



## GUAM WATERWORKS AUTHORITY

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RE: Guam Waterworks Authority comments on the Draft Environmental Impact Statement - Enhanced Integrated Air and Missile Defense System on Guam

Hafa Adai,

Guam Waterworks Authority (GWA) appreciates the opportunity to provide comments on the Draft Environmental Impact Statement (DEIS) for the Enhanced Integrated Air and Missile Defense System on Guam. GWA is responsible for providing water and wastewater services to the civilian population in Guam. Since 2010, GWA has been working with the Department of Defense under the "One-Guam" vision for water and wastewater needs expected in anticipation of increased military and civilian population growth, as outlined most recently in the December 6, 2016, Memorandum of Understanding (MOU) N61128-20161129-1859. This agreement encourages strategies to ensure reliability, redundancy and interoperability. GWA's review of the DEIS not only identifying environmental issues related to ground and surface water sources but also impacts on GWA's current and future operations/plans for water and wastewater services.

The 'One Guam' approach aims to establish permanent robust and reliable drinking water supplies and wastewater services that adequately support the projected civilian development and growth of Guam, as well as the water and wastewater needs of Department of Defense projects on this island.

The DEIS only identifies the water demand on the GWA system to be approximately 8,640 gallons per day for each of the sixteen (16) sites during operations and maintenance but does not include "normal" wastewater service needed or the additional water demand and wastewater load during the construction period. In addition, there is a lack of information regarding water and wastewater demand for the support facilities. Although the DEIS states that these facilities are expected to be distributed across AAFB, MCBCB, and NBG, GWA has received planning level inquiries regarding potential additional new support facilities in other areas, indicating there may be insufficient data in this DEIS to conduct a comprehensive and proper analysis of water demand and wastewater loads, assess the cumulative impact on the sole source aquifer, as well as on GWA's potable water distribution and existing wastewater collection system and treatment plants.

The DEIS fails to account for the reasonably foreseeable cumulative impact of military, Government of Guam, and private sector developments on the sustainable yield of the sole-

source aquifer and to GWA's water and wastewater systems. Reasonably accurate water and wastewater hydraulic models that integrate both civilian and military demands are essential to ensure that GWA can sustainably meet the water supply and wastewater service needs. Given the cost and difficulty in upgrading public infrastructure, especially in the current DOD-fueled construction market, the current models must be updated with all the reasonably foreseeable future water needs for both military and civilian growth, rather than through a piecemeal approach that addresses initiatives one at a time.

### ***Water Resources and Demand***

The DEIS states that eleven (11) of the sites will be serviced by DOD's-own water system, however five (5) of these sites will be connected to GWA's water system. These potential sites include:

- MCBCB South
- MCBCB Dandan
- NBG Barrigada
- NMS Mount Alifan
- NMS Northeast

The DEIS indicates that the five proposed EIAMD sites will connect to the GWA water distribution system without needing infrastructure improvements, except for MCBCB South. Consultation with GWA is crucial to determine if infrastructure improvement is necessary. This will ensure that realistic expectations are set for providing water services to these sites. In addition, assessment of the aging water distribution network needs to be conducted to determine if the lines serving planned facilities need rehabilitation or replacement. GWA may generally have the capacity to produce sufficient daily water volumes (~40 million gallons per day, or MGD), however, production is dependent on the number of wells that are in operation at any given time and service delivery volume is adversely affected by persistent high-water loss. Cumulative and future reasonable demand will increase the stress on the existing 40.2 mgd of GWA's water production.

GWA is addressing these challenges to provide continuous reliable water, but it will require GWA to upgrade and make critical improvements to its system. It is essential for the DOD and their consultants to engage with GWA Engineering and Operations as soon as possible to determine what infrastructure enhancements may be necessary, to gather any additional data required to ensure the accuracy of the water model, and to prioritize required and/or scheduled improvements that may support the planned developments.

The following are GWA's comments for each EIAMD site:

- MCBCB South - No issues with providing daily demand of 2,675 gallons per day. Fire flow requires 1500 gpm, GWA will not be able to supply water required for fire flow without an upgrade to the existing infrastructure. A water storage tank will be required for the facility if the infrastructure pipeline is not upgraded. Please note that there is an existing Navy water line along Route 3 that may be able to provide the required fire flow.
- NBG Nimitz Hill -Existing Navy water line runs through the former Nimitz housing; this is not a GWA water line. The Navy supplies water to GWA for the Nimitz Hill

area. GWA purchases water from the Navy to meet its water demands. Connection to GWA will need further consultation and planning.

- NMS Mount Alifan – GWA does not service this area. The site is located within DOD’s Naval Magazine, which is supplied solely by the Navy.
- NMS Northeast - There is no issues with providing daily demand of 600 gallons per day, however there is an issue with the fire flow requirement of 1500 gpm. GWA currently is unable to meet this requirement. A water storage tank is likely going to be required for this facility. GWA has a line in the area, and this may be an opportunity to improve reliability by upgrading the existing pipeline.
- NBG Dandan -GWA has a water line from the Dandan landfill area. There are no issues with providing daily demand of 2,290 gallons per day, but the fire flow requires 1500 gpm, which GWA is unable to supply at this time. A water storage tank will be required for this site if there is no upgrade to the water supply lines. This may be an opportunity to improve the reliability of GWA’s water system by improving the existing infrastructure and providing additional water supply to the area.

The DEIS did not conduct an analysis on surface water sources to include analysis of potential chemical/contaminants within the watershed that may impact primary surface water sources such as FENA Reservoir, Ugum River and other springs that provide water to the areas. GWA relies on water produced from the Navy’s Fena Water Treatment facilities. No information is provided to determine if current and future GWA water supply will be impacted by the increased water demand on the Navy’s water supply because of increased military development. Analysis of demands to existing surface water sources is essential to assess the impacts to source water availability of increased sedimentation during typhoons, heavy rainfall events, or prolonged droughts resulting from climate change. Surface water is a critical water source for southern residents. Ensuring capacity and redundancy is important to provide continuous water service to the region.

### ***GWA’s Water Hydraulic Model***

Throughout the DEIS, comments are made that the data provided by GWA was erroneous. It should be noted that the information requested and sent to the consultant was from the hydraulic model, not actual field data. Information provided is from an uncalibrated hydraulic model of the GWA system, and modelled scenarios imposing different demands and usage patterns may reveal anomalies requiring field verification. In such cases, GWA normally requires the developer, or developer’s engineers, to verify actual field conditions (such as by gathering actual pressure logger data) – which is needed in this case as the data from the uncalibrated hydraulic model is obviously indicating an anomaly.

The following sections state that GWA provided is erroneous data.

(V 5, p 4-14)

*A 24-inch PVC transmission main, owned by GWA, runs along Route 3. GWA provided pressure data along the transmission line. Many of the pressure readings provided had very low pressures or even negative values and therefore were considered to be erroneous.*

GWA Response:

Pressure data was obtained from the then most current GWA hydraulic model. Not all areas of the model are yet calibrated and may give unrealistic results. At the time the data was requested and provided, it was stated that the model was very much a *work in progress*, and that all information must be field verified for accuracy. It is misleading to omit the exceptions GWA identified when the data request was fulfilled.

(V 5, p4.21)

*The transmission pipe is part of the GWA distribution system and is a 24-inch-diameter PVC pipe. As mentioned in Section 4.2.1, much of the pressure data received from GWA appeared to be erroneous.*

GWA Response:

Pressure data was obtained from the then most current GWA hydraulic model. Not all areas of the model are yet calibrated and may give unrealistic results. At the time the data was requested and provided, it was stated that the model was very much a *work in progress*, and that all information must be field verified for accuracy. It is misleading to omit the exceptions GWA identified when the data request was fulfilled.

(V 5, p4-25)

*Data for the existing conditions model, including pipe locations, pressures (Figure 4.2-8) diameters (Figure 4.2-9), and materials (Figure 4.2-10), are based on GIS and narrative data provided by GWA. Table 4.2-7 summarizes the pressure data provided by GWA used to create the model. Full data are included in Appendix C.*

GWA's Response:

Appendix C is not included in the DEIS document. GWA is requesting the data used for this section to verify pressure data. To ensure that accurate data is used for the model, GWA is requesting that the DOD and its Consultants coordinate with GWA to obtain pressure reading from the field.

(V 5, p 4-28)

*The transmission pipe is part of the GWA distribution system and is a 24-inch-diameter PVC pipe. GWA data for the portion of the pipe nearest the proposed site contained negative pressure readings and was considered erroneous data.*

GWA Response:

Pressure data was obtained from the then most current GWA hydraulic model. Not all areas of the model are yet calibrated and may give unrealistic results. At the time the data was requested and provided, it was stated that the model was very much a *work in progress*, and that all information must be field verified for accuracy. It is misleading to omit the exceptions GWA identified when the data request was fulfilled.

(V 5, p 4-176)

*Data for the existing conditions model (Figure 4.13-14), including pipe locations, diameters (Figure 4.13-15), and materials (Figure 4.13-16), are based on GIS and narrative data provided by GWA. Table 4.13-11 summarizes the pressure data provided by GWA used to create the model. Full data are included in Appendix C.*

GWA's Response:

Appendix C is not included in the DEIS document. GWA is requesting to see the data used for this section to verify pressure data. To ensure that accurate data is used for the model, GWA is requesting that the DOD and its Consultants coordinate with GWA to obtain pressure reading from the field.

*(V 5, p 4-181)*

*The transmission pipe is part of the GWA distribution system and is a 24-inch-diameter PVC pipe. GWA data for the portion of the pipe nearest the proposed site contained negative pressure readings and was considered erroneous data.*

GWA Response:

The statement is incorrect about this area and appears to have been copied directly from page 4-28. The data for this area did not contain negative pressure reading and the transmission pipe is not a 24-inch diameter pipe.

*(V 5, p4-198)*

*Data for the existing conditions model (Figure 4.14-8), including pipe locations, diameters (Figure 4.14-9), and materials (Figure 4.14-10), are based on GIS and narrative data provided by GWA. Table 4.14-7 summarizes the pressure data provided by GWA used to create the model. Full data are included in Appendix C.*

GWA's Response:

Appendix C is not included in the DEIS document. GWA is requesting to see the data used for this section to verify pressure data. To ensure that accurate data is used for the model, GWA is requesting that the DOD and its Consultants coordinate with GWA to obtain pressure reading from the field.

*(V 5, p4-201)*

*The transmission pipe is part of the GWA distribution system and is a 24-inch-diameter PVC pipe. GWA data for the portion of the pipe nearest the proposed site contained negative pressure readings and was considered erroneous data.*

GWA Response:

The statement is incorrect about this area and appears to have been copied directly from page 4-28. The data for this area did not contain negative pressure reading and the transmission pipe is not a 24-inch diameter pipe.

*(V 5, p4-219)*

*Data for the existing conditions model (Figure 4.15-8), including pipe locations, diameters (Figure 4.15-9), and materials (Figure 4.15-10), are based on GIS and narrative data provided by GWA. Table 4.15-7 summarizes the pressure data provided by GWA used to create the model. Full data are included in Appendix C.*

GWA's Response:

Appendix C is not included in the DEIS document. GWA is requesting that the data used for this section be provided to verify pressure data. To ensure that accurate data is used for the model, GWA is requesting that the DOD and its Consultants coordinate with GWA to obtain pressure reading from the field

GWA must always have access to any of their facilities within or adjacent to the EIMAD sites including those that GWA currently leases from the Department of Defense.

### ***Wastewater Generation***

GWA has sewer lines that are located beneath the MCBCB South Finegayan site. The EIS should consider that access to these facilities must be maintained. GWA must be able to access their facilities for maintenance and if necessary, emergency repairs. There is a manhole located on the facility will have some type of locking mechanism installed for security. GWA Operations staff should be provided with the means to access these manholes. Access to any of GWA's facilities must be made available 24 hours a day.

To establish redundancy in the southern portion of Guam, GWA is suggesting an intertie for the entire Navy's Wastewater (WW) line to the GWA system. This will enable the NMS Mount Alifan site to be connected to the gravity lines discharging to GWA's ASRWWTP. This intertie is crucial for enhancing the resilience of the island's wastewater infrastructure. Discussions with GWA are critical in determining opportunities for interoperability and redundancy.

There is no GWA sewer infrastructure for the NMS Northeast site. Upgrade to the infrastructure that includes installation of a gravity line will need to be constructed that flow towards Windward Hills SPS#2. DOD should consider additional connections to the Agat Santa Rita Wastewater Treatment Plant to reduce the load to the Apra Habor WWTP and build additional redundancy for the wastewater systems.

Further modeling needs to be done for the NBG Barrigada site to determine what upgrades will need to be done for the sewer collection and transmission systems, considering that the potential medical campus and other civilian and private development will be served by the same infrastructure.

Although GWA will be able to accommodate future required wastewater services at the Hagåtña Wastewater Treatment Plant and the Northern District Wastewater Treatment Plant, DOD should consider connecting the Dandan EIAMD site to GWA collection system. A lift station will likely be required for the NBG Dandan site to reach GWA sewer infrastructure.

Although it is stated that wastewater services may be discharged from many sites, discharge of any holding tanks that contain fuels, oils or other prohibited materials will not be accepted into GWA's wastewater collection system from sites served by such holding tanks. Only domestic wastewater shall be discharged to the GWA sanitary sewer collection system.

An updated assessment of all existing sewer lines connected to GWA's WWTPs is necessary to determine if any aging lines need replacement or upgrades. GWA requests that all sewer lines discharging into its system be inspected using CCTV and assigned a NASSCO rating.

### ***Environmental Monitoring and Compliance***

Construction site runoff or wastewater leaks could affect groundwater quality. Increased impervious surfaces could interfere with natural recharge processes, impacting the health of the Guam sole source aquifer. DOD must carefully monitor any emerging contaminants that may be used in EIAMD operations. Several of the sites are located within Guam's EPA Groundwater Management Protection Zone, and certain activities may present risk to groundwater quality.

Continuous monitoring of potential cumulative impacts, especially concerning groundwater and stormwater management, is essential to prevent contamination to Guam's Primary Ground Water resource.

Preventative measures and best management practices must be incorporated into Standard Operating Procedures to ensure that contaminants such as oil, fuel, and other chemicals do not enter GWA's wastewater collection system. Only domestic wastewater shall be discharged into the sanitary sewer collection system. Further, stormwater is prohibited from being discharged into or being allowed to otherwise enter GWA's wastewater collection systems. Ensuring that stormwater systems are adequately sized to prevent illicit discharges into GWA's wastewater collection system is essential. Runoff from washdown areas must not enter GWA's wastewater collection system unless a special use pretreatment permit is issued by GWA. Discharges of storm water or water used for washdowns directly into the sanitary sewer are prohibited.

The DEIS did not outline detailed emergency response plans in case of accidental spills or damage to water distribution and wastewater collection systems. These plans should include coordination with local water and wastewater authorities to ensure rapid response and minimal disruption to services.

GWA is concerned about hazardous compounds or potential pollutants from the EIAMD system launches that may impact the water quality of the shared NGLA and GWA wells. It is currently not possible to determine if in the future such compounds may be identified as emerging contaminants that GWA will be required to mitigate. A record of these materials will assist GWA in future mitigation plans. GWA is currently having to address emerging contaminants that resulted from past DoD practices (e.g., PFAS and dieldrin) at significant costs.

### ***Environmental Justice***

Environmental justice is briefly addressed in the DEIS, GWA is concerned that its existing system users will bear the costs associated with the increased water demand and wastewater loads resulting from the construction of additional facilities for the EIAMD. While System Development Charges (SDCs) are a means to address direct costs of new development, there are other indirect costs that result from the increase in commercial and residential development needed to support various DOD projects. One clear example is the increased costs to GWA for water purchases and the significant increase in the cost of construction due to the DoD's build-up activities. These indirect cost increases affect GWA's operation and maintenance costs, but also affect the capital program costs which are paid for through rate increase, further widening the affordability gap for essential services experienced by GWA's most financially vulnerable customers. To further address environmental justice issues, financial management models must be developed to evaluate the costs associated with providing water and wastewater services to underserved areas, especially as system improvement costs continue to escalate. The sole sources aquifer is a shared resource between the DOD and the civilian community. Monitoring of and responsible water withdrawal is critical to ensure that providing water services to DOD does not overshadow the improvements needed to support underserved communities.

### ***Cumulative Impact***

Although GWA's two (2) major projects were listed as part of the Cumulative Impact Analysis, however, GWA's 2025-2029 Capital Improvement Program has at least sixty (60) number of projects that will improve the quality and quantity of water throughout the island to meet the

expected normal growth as well as that due to the DOD's expansion. In addition, Guam Housing and Urban Renewal Authority (GHURA) has estimated that there is a need for at least 11,100<sup>1</sup> housing units needed for both the military and the local community, which will require additional water and wastewater demand. GovGuam also has 200 projects that are planned for the next 10 years. All these projects will have an impact on both surface and ground water demand to meet the basic needs of the whole island community.

A comprehensive cumulative impact study is crucial for fully understanding the effects on Guam's water and wastewater resources. This study will assess whether current water sources and wastewater systems can meet both present and future demand and identify sustainable practices needed to safeguard these resources.

### ***Mitigation Measures to Address Impacts***

The DEIS does not identify specific mitigation strategies that will be implemented to address potential adverse impacts on water resources and infrastructure should occur. Details need to be provided to mitigate any situation if the launch of missiles is unsuccessful including the potential for fire or other unforeseen accidents. There is also a critical need to ensure that firefighting foam used does not contain PFAS or other replacement compounds that have yet to be determined as potential emerging contaminants.

To handle increase water and wastewater demand, identifying areas where GWA can increase surface water sources and boost the ability to move water to areas where necessary, GWA has previously recommended several projects that address water and wastewater resilience as well as enhanced service to both the DOD and GWA customers.

The previously submitted infrastructure resilience projects include several which would increase the island-wide system sustainability, as aligned with the "One-Guam" water initiative, as well as reduce GWA's reliance on mission-critical DoD resources, by increasing flexibility to move water between GWA systems, providing for improved source water security for the Southern and Central Water Systems, and for reducing water losses island-wide. GWA is prepared to discuss these projects as mitigative measures to cumulative impacts resulting from this and other DoD projects.

### ***Resiliency and Disaster Preparedness***

Redundant infrastructure connections to the EIAMD system sites to both DOD and GWA's water and wastewater systems, where feasible, would build resiliency and interoperability for both systems. Under the One-Guam MOU, GWA and DOD must continue to investigate opportunities to provide for mutual redundancy and interoperability. Having the ability to move water between systems will build resilience in both GWA's and DOD's water systems.

### ***Collaboration with DOD and Federal Agencies***

GWA and DOD under the One Guam MOU meet regularly to discuss opportunities for collaboration to improve both water and wastewater systems in Guam. This collaboration helps to develop strategies to build a more robust and resilient water and wastewater system for civilian

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<sup>1</sup> (F. Esteves, Agency Comments RE: EIS for F-15 Beddown and Infrastructure Upgrades at Andersen Air Force Base, Guam, July 25, 2024)

and military customers alike. Ensuring that GWA can provide water and wastewater services to both military and civilian populations require proactive mitigation and collaboration with critical stakeholders. Fortunately, GWA and DOD already have a platform where issues and solutions can be discussed. Strengthening this partnership is critical to ensuring the success of the EIAMD.

If you have any questions or comments, please feel free to contact Mr. Paul Kemp, Assistant General Manager of Compliance and Safety at [paulkemp@guamwaterworks.org](mailto:paulkemp@guamwaterworks.org)

Sincerely,

A handwritten signature in blue ink, appearing to read "Miguel C. Bordallo".

Miguel C. Bordallo, P.E.  
General Manager

cc: Paul Kemp, AGM-Compliance and Safety  
Thomas A. Cruz, P.E., AGM-Operations  
Brett Railey, P.E., AGM-Engineering (Acting)

MCB/edl