

Biological Survey Report

Asan Springs Water Supply Facility

Prepared for:

GUAM WATERWORKS AUTHORITY

Asan, Guam

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Contents

Contents	i
1.0 Introduction	.1
2.0 Project Description	.1
2.1 Background	.1
2.2 Project Area	.1
3.0 Methods	.1
3.1 Desktop Review	.1
3.2 Field Survey Methods	.3
4.0 Results	.4
4.1 Habitat and Plants	.4
4.2 Wildlife	.5
4.3 Protected Species	.5
4.3.1 Federally Listed Plant Species	.5
4.3.2 Federally Listed Animal Species	.5
5.0 Conclusions	.8
6.0 References	.8

Appendices

Appendix A – Species Tables

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1.0 Introduction

HDR completed a biological survey for the Guam Waterworks Authority Project No. W11-003-BND, Asan Springs Water Supply Facility, located in central Guam in the village of Asan. The purpose of this survey was to record the following:

- Presence of any federally listed threatened and endangered species,
- Presence of potential habitat for federally listed species,
- Migratory birds and nesting locations,
- Incidental observations of native and non-native flora and fauna, and
- General vegetation cover and ecological site conditions within the project footprint.

This report contains the findings of the biological survey.

2.0 Project Description

2.1 Background

The water supply system was originally constructed approximately 100 years ago by the U.S. Navy to capture water from a seep in the hillside. The system was eventually transferred to Guam Waterworks Authority and operated until 2004. Guam Waterworks Authority Project No. W11-003-BND is a rehabilitation project that was originally funded with a Department of Interior grant for initial design. The grant was closed and used for other purposes, and the remainder of the project is being funded privately. The purpose of this project is to rehabilitate the water system and supply potable water.

2.2 Project Area

The Asan Springs Site Area and National Park Service Proposed Right-of-Way (Project Area) is located on a steep slope between the Asan village and Nimitz Hill and is partially within the Asan Inland Unit, which is run by the National Park Service (**see Figure 1**). The Project Area is 1.08 acres and the property is owned by the Guam Waterworks Authority and the National Park Service.

3.0 Methods

3.1 Desktop Review

A complete list of the current federally listed threatened and endangered species on Guam was obtained through the U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (<u>https://ecos.fws.gov/ecp/</u>, USFWS 2021) (**see Appendix A, Table 2**). A desktop review of federally listed species with the potential to occur specifically in the Project Area is not available through the USFWS Information for Planning and Consultation (IPaC) tool, as the Pacific Islands Fish and Wildlife Office has not enabled species list delivery through IPaC.

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Figure 1. Proposed Asan Springs Water Supply Facility Project Overview



The government of Guam maintains a list of protected species separate from the federally listed species. The corresponding list of Guam-listed endangered species was obtained and reviewed (DOAG 2009).

In 2019, the Guam Waterworks Authority requested technical assistance from USFWS to obtain a list of species with the potential to occur in the Project Area (reference 2019-TA-0006). The USFWS determined that the following species have the potential to occur:

- Cycas micronesica
- Bulbophylum guamense
- Dendrobium guamense
- Tuberolabium guamense
- Nervilia jacksoniae
- Tinospora homosepala
- Solanum guamense
- Partula gibba (humped tree snail)
- Partula radiolata (Guam tree snail)
- Samoana fragilis (fragile tree snail)
- Pteropus mariannus mariannus (Mariana fruit bat)

With these data, HDR surveyed for federally and locally known threatened and endangered species with potential to occur in the Project Area and their habitats.

3.2 Field Survey Methods

HDR conducted a biological field survey for the Asan Springs Water Supply Facility on 10 February 2021 using a meandering pedestrian survey approach. A buffer of approximately 30 meters was applied to the Project Area on Guam Waterworks Authority and National Park Service property. Tracks followed during the pedestrian survey were recorded using a Trimble GEO7X Global Positioning System.

This survey included a focus on snail and migratory bird habitats. The field team walked meandering transects approximately 5 meters apart (as vegetation and terrain permitted). Where transects could not be walked due to excessively steep terrain or thick vegetation, a visual assessment was conducted from multiple vantage points using binoculars.

Species names for plants were confirmed using The Plant List (<u>http://www.theplantlist.org/, The</u> <u>Plant List 2013</u>) and World Flora Online (<u>http://www.worldfloraonline.org/</u>, WFO 2021) to verify the most current accepted taxonomy. Common and/or Chamorro names are used where available and the U.S. Department of Agriculture Forest Service Pacific Island Ecosystems at Risk (<u>http://hear.org/pier/, PIER 2018</u>) was used to determine plant origin.

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4.0 Results

4.1 Habitat and Plants

The Project Area is a mixed, mesophytic evergreen forest of elevated limestone slopes characterized with native and non-native plant species and, consequently, more abundant undergrowth (Fosberg 1960). Climbing vines, including *Tetrastigma pubinerve* and *Antigonon leptopus*, grow primarily on existing vegetation and dominate the area (**see Photo 1**). During field surveys, a total of 21 plant species were observed (**see Appendix A Table 1**).



Photo 1. Tetrastigma pubinerve vines at Proposed Asan Springs Water Supply Facility

4.2 Wildlife

Figure 2 includes the meandering tracklogs and points recorded during the biological survey.

A total of 2 birds, 1 reptile, 5 insects, and 2 mollusks were observed (**see Table 1**). One of the wildlife species observed during field surveys (*P. radiolata*) is listed as endangered by the USFWS and protected by the Endangered Species Act (ESA). Recent wild pig and deer feces were also observed within the Project Area.

Table 1	. Wildlife	Species	Observed	in	the	Project	Area
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Common Name	Scientific Name
BIRDS	
White Tern	Gygis alba
Eurasian Tree Sparrow	Passer montanus
REPTILES	
Curious Skink	Carlia ailanpalai
INSECTS	
Tropical Paper Wasp	Polistes stigma
Greater Banded Hornet	Vespa tropica
Common Mormon Swallowtail	Papilio polytes
Gulf Fritillary	Agraulis vanilla
Japanese Rice Grasshopper	Oxyga japanoica
MOLLUSKS	
Guam Tree Snail	Partula radiolata (Endangered)
The Taiwan Snail	Satsuma succincta

4.3 Protected Species

Occurrences and habitat for both federally and Guam-listed threatened and endangered species were recorded during field surveys (**see Appendix A, Table 2**).

4.3.1 Federally Listed Plant Species

No federally listed plant species were observed during surveys. Habitat for those species is of marginal quality due to the presence of dense climbing vines.

4.3.2 Federally Listed Animal Species

Small populations of the federally endangered *P. radiolata* were observed during field surveys. These populations were located within the northeast area of the proposed right-of-way and the 30-meter survey buffer area (**see Figure 2**). The *P. radiolata* snails were observed on *T. pubinerve* vines, which may aid in movement to suitable host plant species. The vegetation in the Project Area has the potential to support other federally listed snail species, such as *P. gibba* and *S. fragilis*.

P. radiolata is one of three species of Partulid snails known to occur in Guam today, the other two being *P. gibba* and *S. fragilis. P. radiolata* are endemic to the island and are tropical, arboreal snails described to have a pale colored shell with darker axial rays and faint brown lines (**see Photo 2**). They are found throughout Guam in dense bushes on the undersides of leaves (Kerr 2013). Though *P. radiolata* are still present throughout diverse forests, populations

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are known to still be decreasing due to habitat destructions and predators, such as the introduced New Guinea flatworm (*Platydemus manokwari*).

No migratory birds or other protected wildlife species were observed during surveys. Additionally, no nests were observed within the Project Area.

Although no protected reptile species and/or eggs were identified in the Project Area, the presence of non-protected skink and gecko species were observed within the Project Area, which demonstrates the habitat is likely suitable based on the covered forest floor.



Photo 2. Partula radiolata juvenile snail





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5.0 Conclusions

The purpose of this biological field survey was to determine the flora and fauna species and identify the plant community types present within the Project Area. In addition, the survey was to confirm that any construction activities related to the proposed project are consistent with the requirements of Section 7 of the ESA and to identify and avoid potential impacts if any protected species are identified within or immediately adjacent to the Project Area.

During field surveys, one federally listed snail species, *P. radiolata*, was observed within the National Park Service proposed right-of-way and 30-meters beyond those boundaries. The elevated mixed limestone forest and a nearby ravine forest in the northeastern portion of the Project Area are suitable habitat to support additional snails. Although the *P. radiolata* snails were observed slightly outside of the construction clearing limits, there is a potential for those listed species to migrate into the Project Area using vines; therefore, a USFWS consultation may be required under ESA.

No protected flora species were identified and recorded during field surveys. Federally listed flora species with the potential to occur in the Project Area are unlikely to be present because habitat for those species is of marginal quality due to the density of climbing vines, lack of canopy cover, and the presence of other non-native plant species. The biological survey was conducted with narrow transects to allow for observation of other species.

6.0 References

DOAG 2009	Department of Agriculture, Government of Guam. Endangered Species Regulation No. 9. Available online at: <u>http://dawr.guam.gov/wp-dawr-content/uploads/2017/03/Guam-ES- List-No_90011.pdf</u> .
Fosberg 1960	Fosberg, F. 1960. The Vegetation of Micronesia. New York: Bulletin of the American Museum of Natural History.
Kerr 2013	Kerr, A. M. 2013. University of Guam Marine Laboratory Technical Report 152. Available online at: <u>https://web.uog.edu/_resources/files/ml/technical_reports/152Kerr_</u> 2013_UOGMLTechReport152.pdf.
PIER 2018	US Forest Service, Pacific Island Ecosystems at Risk (PIER). Version 20180602. Published on the Internet; <u>http://www.hear.org/pier/</u> (accessed 12 February 2021).
The Plant List 2013	The Plant List (2013). Version 1.1. Published on the Internet; <u>http://www.theplantlist.org/</u> (accessed 12 February 2021).
USFWS 2021	United States Fish and WildIfie Service, Environmental Conservation Online System (ECOS). Available online at: <u>https://ecos.fws.gov/ecp/</u> (accessed 28 January 2021).
WFO 2021	World Flora Online. Published on the Internet; <u>http://www.worldfloraonline.org</u> (accessed 10 Jun 2021).



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Appendix A – Species Tables



Scientific Name	Chamorro Name	Common Name	Growth Form				
Adiantum tenerum		Brittle maidenhair fern	Fern				
Alocasia macrorrhizos		Giant taro	Forb/Herb				
Antigonon leptopus	Paopao-apaka	Chain of love	Climbing vine				
Artocarpus altilis	Lemai	Breadfruit	Tree				
Artocarpus	Lemai	Breadfruit	Tree				
mariannensis							
Arudina graminifolia		Bamboo orchid	Herb				
Averrhoa bilimbi	Bilimbi; Pikue	Pickle or cucumber	Tree				
		tree					
Bambusa vulgaris		Common bamboo	Tree-like grass				
Bidens pilosa		Beggar ticks	Herb				
Carica papaya	Рарауа	Pawpaw	Herb succulent				
Cocos nucifera	Niyok	Coconut	Tree				
Heterospathe elata	Palma brava	Sagisi palm	Tree				
Hibiscus tiliaceus	Pago	Sea hibiscus	Shrub				
Leucaena leucocephala	Tangantangan	Coffee bush	Tree				
Melanolepis	Alom	NCN	Tree				
multiglandulosa							
Mikania scandens		Climbing hempvine	Climbing vine				
Morinda citrifolia	Noni	NCN	Tree				
Oplismenus compositus		Running mountain	Grass				
		grass					
Pilea microphylla		Rockweed	Herb				
Stictocardia tiliifolia	Abubo	Crimson morning glory	Climbing vine				
Tetrastigma pubinerve		NCN	Climbing vine				

Table 1. Flora Observed in Asan Springs Project Area

Scientific Name	Common or Chamorro (CH) Name	Federally Listed	Guam Listed	Potential to Occur in Project Area ¹	Observed in the Survey Area
PLANTS					
Bulbophyllum guamense	Cebello halumtano (CH)	Т		•	
Cyathea lunulata			•		
Cycas micronesica	Cycad, Fadang (CH)	Т		•	
Dendrobium guamense		Т		•	
Eugenia bryanii	Agatelang (CH)	E			
Hedyotis megalantha	Paudedo (CH)	E			
Heritiera longipetiolata	Ufa-halumtano (CH)	E	•		
Maesa walkeri		Т			
Nervilia jacksoniae		Т		•	
Phyllanthus saffordii		E			
Psychotria malaspinae	Aplokating-palaoan (CH)	E			
Serianthes nelsonii	Hayun lagu (CH)	E	•		
Solanum guamense	Berenghenas halomtano (CH)	E		•	
Tabernaemontana rotensis		Т			
Tinospora homosepala		E		•	
Tuberolabium guamense		Т		•	
MAMMALS					
Emballonura semicaudata rotensis	Pacific sheath-tailed bat (Mariana subspecies); Payeyi (CH)	E	•		
Pteropus tokudae	Little Mariana fruit bat	E	•		
Pteropus mariannus mariannus	Mariana fruit bat	Т	•	•	
BIRDS					
Acrocephalus luscinia	Nightingale reed warbler; Ga'ga' Karisu (CH)	E			
Aerodramus vanikorensis bartschi	Mariana gray swiftlet	E	•		

Table 2. Federally and Locally Listed Species for Guam and the Potential to Occur in the Project Area

¹ Based on USFWS 2019-TA-0006 and confirmed by habitat presence during biological survey.

Scientific Name	Common or Chamorro (CH) Name	Federally Listed	Guam Listed	Potential to Occur in Project Area ¹	Observed in the Survey Area
Aplonis opaca guami	Micronesian starling; Såli (CH)		•		
Corvus kubaryi	Mariana crow; Aga (CH)	E	•		
Gallicolumb xanthonura	White-throated ground dove; Paluman Å'paka' (female) and Paluman Fache' (male) (CH)		•		
Gallinula chloropus guami	Mariana Common Moorhen; Pulattat (CH)	E	•		
Halcyon cinnamomina cinnamomina	Guam Micronesian Kingfisher; Sihek (CH)	E	•		
Myzomela rubrata saffordi	Micronesian Honeyeater		•		
Ptilinopus roseicapilla	Mariana Fruit-dove; Totot (CH)		•		
Rhipidura rufifrons uraniae	Rufous Fantail		•		
Rallus owstoni	Guam Rail	E	•		
Zosterops conspicillatus conspicillatus	Bridled White-eye; Nosa' (CH)	E	•		
REPTILES					
Chelonia mydas	Green sea turtle; Haggan (CH)	Т	•		
Cryptoblepharus poecilopleurus	Snake-eyed skink		•	•	
Dermochelys coriacea	Leatherback sea turtle	E	•		
Eretmochelys imbricata	Hawksbill sea turtle	E	•		
Emoia atrocostata	Tide-pool skink		•		
Emoia cyanura	Azure-tailed skink		•	•	
Emoia slevini	Slevin's skink	E			
Lipinia noctua	Moth skink		•	•	
Nactus pelagicus	Pacific slender-toed gecko		•	•	
Perochirus ateles	Micronesian gecko		•	•	
INSECTS					
Hypolimnas octocula marianensis	Mariana eight-spot butterfly; Ababbang (CH)	E			

Scientific Name	Common or Chamorro (CH) Name	Federally Listed	Guam Listed	Potential to Occur in Project Area ¹	Observed in the Survey Area
Vagrans egistina	Mariana wandering butterfly; Ababbang (CH)	E			
MOLLUSKS					
Partula gibba	Humped tree snail; Akaleha (CH)	E	•	•	
Partula radiolata	Guam tree snail; Akaleha (CH)	E	•	•	•
Samoana fragilis	Fragile tree snail; Akaleha dogas (CH)	E	•	•	



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