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RENEWABLES

FLORA AND FAUNA SURVEY FOR LISTED SPECIES AT THE YABUCOA SOLAR YFN SITE IN THE AUTONOMOUS MUNICIPALITY OF YABUCOA, PUERTO RICO

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DIATOM
ENVIRONMENTAL SERVICES, LLC

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INTRODUCTION

UPDATED TECHNICAL MEMORANDUM CORROBORATING EXISTING CONDITIONS OF FLORA AND FAUNA SPECIES IN THE YABUCOA SOLAR YFN SITE LOCATED IN THE AUTONOMOUS MUNICIPALITY OF YABUCOA, PUERTO RICO

YFN Yabucoa Solar, LLC proposes constructing a solar energy project on property in the Juan Martín Ward Municipality of Yabucoa, Puerto Rico. As part of the environmental compliance and planning process, the United States Department of Energy (USDOE) requested a technical memorandum to update the existing conditions of flora and fauna on site. The objective of the technical memorandum is to confirm that the environmental conditions have not changed since the original flora and fauna was completed over five years ago. These activities are part of an agreement with the reviewers for the DOE to conduct an assessment and to document the results of a site inspection. Most of the Site is currently covered with pastures and shrubs and is extensively used for cattle grassing. The site conditions and access allowed our team to walk the entire property without restrictions. The property currently harbors over 50 bulls and a couple of dozen horses inside smaller parcels surrounded by barbed wire. They roam free, eating the existing grasses until the owner moves them to the next parcel. The brush and small trees currently covering the Site are generally less than two (2) inches in diameter and are composed mainly of dried ***Mimosa pigra***, FACW species very abundant in the area. In some site regions, isolated tree patches with trunk diameters over twelve (12) inches are easily identifiable. The area where the proposed clearing activities maintain a use qualification of farmland and land qualification of Rustic-Common Soils by the Puerto Rico Planning Board.

The Puerto Rico Department of Natural and Environmental Resources and the US Fish and Wildlife Service have identified the area as a habitat for the Puerto Rican Boa (***Chilobotrus inornatus***) listed under the Endangered Species Act. Also, the coastal waters to the east of the property have been identified as a habitat for the Antillean Manatee (***Trichechus manatus***). Our team conducted a property flora and fauna survey to confirm the species listed by the state and federal agencies for the selected Site (table #1).

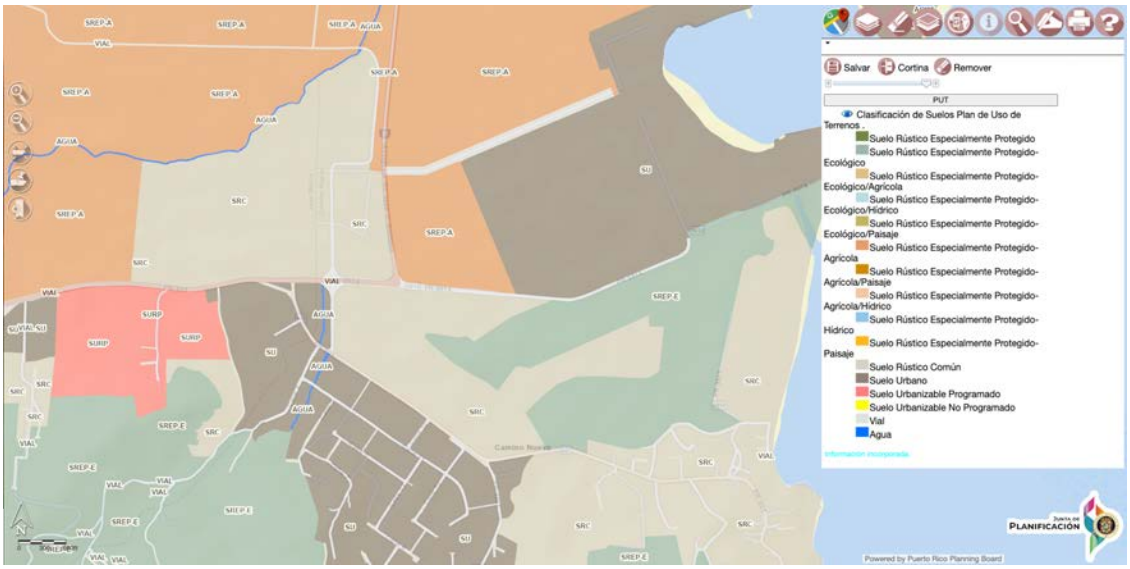

Figure 1 Existing Planning Board qualification for the above-referenced parcel. Most of the site is considered ordinary rustic soil (general use), and some areas (light green) are considered ordinary rustic soil ecologically protected.

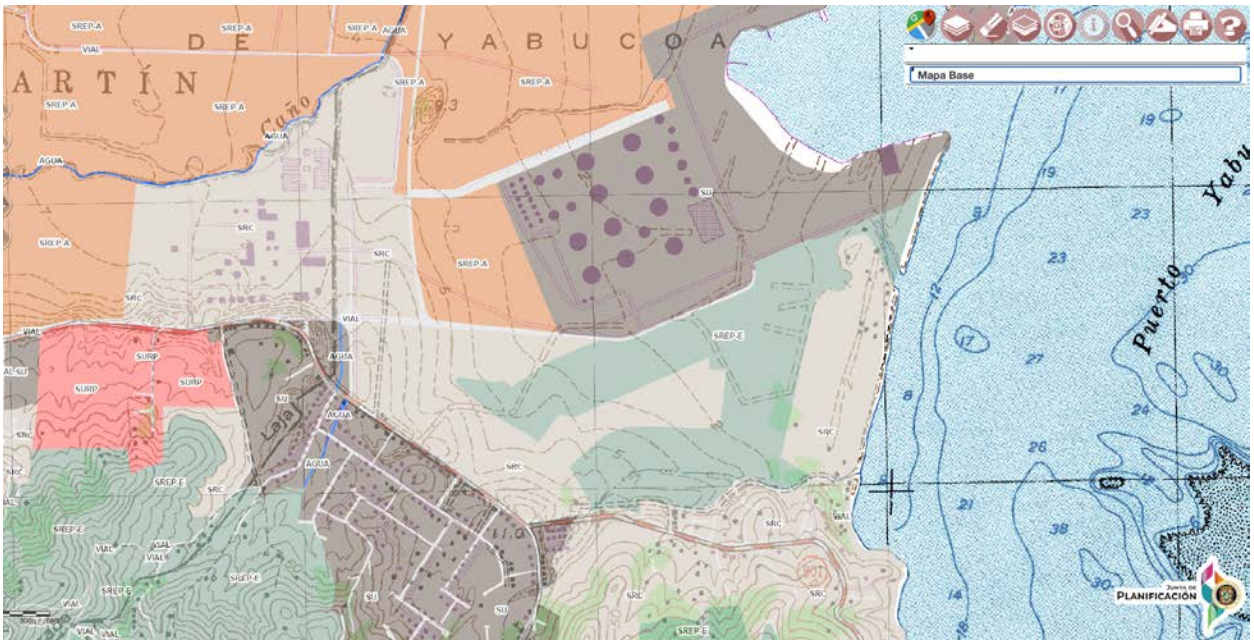

Figure 2 is a Topographic image of the existing soil qualification for the above-referenced properties. The property is primarily flat and drains to the east towards Guayanés Bay.

Group	Scientific Name	Common Name	Survey
Reptile	*Chilobotrus inornatus*	Puerto Rican Boa	Diurnal/Nocturnal
Mammal	*Trichechus manatus*	Manatí Antillano	None

Table #1

Our team completed a field survey of the parcel on February 29, 2024. Due to the existing conditions, we conducted a diurnal study for the Puerto Rican Boa (***Chilobotrus inornatus***). The survey started at 7:30 am and went until noon. After observing the site conditions, we decided not to conduct a nocturnal survey as suitable habitats were not identified on the premises. The following technical opinion represents the conditions observed during the walkthrough. Due to the site's distance from the coastal waters, a survey of the Antillean Manatee was not conducted.

Description of the Property

The main property is composed mainly of pastures and heavy grasses. The vegetation growth observed is the product of almost two decades of inactivity and maintenance work. Secondary growth was observed in a section to the south of the property where trees, shrubs, and plants colonized the abandoned lands, and the roaming animals cleared most of the plants growing below the tree canopy. We observed that many plants that are not being eaten by the herd need to be edible. Under normal conditions (forests do not have animals grazing the ground), the soils are covered with dry leaves and detritus. The heavy impact by the grazing animals and continuous movement shows arid land and very few areas with green overgrowth.

Field Observations

Our team found several sections of the parcel segregated with barbed wire. However, the wire conditions were mainly poor, allowing the cattle to roam freely around the premises. There are several defined access gates or trails to the property. Our team entered through the center of the south side to conduct the site inspection, following the paths left by the animals. The existing conditions allowed the team to walk the entire area following a zigzag pattern (west to east). There is debris from unknown sources scattered over the ground. Trees and plants observed are common to the ecosystems of the eastern coastal wet forest and represent the overgrown vacant land lots. The biological associations are expected to upland systems.

Most of the area comprises unimproved pasture/rangeland consisting of grasses and shrubby overgrowth with common species of vines, palms, shrubs, and other plants included in Table 2.

Table 2: Some trees, vines, and other plants were observed in the parcel. Other species were annotated but not included in the table.

Trees			
Common Name	Scientific Name	Location	Other Information
Moca	*Indira inermis*	Left Center of South side	Native
Tulipán africano	*Spathodea campanulata*	Left and Center side of the property	Introduced
Almendro	*Terminalia catappa*	All areas	Native
Samán	*Samanea saman*	All areas	Native
Mimosa	*Mimosa pigra*	All areas	thorns
Tuatuá	*Jatropha gossypiifolia*	The eastern side of the main parcel	Large patches
Paspalum	Paspalum sp.	All disturbed zone	Invasive
Yerba de guinea	*Panicum maximum*	All areas	Native
Malanguilla	*Colocasia esculenta*	Water channels	OBL - Native
Berenjena cimarrona	*Solanum torvum*	Northern areas	Native

- All the plants, shrubs, vines, and trees observed in the parcel were common, native, planted by humans throughout the years, or seeds reached the area by foraging birds.

The reptile sampling was conducted using the methods described by Rivero (1998) for surveying terrestrial reptiles in Puerto Rico, which we modified to carry out this type of work. The modification expanded the observation areas because it allowed the inclusion of sites that would be out of the sample if we used the recommendation of searching rock formations and crevasses, which are standard in the scientific literature. No individuals of the Puerto Rican Boa were observed during the daily survey. The yellow arrows show the areas surveyed during the inspection (Figure 3).

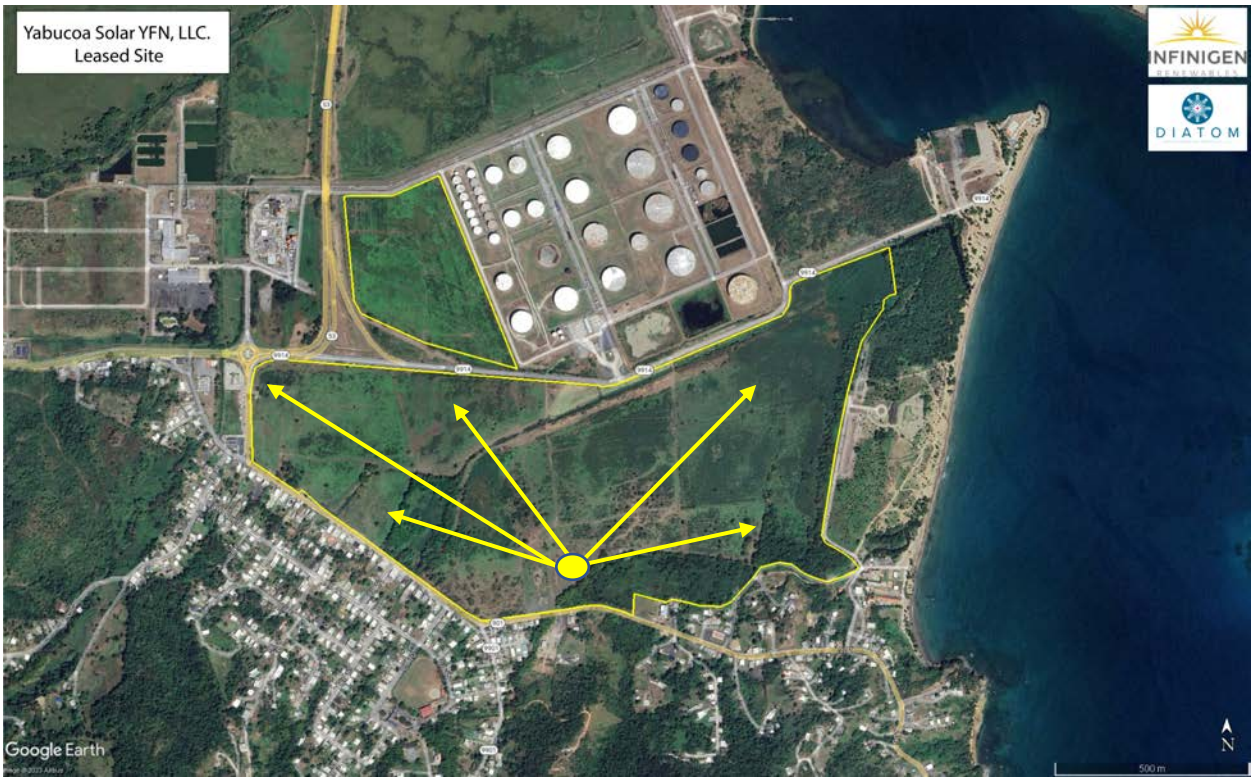

Figure 3. A view of the leased site and surveyed areas at Yabucoa Solar YFN, LLC.

PHOTOGRAPHIC RECORD

Picture 1 Several bulls roaming around the parcel. In the background, dozens of Mimosa shrubs are visible.

Picture 2 View of the property towards the fuel depot located to the north of the parcel

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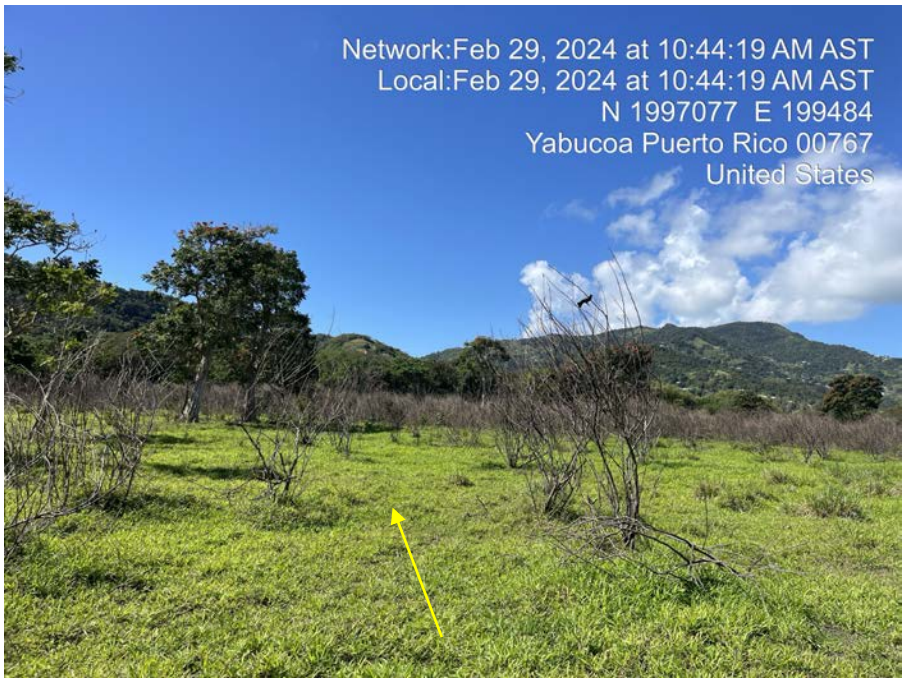
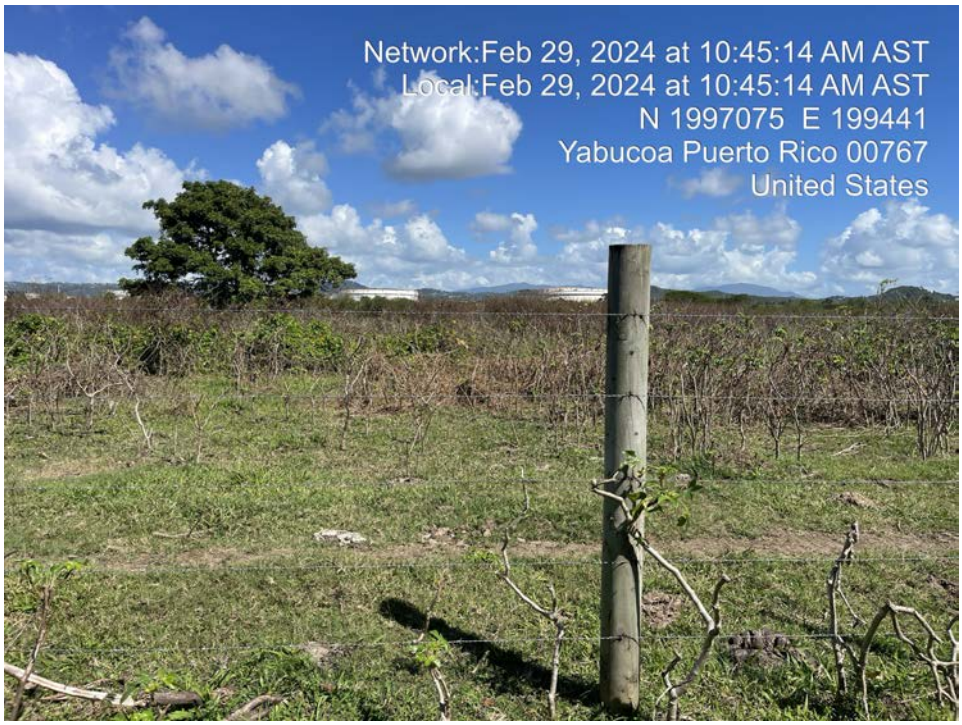
Picture 3 We surveyed the few bamboo patches on the banks of two creeks crossing the property.

Picture 4 Conditions on the northeast side of the property are covered with shrubs.



Picture 5 Another view of the existing ground conditions. The soil has been subject to intense use by grazing cattle.



Picture 6 Parcels are divided with barbed wire.

Picture 7 We surveyed wetland transition areas. No species of the Puerto Rican Boa were observed.

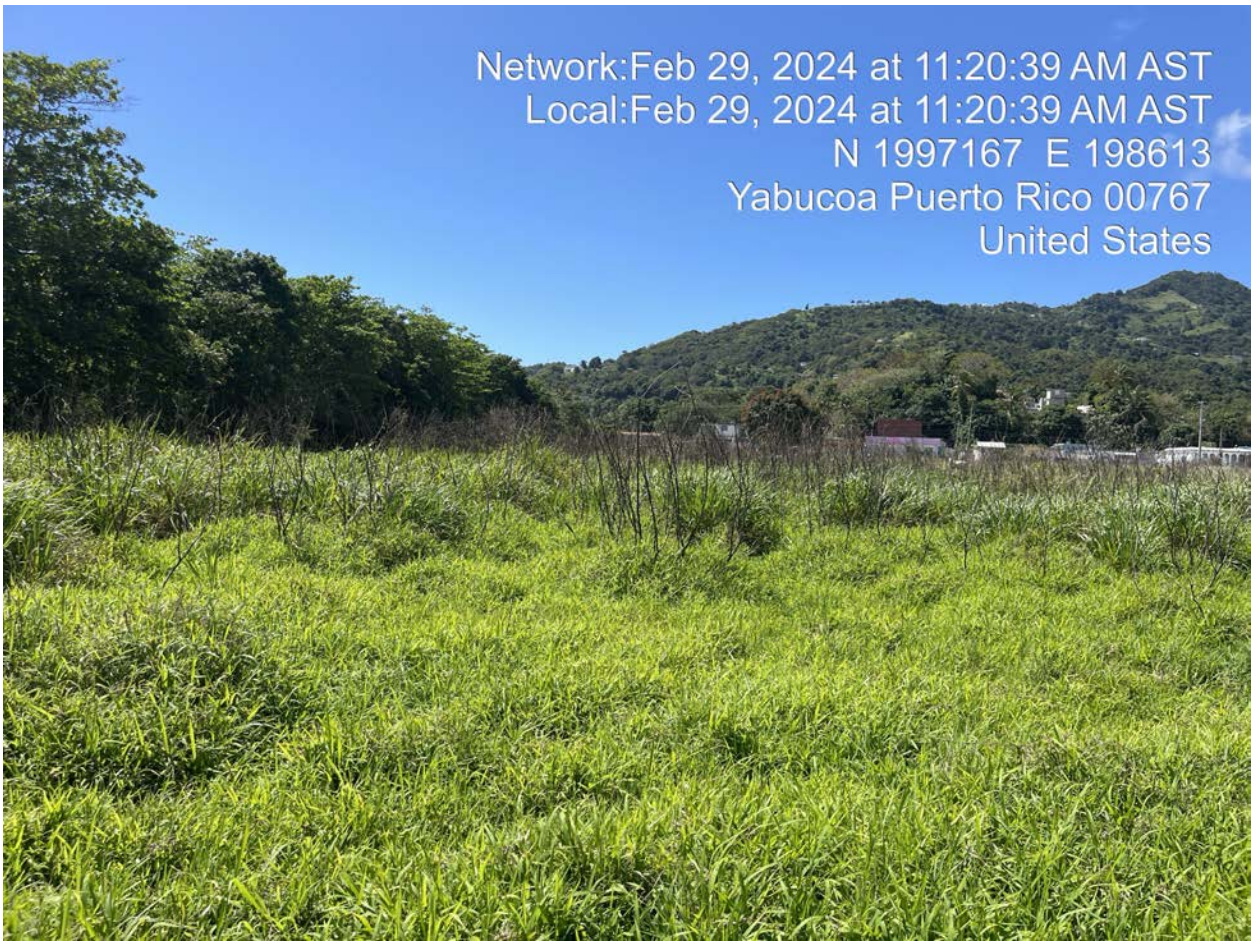
Picture 8 We also surveyed the crossings over the creek and irrigation channel.

Picture 9. The channels could be better maintained. The overgrowth keeps the water from flowing normally.

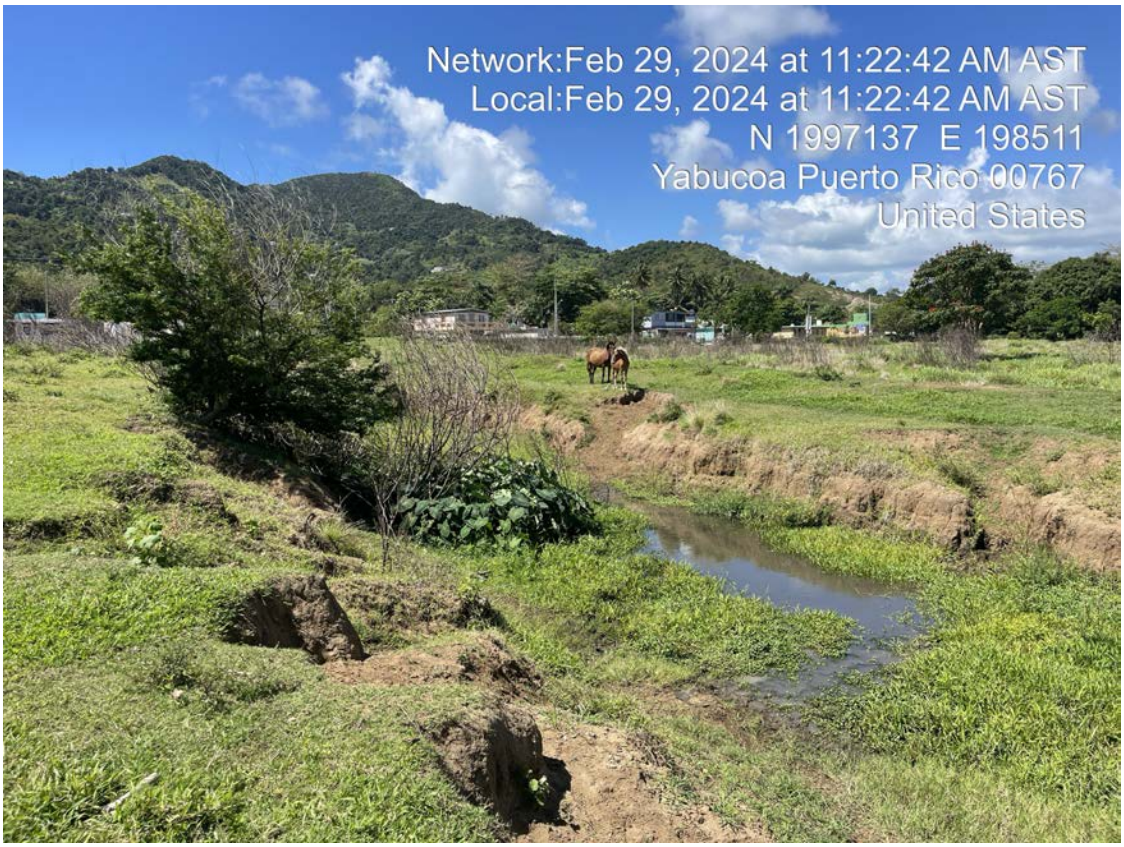
Pictures 10-11: View towards the southeast part of the property.

Picture 12. A View of the wetland area within the property. The conditions remain after years of cattle grassing.

Picture 13. One of the two creeks crosses the property. Cattle have impacted the water channel, and conditions are poor for reptile habitat.



Picture 14 View of the area toward the south side of the property.



Picture 15. A photo of two horses on the southern side of the property.

Picture 16 View towards the southeast of the property where a tree patch is located.

Technical Opinion

After conducting a site inspection of the parcel, we have concluded the following:

1. During the inspections, we observed many insects, reptiles, and birds living in the area. The Puerto Rican Boa (***Chilobotrus inornatus***) was not observed during the diurnal walk.

2. Birds were observed during the diurnal surveys, including the Mockingbird (*Mimus polyglottos*), the Greater Antilles grackle (*Quiscalus niger*), Tórtola aliblanca (*Zenaida asiatica*), and the Pájaro Bobo Menor (*Coccyzus minor*). None of these species are protected or listed.

3. The parcel is primarily unimproved pasture/rangeland, consisting of grasses and shrubby overgrowth.

4. All the observed species (wildlife, plant associations, and birds) are commonly

found in the eastern wet coastal forest in Puerto Rico.

We adjourned after 12:15 pm.

The proposed land-clearing activities may be programmed and are not likely to adversely affect the listed species. We understand that the proposed tree-clearing activities can be conducted as planned. Also, it's important to note that several dozen cattle on the premises deter the Puerto Rican Boa from nesting on the parcel.

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