased wastewater flows directly resulting from the military relocation. However, permit modifications would be required and short-term increased wastewater flows would slightly exceed the design capacity of the plant during this time. Thus, the direct impact to the NDWWTP from the proposed DoD relocation is deemed less than significant because of the proposed upgrades, permit modifications, and alterations of operations when the flow exceeds the design capacity, but would ultimately result in long-term beneficial impacts by providing improved wastewater treatment and improved water quality at the plant discharge site.

The DoD also commits to assist the GWA in securing funding for the primary treatment repairs and upgrades. This funding would significantly improve the quality of wastewater from the plant and reduce the risk to public health from waterborne diseases. The DoD also funded and has completed a detailed engineering study that identifies the specific repairs and upgrades needed at the plant for primary treatment and the expansion to secondary treatment. This study was fully coordinated with the GWA and U.S. Environmental Protection Agency, and is discussed in Volume 6, Chapter 3.

As described in Volume 6, Chapters 2 and 3, the relocation would result in indirect impacts to the off base GWA wastewater system from the wastewater collection and disposal needs of the overall construction workforce required to implement the proposed action and from the induced population that is expected to migrate to Guam. These indirect effects of the relocation would place an increased demand and strain on the existing GWA wastewater system.

According to GWA's Water Resources Master Plan (GWA 2007), of the seven sewage treatment plants on Guam, four are small onsite plants in the southern portions of the island where systems are routinely out of compliance and treatment processes largely bypassed. These smaller plants are either non-discharge plants where the plant effluent is dispersed into the soils onsite near where people live and recreate, or are plants where effluent is discharged into small surface water streams. Increased flow to the wastewater treatment plants and collection system overflows would result from natural population increases as well as the increase in military personnel. Based on the increased population of Guam, issues associated with wastewater discharges on Guam and the use of onsite treatment systems could result in an increase in the number of wastewater-related illnesses. Therefore, at this time, significant impacts to health and health care services would be anticipated as a result of potential increased indirect wastewater treatment and discharge activities. While many populations on Guam would experience the aforementioned impacts on health and health care services, these impacts would disproportionately affect low-income populations, including children of low-income families, on Guam because such groups are more susceptible to the consequences of impacts on health and health care services. Children in general would not be disproportionately affected by these impacts.

Tier 3: Would the disproportionate adverse effects be significant?

With the implementation of proposed upgrades to the NDWWTP, adverse impacts to wastewater treatment capacity and water quality associated with the direct impact of the military population would be less than significant. Therefore, disproportionate adverse effects would be less than significant. When the secondary treatment upgrades would be implemented, the action would have beneficial effects.

However, if the other GWA wastewater treatment facilities are not upgraded prior to the construction period, the increased wastewater flows associated with the indirect effects of increased construction worker and civilian populations are expected to result in significant impacts on wastewater utilities and associated public health and health care services. The adverse impacts on public health and health care services would fall disproportionately on low-income populations, including children of low-income families, and would be significant.

Proposed Mitigation Measures

There would be no direct significant adverse impacts associated with the operational period of Basic Alternative 1a that would disproportionately or adversely affect low-income populations or children, and no mitigation measures are needed.

Mitigation measures for significant indirect impacts are outlined in Volume 6, Chapter 3. Volume 7, Chapter 2, describes two additional mitigation measures (i.e., force flow reduction and adaptive program management of construction) that could reduce indirect impacts to the wastewater utility by lowering peak population levels during construction and slowing the permanent population increases, allowing more time for GWA to improve and upgrade their wastewater systems. The DoD acknowledges the existing sub-standard conditions of infrastructure and public health services on Guam and the desire by many for the DoD to fund improvements to these systems and services. The DoD also recognizes the constraints on the GovGuam to be able to address these indirect impacts of the proposed military relocation. The Council on Environmental Quality has facilitated interagency meetings with the DoD and appropriate federal agencies to identify funding sources to meet this need. The DoD is seeking approximately \$580 million from GoJ for water and wastewater improvement projects pursuant to the terms of the Realignment Roadmap Agreement, described in Volume 1. The EAC is evaluating overall Guam civilian hard (e.g., facilities) and soft (e.g., manpower, operations & management) infrastructure needs, including those associated with the proposed DoD military relocation. As part of this evaluation

the EAC is specifically examining federal funding options for water and wastewater infrastructure improvements that may not be funded through GoJ financing.

20.2.4.2 Basic Alternative 1b

Under Basic Alternative 1b, the existing primary treatment system at NDWWTP would be refurbished and upgraded to accept additional wastewater flow and load from both central and northern Guam and would include new sewer lines and lift pump stations to convey wastewater generated from the proposed DoD Barrigada housing to the NDWWTP in support of Main Cantonment Alternatives 3 and 8.

This alternative includes refurbishing primary treatment capability at NDWWTP and installing a collection system from Finegayan. It also includes installing a sewer collection system from Barrigada to NDWWTP.

The proposed new sewer line would extend from NDWWTP adjacent to Route 25 and then south adjacent to Route 16 to Navy Barrigada. Construction of the sewer line would result in a construction-related traffic increase along Routes 25 and 16 south toward Navy Barrigada. The roadways section in Volume 6, Chapter 4, does not anticipate that traffic along Route 16 would reach unacceptable Levels of Service by 2014 as a result of the proposed action. However, congestion along Route 25 would reach unacceptable Levels of Service. However, with the implementation of the traffic mitigation measures in Volume 6, Chapter 4, the level of congestion would be reduced and impacts would be less than significant and therefore are not assessed further regarding environmental justice and protection of children.

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Racial minorities, low-income populations, and children of north and central Guam are present within the areas affected by facility upgrades/expansion, increased wastewater flows from the proposed military relocation, and the indirect effects of increased construction worker and induced civilian populations.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

The impacts of Basic Alternative 1b would be the same as Basic Alternative 1a.

Tier 3: Would the disproportionate adverse effects be significant?

The impacts of Basic Alternative 1b would be the same as Basic Alternative 1a.

Proposed Mitigation Measures

Mitigation measures to reduce disproportionate adverse effects for Basic Alternative 1b would be the same as Basic Alternative 1a.

20.2.5 Solid Waste

20.2.5.1 Basic Alternative 1 (Preferred Alternative)

The Preferred Alternative would be to continue to use the Navy Landfill at Apra Harbor for municipal solid waste (MSW) until the new GovGuam Layon Landfill at Dandan is available for use. Disposal of other waste streams excluded from Layon Landfill would continue at the Navy Landfill. Construction and demolition (C&D) debris would continue to be disposed at the Navy landfill.

No disproportionate adverse impacts are anticipated with this action.

Proposed Mitigation Measures

There are no disproportionate impacts anticipated; therefore, mitigation measures are not needed.

20.2.6 Off Base Roadways

The proposed action includes 58 Guam Road Network (GRN) improvement projects for off base roadways. While descriptions of these individual projects can be found in Volume 6, Chapter 2, the improvements proposed for the GRN would result in strengthened roadways, bridge replacements, increased roadway capacity, roadway realignment (Route 15), new access, and enhanced roadway safety on Guam as a response to construction for the military relocation and growth.

20.2.6.1 Alternative 1

The roadway projects for Alternative 1 include those listed in Volume 6, Chapter 2, with the exception of the following GRN projects: #38, #39, #41, #47, #48, #49, #49A, #63, and #74.

North

The FHWA traffic study uses a v/c ratio to determine the anticipated level of traffic congestion by 2014. If a v/c ratio is greater than 1, the increased traffic is anticipated to reach a level that would cause congestion. Because of the aforementioned and other construction activities in the north, the FHWA traffic study projects that by 2014 the following northern roadways and intersections will have a v/c ratio greater than 1:

1. The portion of Route 3 south of the Residential Gate and between Route 28 and Main Gate in both the morning and afternoon
2. The intersection of Routes 3, 3A, and 9 in the morning

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Over 90% of the local population in Dededo and Yigo are racial minorities (refer to Volume 2, Chapter 19). Both Dededo and Yigo have a high poverty rate, although some villages in Guam have higher poverty rates. Both Dededo and Yigo have a high percentage of children (refer to Volume 2, Chapter 19).

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

The racial minorities, low-income populations, and children in residences, schools, and parks in northern Dededo and northern Yigo near Routes 3 and 9 would experience increased traffic congestion because of their proximity to the roadways. Construction-related impacts include increased traffic, noise, and air pollutant emissions typically associated with localized use of construction equipment and vehicles. These impacts would be temporary. When construction is complete, roadways would have increased capacity, which would result in both greater traffic volumes and improved traffic flow. The improved roadway infrastructure would have a beneficial impact on the surrounding community by providing better traffic flow and safer travel. For these reasons, no substantial negative environmental consequences would occur near the roadway project areas. Therefore, no disproportionate adverse impacts on low-income populations or children would occur.

Central

According to the FHWA traffic study, by 2014 the implementation of Alternative 1 is projected to result in a v/c ratio greater than 1 along Route 3, Route 10 north of Route 32 to Route 8, Route 15 at its intersection with Route 10, Route 16, Route 25, Route 26, and Route 28.

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

The villages that would be affected by actions proposed in the central region include Mangilao and Barrigada. These village populations all have a majority of racial minorities. Mangilao also has a high poverty rate (refer to Volume 2, Chapter 19). These villages do not have high percentages of children relative to the other villages on Guam (refer to Volume 2, Chapter 19).

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

The racial minorities, low-income populations, and children living near these roads would experience the traffic increase. Construction-related impacts include increased traffic, noise, and air pollutant emissions typically associated with localized use of construction equipment and vehicles. These impacts would be temporary. When construction is complete, roadways would have increased capacity, which would result in both greater traffic volumes and improved traffic flow. The improved roadway infrastructure would have a beneficial impact to the surrounding community by providing better traffic flow and safer travel. For these reasons, no substantial negative environmental consequences would occur. Therefore, no disproportionate adverse impact to low-income groups or children would occur.

Apra Harbor

The construction resulting from the U.S. Marine Corps' actions at Naval Base Guam would increase traffic along Route 1. However, only two facilities would be constructed, which is not a large enough action alone to increase traffic to significant levels. This statement is supported by the FHWA traffic study, which does not project that traffic would increase along the major roadways near Apra Harbor (Routes 1, 2A, and 11) to unacceptable Levels of Service by 2014. Therefore, no significant impact in the Apra Harbor region would occur.

South

The FHWA traffic study projects that by 2014, the v/c ratio along Route 5 would be greater than 1, which indicates that traffic would increase to unacceptable Levels of Service.

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Route 5 runs through the village of Santa Rita, which, while still having a high percentage of racial minorities, people in poverty, and children, has one of the lowest poverty rates in Guam. Santa Rita has a relatively high population of children relative to other villages on Guam (refer to Volume 2, Chapter 19).

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

The racial minorities, low-income populations, and children living near Route 5 would experience the increase in traffic. Construction-related impacts include increased traffic, noise, and air pollutant emissions typically associated with localized use of construction equipment and vehicles. These impacts would be temporary. When construction is complete, roadways would have increased capacity, which

would result in both greater traffic volumes and improved traffic flow. The improved roadway infrastructure would have a beneficial impact on the surrounding community by providing better traffic flow and safer travel. For these reasons, no substantial negative environmental consequences would occur. Therefore, no disproportionate adverse impact on low-income populations or children would occur.

20.2.6.2 Alternative 2 (Preferred Alternative)

The roadway projects for Alternative 2 include those listed in Volume 6, Chapter 2, with the exception of the following GRN projects: #38A, #39A, #41A, #47, #48, #49, #49A, #63, and #74.

North

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Same as for Alternative 1.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Same as for Alternative 1.

Central

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Same as for Alternative 1.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Same as for Alternative 1.

Apra Harbor

Same as Alternative 1.

South

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Same as for Alternative 1.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Same as for Alternative 1.

20.2.6.3 Alternative 3

The roadway projects for Alternative 3 include those listed in Volume 6, Chapter 2, with the exception of the following GRN projects: #20, #31, #38A, #39A, #41, #41A, and #124.

North

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Same as for Alternative 1.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Same as for Alternative 1.

Central

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Same as for Alternative 1.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Same as for Alternative 1.

Apra Harbor

Same as Alternative 1.

South

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Same as for Alternative 1.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Same as for Alternative 1.

20.2.6.4 Alternative 8

The roadway projects for Alternative 8 include those listed in Volume 6, Chapter 2, with the exception of the following GRN projects: #38, #39, #41, #47, #48, #49, #63, and #74.

North

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Same as for Alternative 1.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Same as for Alternative 1.

Tier 3: Would the disproportionate adverse effect(s) be significant?

Same as for Alternative 1.

Central

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Same as for Alternative 1.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Same as for Alternative 1.

Apra Harbor

Same as Alternative 1.

South

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Same as for Alternative 1.

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Same as for Alternative 1.

20.2.6.5 Alternative 2 Constrained

The DoD, FHWA, and GovGuam continue to work cooperatively to develop a funding plan for the off base roadway and intersection capacity projects. As of February 2010, a limited number of off base roadway projects had been identified as having funding or reasonable expectation of being funded. Additional traffic analysis was completed for the 17 roadways and 42 intersections, assuming that only a limited number of projects would be funded. These projects are either DAR-certified or determined to be DAR-eligible at this time (see Volume 6, Chapter 1, Section 1.1.4, Project Location, Funding, and Setting). The evaluation of the remaining road projects for DAR eligibility and certification is continuing. The additional analysis that was performed for Alternative 2 (the Preferred Alternative) included only the following off base roadway and intersection projects:

- Route 3, Route 28 to Route 9; widen to five lanes
- Route 9, Route 3 to Andersen AFB North Gate; widen to five lanes
- Route 9, Andersen AFB to Route 1; widen to three lanes
- Route 1/3 Intersection
- Route 1/8 Intersection
- Route 1/11 Intersection
- Route 3/3A Intersection
- Military Access Points as described for the Preferred Alternative (Alternative 2)

The purpose of analyzing the impacts of only these roadway improvements is to determine the impact of the housing and additional military base traffic on Guam roadways with only a select number of roadway improvement projects (Table 20.2-1). Because the majority of the relocated military population would reside in the Finegayan area, the roadways adjacent to this area, Routes 3 and 9, would receive the

majority of the new traffic. The majority of the roadway projects that are expected to be funded are in the Finegayan area.

Table 20.2-1. Summary of Potential Impacts – Comparison of Alternative 2 and Alternative 2 Constrained**

<i>Alternative 2*</i>	<i>Alternative2 Constrained</i>
Construction (direct and indirect impacts are the same)	
NI <ul style="list-style-type: none"> No disproportionately high and adverse effects on low-income populations and children related to temporary traffic, noise, and air quality impacts during construction. 	<ul style="list-style-type: none"> Same impacts as Alternative 2.
Operation (direct and indirect impacts are the same)	
BI <ul style="list-style-type: none"> Beneficial impact to low-income populations and children due to improved, safer roadway infrastructure after construction is completed. 	SI <ul style="list-style-type: none"> Significant disproportionately high and adverse effects to low-income populations and children due to traffic congestion associated with additional housing and base activities.

Legend: BI = Beneficial impact; LSI = Less than significant impact; SI = Significant impact; *Preferred Alternative; **Assumes only limited number of off base roadway widening and intersection improvement projects are constructed.

Comparison of Alternative 2 and Alternative 2 Constrained – Limited Roadway Improvements

The analysis for Alternative 2 Constrained, with limited roadway improvements showed that there would be significant congestion resulting from traffic associated with the additional housing and base activities without the full recommended off base roadway improvements. Alternative 2 Constrained would involve less construction activity than proposed for Alternative 2. As a result, construction emissions and air quality emissions for Alternative 2 Constrained are expected to be lower than those predicted for Alternative 2.

Tier 1: Are there any racial minorities, low-income, or child populations adjacent to the proposed action site?

Over 90% of the local population in Dededo and Yigo are racial minorities (refer to Volume 2, Chapter 19). Both Dededo and Yigo have a high poverty rate although some villages in Guam have higher poverty rates. Both Dededo and Yigo have a high percentage of children (refer to Volume 2, Chapter 19).

Tier 2: Are the applicable disadvantaged groups disproportionately affected by the negative environmental consequences of the proposed action(s)?

Impacts from increased traffic would affect all groups living in or using the roadways of Dededo and Yigo in the same manner. However, low-income populations and children living or present near the roadway would likely be more susceptible to the adverse effects of traffic congestion and would

experience disproportionate impacts from traffic increases associated with additional housing and base activities during roadway construction and after construction is complete.

Tier 3: Would the disproportionate adverse effect(s) be significant?

Disproportionately high and adverse effects on low-income populations and children from traffic increases would be significant.

Proposed Mitigation Measures

Proposed mitigation measures described in Chapter 4 of Volume 6 would reduce the significant impacts on low-income populations and children.

20.2.7 No-Action Alternative

Under the no-action alternative, no utility or roadway upgrades or improvements associated with the proposed actions would occur and existing operations at the proposed project areas would continue. There would be no noise or traffic impacts related to construction and no increase in military population. Anticipated beneficial effects of increased utility and roadway capacity would not be realized. The no-action alternative would have no adverse environmental justice impacts on the villages of Dededo, Barrigada, and Mangilao in particular or the island of Guam in general.

20.2.8 Summary of Impacts

This section summarizes the potential environmental justice impacts associated with the proposed action alternatives for each major component – power, potable water, wastewater, solid waste, and off base roadways.

Table 20.2-2 summarizes the potential impacts of the power alternative. The power alternative would have the beneficial impact of increasing capacity. The alternative was evaluated for disproportionate environmental justice effects regarding changes in air emissions, changes to electrical user fees, and changes in reliability of the islandwide power supply. As shown in the table, no impacts would occur with regard to air emissions, user fees, or system reliability. No significant disproportionate adverse impacts to low-income populations or children would occur under any of the alternatives.

Table 20.2-2. Summary of Potential Impacts: Power Alternatives

<i>Basic Alternative 1*</i>	
Construction and Operation Impacts	
NI	<ul style="list-style-type: none"> No environmental justice impacts to low-income populations or children related to air emissions.
NI	<ul style="list-style-type: none"> No environmental justice impacts to low-income populations or children related to electrical user fees.
NI	<ul style="list-style-type: none"> No environmental justice impacts to low-income populations or children related to power supply reliability.

*Legend: LSI = Less than significant impact; NI = No impact; * Preferred Alternative.*

Table 20.2-3 summarizes the potential impacts of each potable water alternative. Under Alternative 1, indirect impacts would be experienced by the GWA water system during the construction period because of the overall construction workforce required to implement the proposed action, induced civilian population growth, and anticipated regular civilian growth. These impacts would be significant to the

overall population; therefore, the indirect impact would have significant disproportionate impacts on low-income populations and children of low-income families.

Table 20.2-3. Summary of Potential Impacts: Potable Water Alternatives

<i>Basic Alternative 1</i>	<i>Basic Alternative 2</i>
Construction Impacts (direct with indirect in parentheses)	
NI (NI) <ul style="list-style-type: none"> No disproportionately high and adverse effect on low-income populations or children from construction. 	NI(NI) <ul style="list-style-type: none"> No disproportionately high and adverse effect on low-income populations or children from construction.
Operation Impacts (direct with indirect in parentheses)	
NI (SI) <ul style="list-style-type: none"> The water system would be upgraded to serve increased DoD demand. (Water shortages and associated public health and safety and health care services impacts with increased demand of construction workforce and induced civilian population growth.) 	NI (SI) <ul style="list-style-type: none"> The water system would be upgraded to serve increased DoD demand. (Water shortages and associated public health and safety and health care services impacts with increased demand of construction workforce and induced civilian population growth.)

Legend: DoD = Department of Defense; LSI = Less than significant impact; NI = No impact; SI = Significant impact.

Table 20.2-4 summarizes the potential impacts of each wastewater alternative. Direct operational impacts associated with wastewater discharges that would flow to the upgraded NDWWTP would be less than significant. However, without upgrades to other wastewater treatment facilities on Guam being implemented prior to the construction period, the increased wastewater flows associated with the indirect effects of increased construction worker and civilian populations are expected to result in significant impacts to wastewater treatment facilities and associated impacts on public health problems and health care services that would disproportionately affect low-income populations and children of low-income families.

The sewer upgrades proposed in Basic Alternatives 1a and 1b would not have any adverse environmental impacts during the construction period.

Table 20.2-4. Summary of Potential Impacts: Wastewater Alternatives

<i>Basic Alternative 1a*</i>	<i>Basic Alternative 1b</i>
Construction Impacts (direct with indirect in parentheses)	
NI(NI) <ul style="list-style-type: none"> No disproportionately high and adverse effect low-income populations or children from construction. 	NI(NI) <ul style="list-style-type: none"> No disproportionately high and adverse effect on low-income populations or children from construction.
Operation Impacts (direct with indirect in parentheses)	
NI (SI) <ul style="list-style-type: none"> The NDWWTP would be upgraded to include required sewer improvements to serve increased DoD demand; therefore, no impacts on low-income populations or children. (Significant indirect wastewater impacts and associated health and health care services impacts on low-income populations, including children of low-income families with increased demand of construction workforce and induced civilian population growth). 	NI (SI) <ul style="list-style-type: none"> Same as Basic Alternative 1a.

Note: Potential impacts under Long-term Alternatives 1-4 would be analyzed under future National Environmental Policy Act documentation; potential impacts listed herein are general and not final.

Legend: DoD = Department of Defense; LSI = Less than significant impact; NDWWTP = Northern District Wastewater Treatment Plant; NI = No impact; SI = Significant impact; * Preferred Alternative.

As shown in Table 20.2-5, no impacts associated with environmental justice or protection of children are anticipated under the Preferred Alternative for solid waste.

Table 20.2-5. Summary of Potential Impacts: Solid Waste

<i>Basic Alternative 1 (Preferred Alternative)</i>
Construction and Operation Impacts
NI

Legend: NI = No impact.

Table 20.2-6 summarizes the potential impacts of each off base roadway alternative. Proposed roadway projects include intersection improvements, bridge replacements, pavement strengthening, relocation of Route 15, roadway widening, and the construction of a new road (the Finegayan Connection). Roadway projects would occur in all Guam villages except the southern Guam villages of Yona, Agat, Talofoto, Inarajan, Umatac, and Merizo. While the low-income populations and children living or present near the roadway projects would experience impacts from temporary traffic increases during the construction period, these impacts would be mitigated by the proposed phased project schedule. When construction is complete, the improved roadway infrastructure would have a beneficial impact on the surrounding community. Therefore, no disproportionately high and adverse effects on low-income populations or children would occur.

20.2.9 Summary of Proposed Mitigation Measures

Table 20.2-7 summarizes proposed mitigation measures for each component of the proposed action.

Table 20.2-6. Summary of Roadway Project Impacts

<i>Alternative 1</i>	<i>Alternative 2*</i>	<i>Alternative 3</i>	<i>Alternative 8</i>
Construction (direct and indirect impacts are the same)			
NI • No disproportionately high and adverse effects on low-income populations or children from construction.	• Same impacts as Alternative 1.	• Same impacts as Alternative 1.	• Same impacts as Alternative 1.
Operation (direct and indirect impacts are the same)			
NI • No disproportionately high and adverse effects on low-income populations or children related to roadway infrastructure after construction is completed. BI • Beneficial impact to low-income populations and children due to improved, safer roadway infrastructure after construction is completed.	• Same impacts as Alternative 1.	• Same impacts as Alternative 1.	• Same impacts as Alternative 1.

Legend: LSI = Less than significant impact; BI = Beneficial impact; *Preferred Alternative.

Table 20.2-7. Summary of Proposed Mitigation Measures

<i>Power Alternatives</i>	<i>Potable Water Alternatives</i>	<i>Wastewater Alternatives</i>	<i>Solid Waste Alternatives</i>	<i>Off Base Roadway Alternatives</i>
Utilities				
<ul style="list-style-type: none"> No mitigations needed. 	<ul style="list-style-type: none"> The DoD would implement the mitigation measures in Volume 6, Chapter 3 and Volume 7, Chapter 2. 	<ul style="list-style-type: none"> The DoD would implement the mitigation measures in Volume 6, Chapter 3 and Volume 7, Chapter 2. 	<ul style="list-style-type: none"> No mitigations needed. 	<ul style="list-style-type: none"> No mitigations needed.
Public Health and Safety				
<ul style="list-style-type: none"> No mitigations needed. 	<ul style="list-style-type: none"> The DoD would implement the mitigation measures in Volume 6, Chapter 3 and Volume 7, Chapter 2. 	<ul style="list-style-type: none"> The DoD would implement the mitigation measures in Volume 6, Chapter 3 and Volume 7, Chapter 2. 	<ul style="list-style-type: none"> No mitigations needed. 	<ul style="list-style-type: none"> No mitigations needed.

Legend: DoD = Department of Defense; EIS = Environmental Impact Statement.

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