

ANEJO 4

**Carta del Servicio de Pesca y Vida Silvestre (FWS)
(3 de septiembre de 2004)**



United States Department of the Interior



FISH & WILDLIFE SERVICE

Boqueron Field Office

Carr. 301, KM 5.1, Bo. Corozo

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Boqueron, PR 00622

SEP 3 2004

Mr. Edwin C. Centeno Jiménez, PE
Ray Engineers P.S.C.
P.O. Box 363443
San Juan, Puerto Rico 00936-3443

Re: Los Farallones, Residential
Cañabón Ward, Caguas

Dear Mr. Centeno:

We are responding to your request for comments on the above referenced proposed residential project. According to the information provided, the project would consist of 936 apartments within 26 buildings on approximately 72 acres of a 194 acre farm in the Cañabón Ward of Caguas. The remnant 122 acres would be preserved through classification as "rustic land specially protected." The project would also develop a passive linear park with a footpath along the river as part of the Municipality's "Honor al Río" project. The design of the linear riparian park would be wider than the 5 meters normally required by DNER. We understand that you are requesting information to assist in developing environmental documentation for the project.

The site is bordered on the south side by PR-155, and on the southwest and west sides by the Cagüitas River, a tributary to the Río Grande de Loiza above the Carraizo Dam. The northeast sections of the property are relatively steep and forested, while the lower portions of the property have been previously cleared for agriculture. The USGS DOQQ aerial photograph of the site indicates that there are some lines of trees passing through the formerly cleared portions of the property, but it is not clear if these are natural drainages or fence lines.

The project lies within the range of the Puerto Rican plain pigeon (*Columba inornatus wetmorei*) and the farm is likely to harbor habitat for this species. The Puerto Rican boa (*Epicrates inornatus*) also may occur within the forested habitat or along the riparian zone. The Puerto Rican plain pigeon has been observed in nearby forest adjacent to the Las Hormigas hills and in the valley along the Cagüitas River. We recommend that surveys for these species on and adjacent to the property be conducted as part of the environmental documentation for the project. The Department of Natural and

Environmental Resources could also be contacted to determine whether there are reports of these species from the farm and adjacent properties.

The Service has not developed survey protocols and specific methodology to detect the presence of plain pigeons or Puerto Rican boas at proposed project sites. We do provide guidance on survey protocols to biologist conducting field investigations and surveys of these species. This guidance is based on recommendations from scientists who have previously worked on these species. In general terms, the methodology to determine whether listed species are present at a particular site requires extensive surveys that include, but may not be limited to, searching all areas or randomly-selected areas within the potential habitat of the species. Since listed species are not abundant and in many cases secretive or with unusual behaviors (e.g., nocturnal habits), surveys must be dedicated exclusively to search for those species and should not be conducted simultaneously with other species surveys. An uncommon secretive species may be overlooked while searching for another. Additionally, the "search image" that is created to locate a certain species may interfere with the detection of another. For instance, looking for frogs under rocks/vegetation may interfere with detection of a flying/roosting pigeon or a boa resting/basking on the canopy of trees.

Your project represents an opportunity to combine the benefits of riparian forested habitat with upland forested habitat. The information provided mentions the Municipal "Honor al Río" project as well as two other development projects bordering this river. Our Partners for Fish and Wildlife program has been assisting the Municipality in developing a river restoration project for a downstream section of the river that is to be part of the "Honor al Río" project. This project is important to protect habitat of many wildlife species including the above-mentioned endangered Puerto Rican Plain Pigeon and the Puerto Rican boa. Our office reviewed at least one projects (Finca San José) during its development, and provided recommendations for reducing impacts to the river, riparian habitat, associated wetlands and Puerto Rican plain pigeon habitat.

We are pleased to see a riparian corridor be left for conservation and suggest maintaining as broad and dense a forested riparian buffer as possible. Existing trees along the riparian corridor be left intact. The maintenance or development of various layers (high and intermediate) within the riparian forest canopy provides superior plain pigeon and other wildlife habitat as well as superior riparian filtration and bank stabilization functions. Native trees beneficial to wildlife, particularly the plain pigeon be planted within this corridor to further enhance the riparian habitat. We also recommend maintaining and improving one or more of the forested strips, particularly those following natural drainages, leading from the forested hillside to the river be considered. This would provide forested habitat corridors between the steeper forested area to be preserved and the forested riparian zone.

There are several mechanisms to convey more durable protection to the areas to be preserved (both the steeper forest and riparian area) such as DNER Auxiliary Forest program, deed restrictions or protected through a formal Conservation Easement (DNER). Some of these programs could provide tax exemptions on these portions of the property and ensure the future preservation of these forested lands. Depending upon the

design of the passive riparian park, our Partners for Fish and Wildlife program might be able to assist with reforestation along the river corridor.

For the Environmental documentation, infrastructure, particularly, storm water, wastewater management and a suitable Plan CES should be discussed. The project lies within the Río Grande de Loiza watershed, and wastewater treatment and sedimentation is a concern for water quality in the river and Carraizo Reservoir.

We hope this information proves useful, and would appreciate additional opportunities to assist you and review the project as it develops. If the project requires Federal funds or permits, Section 7 Consultation under the Endangered Species Act may be required. If you have any questions on these comments, please contact Beverly Yoshioka of my staff at 787-851-7297 ext. 227.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Carlos A. Díaz', with a horizontal line extending to the right.

Carlos A. Díaz
Assistant Field Supervisor

bby

cc:

DNER, San Juan

EQB, San Juan

Municipal Lajas

ANEJO 5

Estudio Determinación de Jurisdicción (marzo de 2007)

JURISDICTIONAL DETERMINATION

Los Farallones

Bo. Cañabon

Caguas, Puerto Rico

Terramar Development Group

San Juan, Puerto Rico

March 2007



Environmental Consulting Group

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Preliminary Jurisdictional Determination

Project Name/Location: Los Farallones
Finca Cartagena
State Road PR-156, Km. 56.0
Cañabón Ward, Caguas

Application Number: Not Assigned

Project Owner: Desarrollos Urbanos, Inc.
Address: PO Box 13460
San Juan, PR 00908
Phone: 787-474-8266

Property Owner: Doran Realty, Inc.
Address: PO Box 605
Caguas, PR 00726
Phone: 787-744-2876

Authorized Agent: Ing. Carlos Cáceres
Terramar Development Group

Prepared by: Environmental Consulting Group
Address: PO Box 192395
San Juan, Puerto Rico. 00919-2395
Phone: (787) 759-0101
Fax: (787) 765-1186
E-Mail: service@enviopr.com

Permission for U.S. Army Corps of Engineers personnel

I, _____, owner of the property where the project referred to as **Los Farallones** is proposed to be developed, give permission to the U.S. Army Corps of Engineers personnel to enter the property (also referred to as Finca Cartagena) located along to the east and northeast of State Road PR-156, at Cañabón Ward, in Caguas.

This permission allows the Corps personnel to visit and enter the property for processing the requests for the verification of a Jurisdictional Determination (JD) in Puerto Rico.

Property Owner

1.0 Introduction

1.1 Purpose and Objectives

The purpose of this Delineation, or Jurisdictional Determination (JD) is to provide enough information, guidelines and methods to determine whether certain areas, within the selected sites for the development of the proposed project Los Farallones (hereinafter referred to as the study area); contain any wetlands as defined under Section 404 of the Clean Water Act (the Act).

The specific objectives of this JD are to:

- Present the technical research for identifying wetlands and distinguishing them from non-wetland areas.
- Provide the methods for applying the technical research
- Provide supporting information useful in applying the wetland delimitation.
- Establish the boundaries between uplands (non wetlands) and wetlands.
- Evaluate the presence of Jurisdictional Areas of the proposed alternatives for Los Farallones.

1.2 Scope

This JD is limited in scope to wetlands that are subset of “waters of the United States” and thus subject to Section 404. The term “waters of the United States” has broad meaning and incorporates both deep-water aquatic habitats and special aquatic sites, including wetlands (Federal Register 1982), as follows:

- The territorial seas with respect to the discharge of fill material.
- Coastal and inland waters, lakes, rivers, and streams that are navigable waters of the United States, including their adjacent wetlands.
- Tributaries to navigable waters of the United States, including adjacent wetlands.
- Interstate waters and their tributaries, including adjacent wetlands.
- All other “waters of the United States” not identified above, such as isolated wetlands and lakes, intermittent streams, prairie potholes, and other waters that are not a part of a tributary system to interstate waters or navigable waters of the United States, the degradation or destruction of which could affect interstate commerce.

The special aquatic site subject to the provisions Section 404 of the Clean Water Act that this JD considers is only wetlands that by definition are vegetated.

This JD is an attempt to determine whether the study area contains a wetland or not for the purpose of Section 404, without attempting to classify it under any specific wetland type.

The considerations used in this JD include the USFWS classification system, NWI wetland maps, and the evaluation of positive wetland indicators present for each parameter (vegetation, soils, and hydrology).

1.3 Definitions

- **Anaerobic conditions** – a situation in which molecular oxygen is absent (or effectively so) from the environment.
- **Dominant species** – a plant species that exerts a controlling influence on or defines the character community.
- **Gleyed** – a soil condition resulting from prolonged soil saturation, which is manifested by the presence of bluish or greenish colors through the soil mass or in mottles among other colors.
- **Homogeneous vegetation** – a situation in which the same plant species association occurs throughout an area.
- **Hydric Soil** – a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation.
- **Hydrology** – the science dealing with the properties, distribution and circulation of flowing water.
- **Hydrophytic vegetation** – the sum of all macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.
- **Mottles** – spots or blotches of different color or shades of color interspersed within the dominant color in a soil layer, usually resulting from the presence of periodic reducing soil conditions.
- **Nonwetland** – any area that has sufficiently dry conditions that indicators of hydrophytic vegetation, hydric soils, and/or wetland hydrology are lacking.
- **Parameter** – a characteristic component of a unit that can be defined. Vegetation, soil and hydrology are three parameters that may be used to define wetlands.

- **Positive wetland indicator** – any evidence of the presence of hydrophytic vegetation, hydric soil, and/or wetland hydrology in an area.
- **Routine wetland determination** – a type of wetland determination in which office data and/or relatively simple, rapidly applied onsite methods are employed to determine whether or not an area is a wetland.
- **Wetlands** – those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.
- **Wetland boundary** – the point on the ground at which a shift from wetlands to nonwetlands or aquatic habitats occurs. These boundaries usually follow contours.

2.0 General Description

2.1 General Project and Site Description

Terramar Development Group (TDG) has requested Environmental Consulting Group (ECG) to perform a Jurisdictional Determination of Wetlands for the project Los Farallones proposed to be developed at Finca Cartagena with an extension of approximately 202 cuerdas (196.167 acres). The site is located at State Road PR-156, Km. 56.0, Cañabón Ward, in Caguas. The proposed project includes the development of multifamily units, recreational facilities, parking lots, infrastructure, lakes, a linear park parallel to the Cagüitas River and a commercial component. Los Farallones will have approximately 80,000 ft² of commercial space and 936 multifamily residential units.

Approximately 113 cuerdas (109.61 acres) out of the 202 will be voluntarily transferred to the Municipality of Caguas for preservation and conservation under Law # 134 of June of 2004. The project will use approximately 73 cuerdas (70.81 acres) for development.

The boundaries of the property are, to the north Las Carolinas, to the east Jose W. Cartagena and Blanca Longo, to the south State Road PR-156, to the west Puerto Rico Aqueduct and Sewer Authority, El Amal, Notre Dame and Better Roads Asphalt.

The site contains various hydrological systems within it, or associated with the site, these are the Cagüitas River, an unnamed ephemeral stream, intermittent streams and runoff water of Finca Cartagena that discharges into Cagüitas River.

The majority of the water bodies found in the property of the proposed project drain through the north boundary with Las Carolinas and also drain to the west and southwest property boundaries.

Two principal water bodies related to the site could be identified, the Cagüitas River that runs parallel to the west and southwest boundaries and the unnamed creek that runs parallel to the north boundary near Las Carolinas.

A wetland area was found within hydrologic system at the site, that in precipitation periods retains enough water for the development of redox conditions and internal drainage patterns which continue the erosion process, transportation and connection of land nutrients to water bodies.

2.2 General Site Descriptions

As per the topographic maps for Aguas Buenas and Caguas of the US Geological Survey (USGS), the elevation in the area proposed to be developed is approximately between 80.0 and 110.0 meters mean sea level (MSL). See Appendix 1 - Topographic Map of Proposed Site.

The topography of the study site is characterized by leveled and semi-leveled terrains with 0 to 45 percent slopes, with a river to the west and an ephemeral stream that runs along the north boundary of the proposed project site.

The general vegetation of the site can be described as: pasture associations mostly covered by grasses, herbaceous, shrubs and spread trees; a riparian association mostly covered by trees, herbaceous and spread shrubs; a forest association mostly covered by trees, herbaceous, grasses and a few shrubs; and a wetland association mostly cover by herbaceous, shrubs and vines.

3.0 Methodology

3.1 Sources of Information

The information available for review for the study site included the USGS topographic map, aerial photographs, flood prone areas maps, soil surveys, topographic survey and site visits.

There is no data available for the location of the proposed site within the National Wetland Inventory Maps of the US Corps of Engineers.

3.1.1 Topographic Map

As per the topographic maps for Aguas Buenas and Caguas of the US Geological Survey (USGS), the elevations at the proposed area varies between 80 to 175 meters of elevation above sea level (MSL).

The topographic map shows that the studied area contains within its limits different watersheds for ephemeral and intermittent streams that discharge into Río Cagüitas.

3.1.2 Aerial photographs

A recent aerial photograph (2006) was reviewed for the purpose of this determination (Please refer to Appendix 1 - Sheet 3. Observation Points Over Site Topography). Other aerial photographs used were images presented in the Soil Survey of San Juan Area Puerto Rico, sheets 35 and 36.

The revision of the aerial photographs was made to evaluate internal drainage patterns, as the ephemeral streams and intermittent streams, different light intensity and color shifts in the vegetation, and possible distinction of soil surface by removal of vegetation.

3.1.3 Soil Survey

The soils in the area are classified as Mucara clay (MxF, 40 to 60 percent slopes). These soils are not classified as hydric on the Hydric Soil List of the USDA-NRCS (See Appendix 3 - Soil Survey of Project Area). Please refer to Soil Survey of San Juan Area Puerto Rico, sheets 35 and 36.

Mucara clay (MxF, 40 to 60 percent slopes). This is a very steep, well-drained soil on side slope and rounded hilltop sides of strongly dissected uplands. Slopes are irregular and are 100 to 800 feet long. The areas range from 100 to 1000 acres. A few shallow and deep gullies are formed.

Typically the surface very dark grayish brown clay, firm clay about 5 inches thick. The subsoil is about 7 inches thick; it is dark brown, firm clay. The substratum, beginning at a depth of 12 inches, is highly weathered volcanic rock. Bedrocks at a depth of 30 inches.

Included with this soil in mapping are spots of Caguabo and Naranjito Soils. Also included some hilltops that have many rocks and boulders on the surface. The surface layer of Caguabo soils is dark grayish brown clay loam, and that of Naranjito soils is brown to dark brown silty clay loam. These soil make up to 10 to 20 percent of this mapping unit.

Permeability is moderate, and the available water capacity is low. Runoff is very rapid, and erosion is a hazard. Slippage is common in roadbanks, ditches, and draingeways. This soil is difficult to work because of the stickiness and plasticity of the clay. Hillside ditches and diversion are difficult to establish, and maintain. The root zone is moderately deep. This soil is fertile. Controlling erosion is the major concern of management.

This soil has been in brush and brushy pasture. It is suitable to pangolagrass.

Proper stocking rates and grazing of pasture, as well as liming and fertilizing, are chief management needs.

The hazard of erosion and limitations on the use of equipment are the major concerns of management. Logging roads, skids trails, and planting should be on the contour to help control erosion. The use of logging equipment is restricted at times because the soil is soft and slippery when wet. Brush removal, careful hand planting, and fertilizing increase the survival of plant seedlings.

This soil is limited for most urban uses because it is very steep and it is shallow to rock. If the soil is used as construction sites, development should be on the contour. Removal of vegetation should be held to a minimum, and temporary plant cover to established quickly in denuded areas. Capability subclass VIIe.

The NRCS classification system includes three levels: capability class, subclass and unit. The capability classes range from I (the best) to VII

(the worst). The subclass indicates the limitation of the soils. The letter “e” represents the greatest limitation, is the risk of erosion, “w” represents the presence of water on or under the soil which interferes with the growth of plants, “s” indicates that the soil is limited by being shallow or rocky.

The soils on the study site, Mucara clay, are classified as category VIIe. These are described as follows:

- Class VII = soils that have severe limitations that make them unsuitable for cultivation.
- Subclass VIIe = soils subject to severe erosion if they are cultivated and not protected.

By evaluating these parameters, it can be ascertained that the agricultural potential of the soils at the site is very low, this mainly due by the potential soil erosion, shrink well potential and steep slopes.

The Mucara Clay series consist of clayey, montmorillonitic, isohyperthermic, shallow Vertic Eutropepts. These soils are under the order of Vertisols that are soils with a high content of montmorillonitic clay and a consequent high shrink well potential. They are under the great group of formative elements *Eutr* that is characterized of having a high base saturation.

3.1.4 Flood Prone Area Map

According to the Flood Prone Area Maps of the Puerto Rico Planning Board and the FEMA Flood Insurance Rate Maps (FIRM), the area of the proposed action is not inside of flood prone areas. Please refer to Appendix 4.

The landform presents superficial drainage patterns caused by the water runoff from upland to lowland. The runoff of the study area moves in general direction towards the Río Cagüitas and an unnamed tributary stream.

3.1.5 Geotechnical Report

No geotechnical report was used during site assessment.

3.1.6 Hydrology and Hydraulic Assessment

The hydrology component was determined in various ways, prior to the field visit by evaluating recorded data, and in the field. The recorded data was used to consider the hydrology that influences the conditions at the site and neighboring areas within the watershed.

- a. Recorded data
 - Interpretation of aerial photographs was made to evaluate internal drainage patterns, different light intensity of the vegetation, and possible distinction of soil surface by removal of vegetation.
 - A topographic drawing of the site was developed by a surveyor to identify differences in elevations, internal drainage, possible streams, or water runoff patterns.
 - The elevation of the site was compared with the surrounding areas to know the direction of the water runoff that flows through the site.
 - Flood Maps were used to determine if areas within the site have the possibility to be flooded at any time.
 - The determination of the water table as a source of soil saturation was determined by the use of the Soil Survey, visible evidence of water at the site, and complemented with data from the soil studies.
 - Ordinary high water marks for potential streams.

The gathered data shows that the site is within the watershed corresponding to Cagüitas River.

The hydrology inside the site boundaries is principally composed of a river, intermittent streams and ephemeral streams. In addition, some internal drainages in the form of gullies receive the runoff from upland and wetland areas, which directly discharge them into the river.

A hydrologic-hydraulic study has been developed for the site in order to determine the water levels during rainfall events. The gathered data and rainfall event simulation was used to establish the elevations of the ordinary high water marks. For the field assessment, the ordinary high watermark parameter established by the NW Delineation Standard was used as primary indicator for determination.

3.2 Selection of Methodology

The methodology used was selected in accordance with the Corps of Engineers Wetland Delineation Manual (WDM), 1987, prepared by the Environmental Laboratory of the US Army Corps of Engineers.

The techniques described in the Manual were the basis to develop the research methodology in the field, to perform the observations, photographic studies, sampling and report preparation.

The Routine Determination (Onsite Inspection Necessary) Method was selected because it involves simple, rapidly applied methods that result in sufficient qualitative data for making the determination.

As a consequence of the changes in topography and vegetation present, a modification to the assessment transect procedures specified in the WDM was made, for two main purposes; to cover the suspected areas, and to make a more representative and precise determination of the vegetation, soil and hydrology boundaries.

The preliminary determination was based on the review of available information, as presented in Section 3.1 *Sources of Information*; the establishment of observation points based upon changes of vegetation and topography, and evaluation of the gathered data.

The research, site visits, and data collection was performed in the period of April 7 to June 10 of 2006.

3.2.1 Vegetation

One of the three parameters to consider in the determination of wetland and non-wetland boundaries is the presence of hydrophytic vegetation. A preliminary evaluation of the available sources of information about the vegetation of the study area was performed using the aerial photographs.

Consequently, in the field, leveled areas, rolling areas, and gullies were evaluated in order to identify the different layers of plant community species present.

The vegetation was sampled at each observation point, selecting a representative location over the site at Finca Cartagena, over the Cagüitas River, the unnamed ephemeral stream and intermittent streams. Most of the species identified in the site of the proposed project site are presented in Table 2. Please refer to Appendix 6.

Most abundant species identified in the site are presented in Table 1, with its wetland indicator status.

Table 1. Most Abundant species

Species	Indicator status
<i>Brachiaria purpurascens</i>	FACW (Facultative Wetland)
<i>Mimosa ceratonia</i>	FAC (Facultative)
<i>Paspalum virgatum</i>	FACW
<i>Paspalum fasciculatum</i>	FACW
<i>Commelina elegans</i>	UPL (Upland)
<i>Panicum maximum</i>	FACU (Facultative Upland)
<i>Urena lobata</i>	FAC
<i>Solanum torvum</i>	FAC
<i>Inga vera</i>	FAC
<i>Mikania congesta</i>	FACW
<i>Zanthoxylum martinicense</i>	FAC
<i>Inga laurina</i>	FAC
<i>Erythrina fusca</i>	FACW
<i>Casearia sylvestris</i>	FAC
<i>Psidium guajava</i>	FAC
<i>Spathodea campanulata</i>	FACU
<i>Guarea guidonea</i>	FAC
<i>Hymenaea courbaril</i>	FACU
<i>Albizia procera</i>	FAC
<i>Albizia lebbek</i>	FAC
<i>Peltoforum inerme</i>	FAC
<i>Ricinus communis</i>	FAC

Categories of recorded species were determined by using the “National List of Plant Species That Occur in Wetlands: Caribbean (Region C) published by the U.S. Fish and Wildlife Service (1988).

The dominant species of trees identified at the site consist of *Spathodea campanulata*, *Albizia procera*, *Albizia lebbek*, *Zanthoxylum martinicense*, *Peltoforum inerme*, *Guarea guidonea*, *Psidium guajava* and *Casearia sylvestris*. The dominant species of grasses and herbs identified at the site consist of *Panicum maximum*, *Brachiaria purpurascens*, *Paspalum fasciculatum*, *Commelina elegans*, and *Mikania congesta* inside the areas.

The streams areas predominantly consist of riparian vegetation such as *Zanthoxylum martinicense*, *Guarea guidonea*, *Casearia sylvestris*, *Spathodea campanulata*, *Peltoforum inerme*, *Inga Vera*, *Inga laurina*, *Erythrina poeppigiana* and other herbaceous such as *Ludwigia octovalvis*, *Ruellia brittoniana*, *Ricinus communis*, *Brachiaria purpurascens*, *Hymenachne amplexicaulis* and *Echinochloa polystachya*.

3.2.2 Soils

A pre-recognition of the soils present at the site was made by using recorded data. The knowledge of the soil series present was imperative to make the soil samples.

The identification of hydric soils on distributed observation points on leveled terrain, rolling terrain, the gullies, and drainage patterns was made by digging a soil pit and taking core samples with an auger, this due to the presence of clayey and silty soils.

The soil samples were identified by describing its components (mottles, redox channels, gleyed, etc.) within the corresponding depth, and compared with the Munsell Color Chart to obtain data for the chroma, value and hue.

Once an observation point was established, we then proceeded to walk following ascending topography until the soil sampling showed the boundary between wetland and upland areas.

This method was repeated for each observation point, along the boundaries between uplands and wetlands.

Once the condition and properties of the soil boundaries was established, other nearby soil sampling points with similar properties and/or the same/proximate contour elevation were taken under consideration for determination of more refined boundaries between the upland and wetland.

The soil in the project site had some areas mainly composed of fine clay, some areas of compacted clay and other with fill materials. Criteria mentioned in the Manual were used to identify the hydric soils.

Finally, all soil data obtained from the soil profiles was recorded on the corresponding Routine Data Forms.

3.2.3 Hydrology

In the field, visual observations were recorded in the Routine Data Forms. Some of the wetland hydrology indicators observed included flooding, soil saturation observed while digging pits in the root zone on 16 inches, watermarks in trees, drift lines, sediment deposits, water stain leaves, drainage patterns within areas and debris along any surface pattern or ordinary high water mark.

The information available in regards to this indicator was sufficient to determine the existence of wetlands, intermittent streams, and ephemeral streams and its delimitation.

3.3 Boundaries from Wetland and Non Wetland

After careful evaluation of the information presented herein, we propose a delimitation of the boundaries between wetland and non-wetland areas. Please refer to Appendix 1 - Sheet 3 for Preliminary Jurisdictional Determination Over Topography.

4.0 Results and Conclusions

The areas where the proposed project will be located contain waters of the United States, in the form of intermittent streams, drainages, ephemeral streams (creeks and rivers), and wetlands areas at the moment of the assessment and presentation of this Preliminary Jurisdictional Determination.

After evaluation of the field gathered and recorded data for the site, it has been ascertained that the site contains within its boundaries intermittent drainages inside small gullies that are connected to the Cagüitas River. The site also contains an ephemeral stream at the north-west side of the property. Also, the site contains jurisdictional wetland areas at the south of the property adjacent to the Cagüitas River banks.

The data collected at each observation point in the field is included in Appendix 7 (*Data Forms*). Also, please refer to Appendix 1 (Observation Points). Each observation point has been documented with the corresponding Routine Data Form and presents the area characteristics, described next.

As a general characteristic, the soil permeability is moderate, and the available water capacity is low. Runoff is very rapid, and erosion is a hazard. Slippage is common in road banks, ditches, and drainage ways. This soil is difficult to work because of the stickiness and plasticity of the clay.

Please note that an observation in the site is that the surface is very dark grayish brown clay and the subsoil is dark brown clay in the upland areas and near atypical areas. This has been justified by the characteristic of the soil series order.

The presence of ordinary high water marks, drainage patterns, different light intensity of the vegetation, possible distinction of soil surface by removal of vegetation, watermarks in trees, drift lines, sediment deposits, water stain leaves, drainage patterns, debris along any surface pattern, and soil saturation, provided enough evidence to establish the boundaries of the ephemeral streams, drainages and the Río Cagüitas. Please refer to Appendix 1.

The west area of the site is characterized with internal drainage patterns that are hydrologically connected to the Cagüitas River. Vegetation within these areas has been mostly classified as FAC, FACW and UPL. Please refer to Appendix 1.

On the southern part of the site, in the following geographical coordinates, 18° 14' 43.8" N and 66° 03' 55.1 W, we found that this location presents two areas with redox conditions (mostly by the presence of low chroma), mottles, gleyed, redox channels and hydrophytic vegetation. These areas are located to the north bank of the Cagüitas River. The first one has an area of approximately 696 square meters and the second one has an area of approximately 3,409 square meters. The two areas, determined as Jurisdictional Wetlands Areas, have an extension of approximately 4,106 square meters. Please refer to Appendix 1.

The gathered information, actual conditions of the site, surroundings and inside activities, indicates that the original condition of the site has being altered, mostly by agricultural activities of the past decades, and present activities.

The southwest area of the site shows disturbances by anthropogenic activities outside wetland areas by previous constructions of homes, light industrial activities, and other anthropogenic activities. The evidence gathered in the field presents enough information to understand and support that this activities have taken place in these areas. Please refer to Appendix 1.

An area in northwest of the site shows anthropogenic activities by previous soil and rock extraction that present spontaneous vegetation in the area, thus soil samples show disturbance on natural composition and stratification. The vegetation of these areas has being removed and cleared, this is evidenced by physical evidence of heavy equipment tracks, soil piles, and dirty roads with few aggregates were present. Please refer to Appendix 1.

Due to the past agricultural and livestock activities, artificial ponds were constructed, over a five (5) year period, to receive water from uplands and internal drainage for storage. Field evidence shows enough information to determined, that these areas are isolate by lack of surface connection and/or proximity to another jurisdictional area

There is an area towards the southern part of the site, which presents hydric characteristics, close to the grass farming area. The area shows anthropogenic activities and the existing conditions (soil, hydrology and vegetation) presents characteristic of a wetland. The lower parts of the property within this area retain the runoff water from upland due to a dike formed by the presence of the municipal road. Please refer to Appendix 1 and Appendix 7 (Observation Points and Data Forms).

The soil is gleyed, has redox channels and mottles, and emits a sulfide odor. In addition, it was saturated and flooded in some areas, with organic streaking. No connection to surface waters was found; hence, this wetland is determined to be isolated.

In Response to "United States v. James J. Wilson," EPA and the US Department of the Army (Army Corps of Engineers) established the position regarding Clean Water Act jurisdiction over isolated waters on May 29, 1998, to the US Corps of Engineers, regulatory jurisdiction. Artificial ponds, connected drainages and isolated wetland are not included as jurisdictional areas in accordance with applicable regulations (33 CFR 323).

After completion of the Preliminary Jurisdictional Determination we conclude the following:

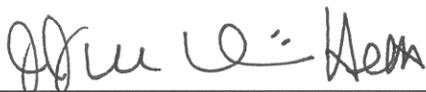
- a) There are two (2) areas identified in drawings as wetland areas that unequivocally present the three (3) indicators related to the identification of a jurisdictional wetland.
- b) The drainages flowing through the southern part of the site to the Caguitas River only contain water flow during storm events and only convey water from uplands into the Caguitas River. These situations render these drainages as non-jurisdictional in accordance with recent guidelines established by the EPA and the USACE based upon de Rapanos-Carabell case. These areas have been identified as streams in the drawings.

5.0 Certification

Research and evaluation prepared by:

Orlando Díaz Díaz
Project Manager

Report review and approval:



José J. Orsini
Partner

3/8/2007

Date

6.0 References

Little, Elbert., Jr.; Wadsworth, F.H. 1964. *Common trees of Puerto Rico and Virgin Islands*. Agric. Handb. 249. Washington DC: U.S. Department of Agriculture, Forest Service. 1024 p. Vol. 2.

National List of Vascular Plant Species that Occur in Wetlands, US Fish and Wildlife Service, 1996.

Soil Survey of the San Juan of Puerto Rico, US Department of Agriculture, Soil Conservation Service, November 1978, Sheets 35 & 36.

University of Puerto Rico (2001) *Guide to Identify Common Wetland Plants in the Caribbean Area: Puerto Rico and The U.S. Virgin Islands*. Editorial de la Universidad de Puerto Rico.

USDA-NRCS Hydric Soil List.

USGS Aguas Buenas Quadrangle, Puerto Rico, 7.5 Minute Series (Topographic), US Geological Survey, 1982.

USGS Caguas Quadrangle, Puerto Rico, 7.5 Minute Series (Topographic), US Geological Survey, 1982.

Yarlett. L.L. 1996 *Common Grasses of Florida and Southeast*. Florida Native Plants Society.

Acevedo-Rodriguez, Pedro (2003). *Vines and Climbing Plants of Puerto Rico and Virgins Islands*, Smithsonian Institution, Washington, DC, October 2003.

Miner-Solá, Edwin (1997). *Trees of Puerto Rico and Exotics*, Printed in Puerto Rico, 2000.

Mas, E., Garcia-Molinari, O. (1990). *El Servicio de Extensión Agrícola del Colegio de Ciencias, Recinto de Mayagüez, Universidad de Puerto Rico en cooperación con el Departamento de Agricultura de los Estados Unidos de América*, 1990.

Miner-Solá, Edwin (1998). *Flowers of Puerto Rico and Exotics*, Printed in Puerto Rico, 1998.

Miner-Solá, Edwin (1999). *Árboles y Plantas en Peligro de Extinción en Puerto Rico*, Printed in Puerto Rico, 1999.

Appendix 1

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Los Farallones</u>	Date: <u>May /22/ 2006</u>
Applicant/Owner: <u>Terramar Development Group</u>	County: <u>Caguas</u>
Investigator: <u>Jesús A. Angleró</u>	State: <u>Puerto Rico</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Finca Cartagena</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>01</u>
(If needed, explain on reverse.)	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Brachiaria puspurascens</u>	<u>G</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Commelina elegans</u>	<u>H</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Mikania congesta</u>	<u>V</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Pistia stratiotes</u>	<u>H</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Solanum torvum</u>	<u>S</u>	<u>FAC</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 3/5 = 60%

Remarks: FAC- Neutral test = 3 wet : 0 non wet

HYDROLOGY

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>0</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	
Remarks: Conditions of weather when observation point was taken, Cloudy.	

SOILS

Map Unit Name (Series and Phase):	<u>Mucara clay</u>	Drainage Class:	<u>Moderate Well Drained</u>
Taxonomy (Subgroup):	<u>Vertic Eutropepts</u>	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions: Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	O	10YR/2/1	---	---	C
4-	A	Gley			

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input checked="" type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input checked="" type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
--	--

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks:

Observation Point was taken in the following geographical coordinates: N 18° 14' 38.8" W 66° 03' 50.0" 6 meters of accuracy taken with GPS Garmin Etrex Legend. Aisolated artificial pond. 50 meters distance from a surface water body.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Los Farallones</u>	Date: <u>May /22 / 2006</u>
Applicant/Owner: <u>Terramar Development Group</u>	County: <u>Caguas</u>
Investigator: <u>Jesús A. Angleró</u>	State: <u>Puerto Rico</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Finca Cartagena</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>02</u>
(If needed, explain on reverse.)	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Colocasia esculenta</u>	<u>H</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Commelina elegans</u>	<u>H</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Brachiaria purpurascens</u>	<u>G</u>	<u>FACW-</u>	11. _____	_____	_____
4. <u>Cleome speciosa</u>	<u>H</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Echinochloa polystachya</u>	<u>G</u>	<u>OBL</u>	13. _____	_____	_____
6. <u>Ipomoea tiliacea</u>	<u>V</u>	<u>FACW</u>	14. _____	_____	_____
7. <u>Hymenachne amplexicaulis</u>	<u>G</u>	<u>OBL</u>	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 5/7 = 71%

Remarks: FAC- Neutral test = 5 wet : 0 non wet

HYDROLOGY

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input checked="" type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>12</u> (in.) Depth to Saturated Soil: <u>2</u> (in.)	
Remarks: <u>Conditions of weather when observation point was taken, Cloudy. Observation Point taken next to river bank.</u>	

SOILS

Map Unit Name (Series and Phase):	<u>Mucara clay</u>	Drainage Class:	<u>Moderate Well Drained</u>
Taxonomy (Subgroup):	<u>Vertic Eutropepts</u>	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	O	7.5YR/6/3	—	—	CS
4-12	A	10YR/3/3	7.5YR/6/6	few, distinct	SC
12-	B	Gley		-	-

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input checked="" type="checkbox"/> Concretions <input checked="" type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input checked="" type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
--	---

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks:

Observation Point was taken in the following geographical coordinates: N 18° 14' 38.3" W 66° 03' 53.7" 5 meters of accuracy taken with GPS Garmin Etrex Legend. Next to river bank.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Los Farallones</u>	Date: <u>May /22/ 2006</u>
Applicant/Owner: <u>Terramar Development Group</u>	County: <u>Caguas</u>
Investigator: <u>Jesús A. Angleró</u>	State: <u>Puerto Rico</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Finca Cartagena</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>03</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Colocasia esculenta</u>	<u>H</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Commelina elegans</u>	<u>H</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Syngonium podophyllum</u>	<u>V</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Spathodea campanulata</u>	<u>T</u>	<u>FACU</u>	12. _____	_____	_____
5. <u>Bidens alba</u>	<u>H</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>Paspalum virgatum</u>	<u>G</u>	<u>FACW-</u>	14. _____	_____	_____
7. <u>Brachiaria puspurascens</u>	<u>G</u>	<u>FACW</u>	15. _____	_____	_____
8. <u>Echinochloa polystachya</u>	<u>G</u>	<u>OBL</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 4 / 8 = 50%

Remarks: FAC- Neutral test = 4 wet : 1 non wet

HYDROLOGY

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input checked="" type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>36</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	
Remarks: Conditions of weather when observation point was taken, Cloudy. Observation Point taken 40 meters from river bank.	

SOILS

Map Unit Name (Series and Phase):	<u>Mucara clay</u>	Drainage Class:	<u>Moderate Well Drained</u>
Taxonomy (Subgroup):	<u>Vertic Eutropepts</u>	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	O	10YR/3/2	---	---	SCL
4-12	A	10YR/3/3	7.5YR/6/6	Few, Faint	CL
12-	B	7.5YR/3/4	7.5YR/6/6	Few, Faint	CL

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors	<input checked="" type="checkbox"/> Concretions <input checked="" type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
---	--

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks:

Observation Point was taken in the following geographical coordinates: N 18° 14' 43.8" W 66° 03' 55.1" 7 meters of accuracy taken with GPS Garmin Etrex Legend.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Los Farallones</u>	Date: <u>May /22/ 2006</u>
Applicant/Owner: <u>Terramar Development Group</u>	County: <u>Caguas</u>
Investigator: <u>Jesús A. Angleró</u>	State: <u>Puerto Rico</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Finca Cartagena</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>04</u>
(If needed, explain on reverse.)	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Mikania congesta</u>	<u>V</u>	<u>FACW</u>	9. <u>Cuphea atrigulosa</u>	<u>H</u>	<u>FAC</u>
2. <u>Bambusa vulgaris</u>	<u>G</u>	<u>FACU</u>	10. <u>Desmodium adscendens</u>	<u>H</u>	<u>FACW</u>
3. <u>Syngonium podophyllum</u>	<u>V</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Spathodea campanulata</u>	<u>T</u>	<u>FACU</u>	12. _____	_____	_____
5. <u>Polygonum punctatum</u>	<u>H</u>	<u>OBL</u>	13. _____	_____	_____
6. <u>Deffenbachia seguine</u>	<u>H</u>	<u>OBL</u>	14. _____	_____	_____
7. <u>Echinochloa pplystachya</u>	<u>G</u>	<u>OBL</u>	15. _____	_____	_____
8. <u>Inga vera</u>	<u>T</u>	<u>FAC</u>	16. _____	_____	_____
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 5/10 = 50%					
Remarks: FAC- Neutral test = 5 wet : 2 non wet					

HYDROLOGY

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input checked="" type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>36</u> (in.) Depth to Saturated Soil: <u>8</u> (in.)	
Remarks: Conditions of weather when observation point was taken, Cloudy. Observation Point taken 5 meters from river bank.	

SOILS

Map Unit Name (Series and Phase):		<u>Mucara clay</u>		Drainage Class:	<u>Moderate Well Drained</u>
Taxonomy (Subgroup):		<u>Vertic Eutropepts</u>		Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	O	10YR/3/2	---	---	SCL
4-12	A	10YR/3/3	7.5YR/6/6	Few, Distinct, Fine	CL
12-	B	7.5YR/3/4	7.5YR/6/6	Few, Distinct, Fine	CL
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol			<input type="checkbox"/> Concretions		
<input type="checkbox"/> Histic Epipedon			<input checked="" type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils		
<input type="checkbox"/> Sulfidic Odor			<input type="checkbox"/> Organic Streaking in Sandy Soils		
<input type="checkbox"/> Aquic Moisture Regime			<input type="checkbox"/> Listed on Local Hydric Soils List		
<input type="checkbox"/> Reducing Conditions			<input type="checkbox"/> Listed on National Hydric Soils List		
<input type="checkbox"/> Gleyed or Low-Chroma Colors			<input type="checkbox"/> Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks: Observation Point was taken in the following geographical coordinates: N 18° 14' 45.1" W 66° 03' 59.3" 23 meters of accuracy taken with GPS Garmin Etrex Legend.	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Los Farallones</u>	Date: <u>May /22/ 2006</u>
Applicant/Owner: <u>Terramar Development Group</u>	County: <u>Caguas</u>
Investigator: <u>Jesús A. Angleró</u>	State: <u>Puerto Rico</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Finca Cartagena</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>05</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Commelina elegans</u>	<u>H</u>	<u>FAC</u>	9. <u>Piper aduncum</u>	<u>T</u>	<u>FACW</u>
2. <u>Roystonea borinquena</u>	<u>T</u>	<u>FAC</u>	10. <u>Miconia prasina</u>	<u>T</u>	<u>FAC</u>
3. <u>Ipomoea tiliacea</u>	<u>V</u>	<u>FACW</u>	11. <u>Vigna luteola</u>	<u>V</u>	<u>FAC+</u>
4. <u>Spathodea campanulata</u>	<u>T</u>	<u>FACU</u>	12. _____	_____	_____
5. <u>Cissus verticillata</u>	<u>V</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>Deffenbachia seguine</u>	<u>H</u>	<u>OBL</u>	14. _____	_____	_____
7. <u>Momordica Charantia</u>	<u>V</u>	<u>FAC</u>	15. _____	_____	_____
8. <u>Guarea guidonea</u>	<u>T</u>	<u>FAC</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC
(excluding FAC-). 3/11 = 27%

Remarks: FAC- Neutral test = 3 wet : 1 non wet

HYDROLOGY

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input checked="" type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>36</u> (in.) Depth to Saturated Soil: <u>4</u> (in.)	
Remarks: Conditions of weather when observation point was taken, Cloudy. Observation Point taken 5 meters from creek bank.	

SOILS

Map Unit Name (Series and Phase):		<u>Mucara clay</u>	Drainage Class:	<u>Moderate Well Drained</u>
Taxonomy (Subgroup):		<u>Vertic Eutropepts</u>	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	O	10YR/3/2	---	---	CL
4-12	A	10YR/3/3	-	-	CL
12-	B	7.5YR/3/4	-	-	CL

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks:
 Observation Point was taken in the following geographical coordinates: N 18° 15' 01" W 66° 03' 56.7"
 53 meters of accuracy taken with GPS Garmin Etrex Legend.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Los Farallones</u>	Date: <u>May /22/ 2006</u>
Applicant/Owner: <u>Terramar Development Group</u>	County: <u>Caguas</u>
Investigator: <u>Jesús A. Angleró</u>	State: <u>Puerto Rico</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Finca Cartagena</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>06</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Commelina elegans</u>	<u>H</u>	<u>FAC</u>	9. <u>Vigna luteola</u>	<u>V</u>	<u>FAC+</u>
2. <u>Inga laurina</u>	<u>T</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Calopogonium caeruleum</u>	<u>V</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Spathodea campanulata</u>	<u>T</u>	<u>FACU</u>	12. _____	_____	_____
5. <u>Dioscorea alata</u>	<u>V</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>Paullinia pinnata</u>	<u>V</u>	<u>FAC+</u>	14. _____	_____	_____
7. <u>Terminalia catappa</u>	<u>T</u>	<u>FAC-</u>	15. _____	_____	_____
8. <u>Guarea guidonea</u>	<u>T</u>	<u>FAC</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 1/9 = 11%

Remarks: FAC- Neutral test = 1 wet : 1 non wet

HYDROLOGY

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>30</u> (in.) Depth to Saturated Soil: <u>4</u> (in.)	
Remarks: Conditions of weather when observation point was taken, Cloudy. Observation Point taken 5 meters from creek bank.	

SOILS

Map Unit Name (Series and Phase): Mucara clay Drainage Class: Moderate Well Drained
 Taxonomy (Subgroup): Vertic Eutropepts Field Observations Confirm Mapped Type? Yes No

Profile Descriptions:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.
0-4	O	10YR/3/2	---	---	CL
4-12	A	10YR/3/3	-	-	CL
12-	B	7.5YR/3/4	-	-	CL

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks:
 Observation Point was taken in the following geographical coordinates: N 18° 15' 00.6" W 66° 03' 57.7"
 26 meters of accuracy taken with GPS Garmin Etrex Legend.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Los Farallones</u>	Date: <u>May /22/ 2006</u>
Applicant/Owner: <u>Terramar Development Group</u>	County: <u>Caguas</u>
Investigator: <u>Jesús A. Angleró</u>	State: <u>Puerto Rico</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Finca Cartagena</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>07</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Commelina elegans</u>	<u>H</u>	<u>FAC</u>	9. <u>Vigna luteola</u>	<u>V</u>	<u>FAC+</u>
2. <u>Colocasia esculenta</u>	<u>H</u>	<u>OBL</u>	10. <u>Piper aduncum</u>	<u>T</u>	<u>FACW</u>
3. <u>Zanthoxylum martinicense</u>	<u>T</u>	<u>FAC</u>	11. <u>Dieffenbachia seguine</u>	<u>H</u>	<u>OBL</u>
4. <u>Spathodea campanulata</u>	<u>T</u>	<u>FACU</u>	12. <u>Miconia mirabilis</u>	<u>T</u>	<u>FACW</u>
5. <u>Andira inermis</u>	<u>T</u>	<u>FACW</u>	13. _____	_____	_____
6. <u>Paullinia pinnata</u>	<u>V</u>	<u>FAC+</u>	14. _____	_____	_____
7. <u>Syngonium podophyllum</u>	<u>V</u>	<u>FAC</u>	15. _____	_____	_____
8. <u>Guarea guidonea</u>	<u>T</u>	<u>FAC</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 5/12 = 42%

Remarks: FAC- Neutral test = 5 wet : 1 non wet

HYDROLOGY

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>30</u> (in.) Depth to Saturated Soil: <u>6</u> (in.)	
Remarks: <u>Conditions of weather when observation point was taken, Cloudy. Observation Point taken 5 meters from creek bank.</u>	

SOILS

Map Unit Name (Series and Phase):	<u>Mucara clay</u>	Drainage Class:	<u>Moderate Well Drained</u>
Taxonomy (Subgroup):	<u>Vertic Eutropepts</u>	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	O	10YR/3/2	---	---	CL
4-12	A	10YR/3/3	-	-	CL
12-	B	7.5YR/3/4	-	-	CL

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input checked="" type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
---	---

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Remarks: Observation Point was taken in the following geographical coordinates: N 18° 15' 00.0" W 66° 04' 01.7" 18 meters of accuracy taken with GPS Garmin Etrex Legend.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Los Farallones</u>	Date: <u>Jun /02/ 2006</u>
Applicant/Owner: <u>Terramar Development Group</u>	County: <u>Caguas</u>
Investigator: <u>Jesús A. Angleró</u>	State: <u>Puerto Rico</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Finca Cartagena</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>08</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Colocasia esculenta</u>	<u>H</u>	<u>OBL</u>	9. <u>Mikania congesta</u>	<u>V</u>	<u>FACW</u>
2. <u>Commelina elegans</u>	<u>H</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Syngonium podophyllum</u>	<u>V</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Mimosa ceratonia</u>	<u>H</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Bidens alba</u>	<u>H</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>Momordica charantia</u>	<u>V</u>	<u>FAC</u>	14. _____	_____	_____
7. <u>Brachiaria puspurascens</u>	<u>G</u>	<u>FACW</u>	15. _____	_____	_____
8. <u>Echinochloa polystachya</u>	<u>G</u>	<u>OBL</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 4 / 8 = 50%

Remarks: FAC- Neutral test = 4 wet : 0 non wet

HYDROLOGY

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input checked="" type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>36</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	
Remarks: <u>Conditions of weather when observation point was taken, Cloudy. Observation Point taken 20 meters from river bank.</u>	

SOILS

Map Unit Name (Series and Phase):		<u>Mucara clay</u>	Drainage Class:	<u>Moderate Well Drained</u>
Taxonomy (Subgroup):		<u>Vertic Eutropepts</u>	Field Observations Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	O	10YR/3/2	---	---	SCL
4-12	A	10YR/3/3	7.5YR/6/6	Few, Faint	CL
12-	B	7.5YR/3/4	7.5YR/6/6	Few, Faint	CL

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input checked="" type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input checked="" type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Los Farallones</u>	Date: <u>Jun /02/ 2006</u>
Applicant/Owner: <u>Terramar Development Group</u>	County: <u>Caguas</u>
Investigator: <u>Jesús A. Angleró</u>	State: <u>Puerto Rico</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>Finca Cartagena</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: _____
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>09</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Paspalum virgatum</u>	<u>G</u>	<u>FACW-</u>	9. <u>Mikania congesta</u>	<u>V</u>	<u>FACW</u>
2. <u>Commelina elegans</u>	<u>H</u>	<u>FAC</u>	10. <u>Wedelia trilobata</u>	<u>H</u>	<u>FAC</u>
3. <u>Cyperus odoratus</u>	<u>G</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Mimosa ceratonia</u>	<u>H</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Bidens alba</u>	<u>H</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>Momordica charantia</u>	<u>V</u>	<u>FAC</u>	14. _____	_____	_____
7. <u>Brachiaria puspurascens</u>	<u>G</u>	<u>FACW</u>	15. _____	_____	_____
8. <u>Echinochloa polystachya</u>	<u>G</u>	<u>OBL</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 5 / 10 = 50%

Remarks: FAC- Neutral test = 5 wet : 0 non wet

HYDROLOGY

<input checked="" type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input checked="" type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input checked="" type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input checked="" type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>6</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	
Remarks: Conditions of weather when observation point was taken, Cloudy. Point taken next to the grass farm.	

SOILS

Map Unit Name (Series and Phase):	<u>Mucara clay</u>	Drainage Class:	<u>Moderate Well Drained</u>
Taxonomy (Subgroup):	<u>Vertic Eutropepts</u>	Field Observations	
		Confirm Mapped Type?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	O	10YR/3/2	—	—	SCL
4-12	A	10YR/3/3	7.5YR/6/6	Few, Faint	CL
12-	B	Gley			

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input checked="" type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input checked="" type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
--	---

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check) Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	(Check) Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
---	---

Remarks:

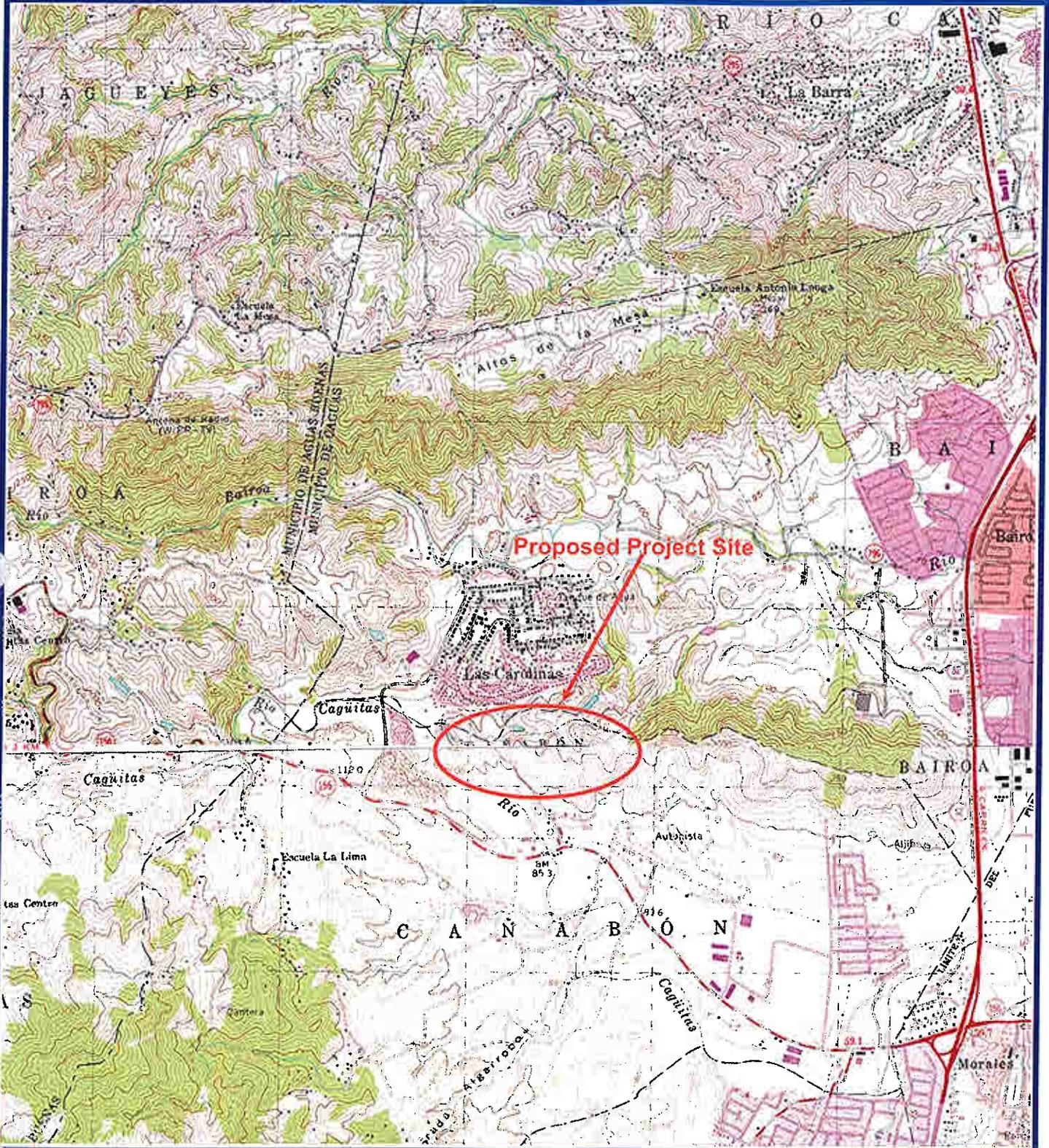
Appendix 2



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Appendix 2. Location Map

Name: **LOS FARALLONES**
Address: **State Road PR-156, km.56.0, Cañabón Ward,
Caguas, Puerto Rico.**



Prepared for: **Terramar Development Group (TDG)**

USGS (Topographic Maps of Puerto Rico, Caguas and Aguas Buenas Quadrangles)

April 2006

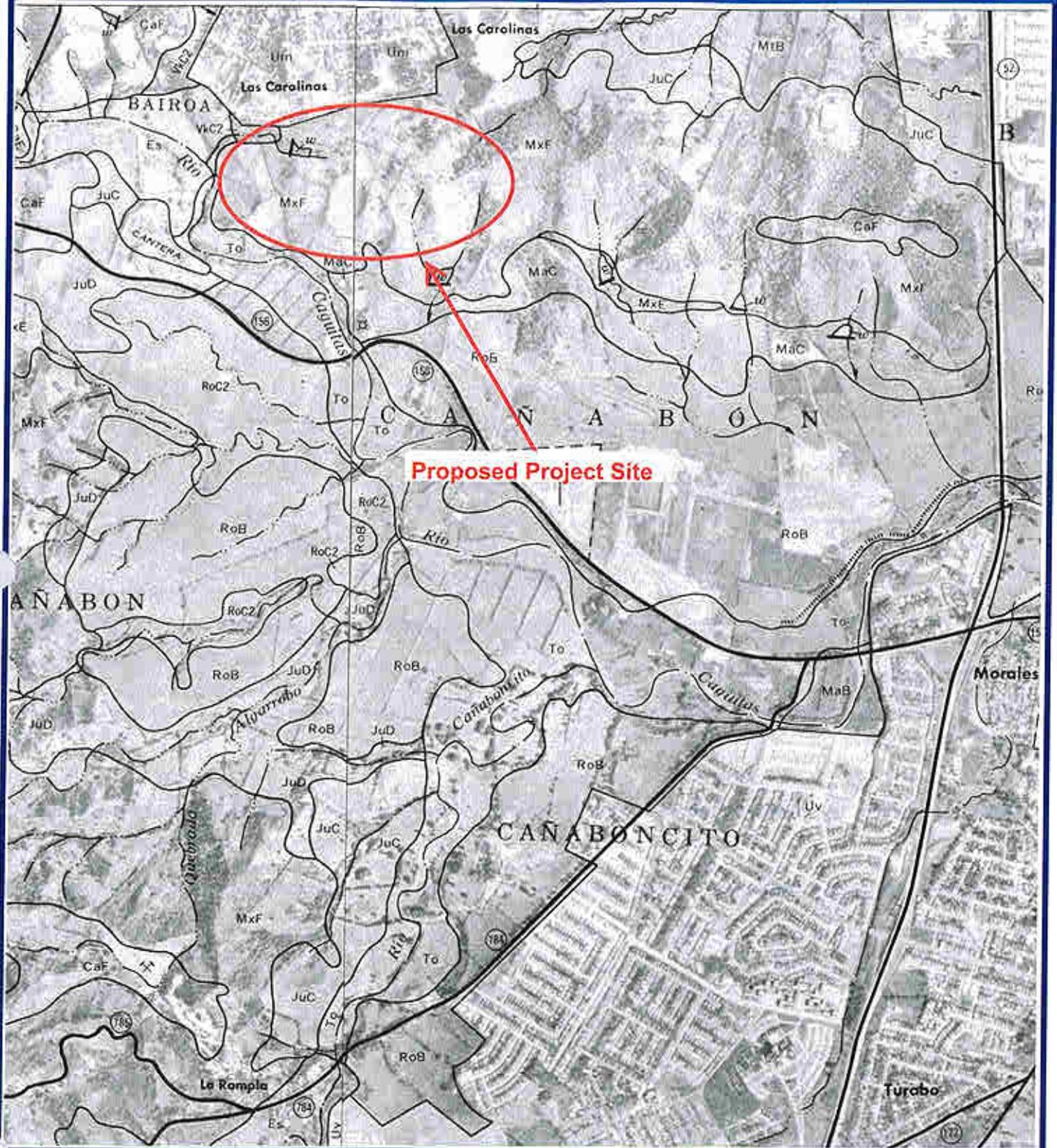
Scale: 1: 20,000

Appendix 3



Appendix 3. Soil Map

Name: Los Farallones
Address: State Road PR-156, km.56.0, Cañabón Ward, Caguas, Puerto Rico.



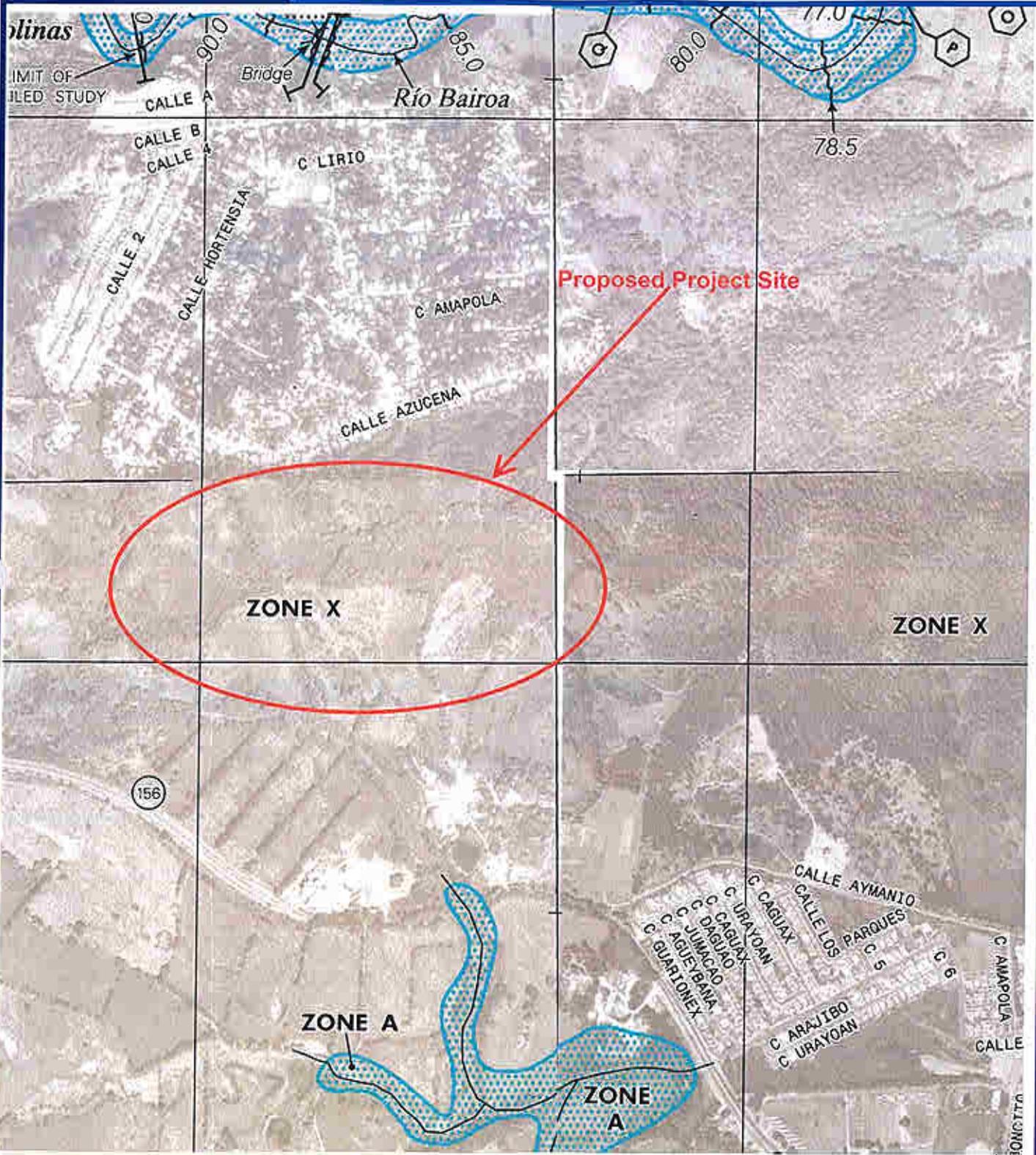
Appendix 4



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Appendix 4. Flooding Map

Name: **LOS FARALLONES**
Address: **State Road PR-156, km. 56.0, Cañabón Ward, Caguas, Puerto Rico.**

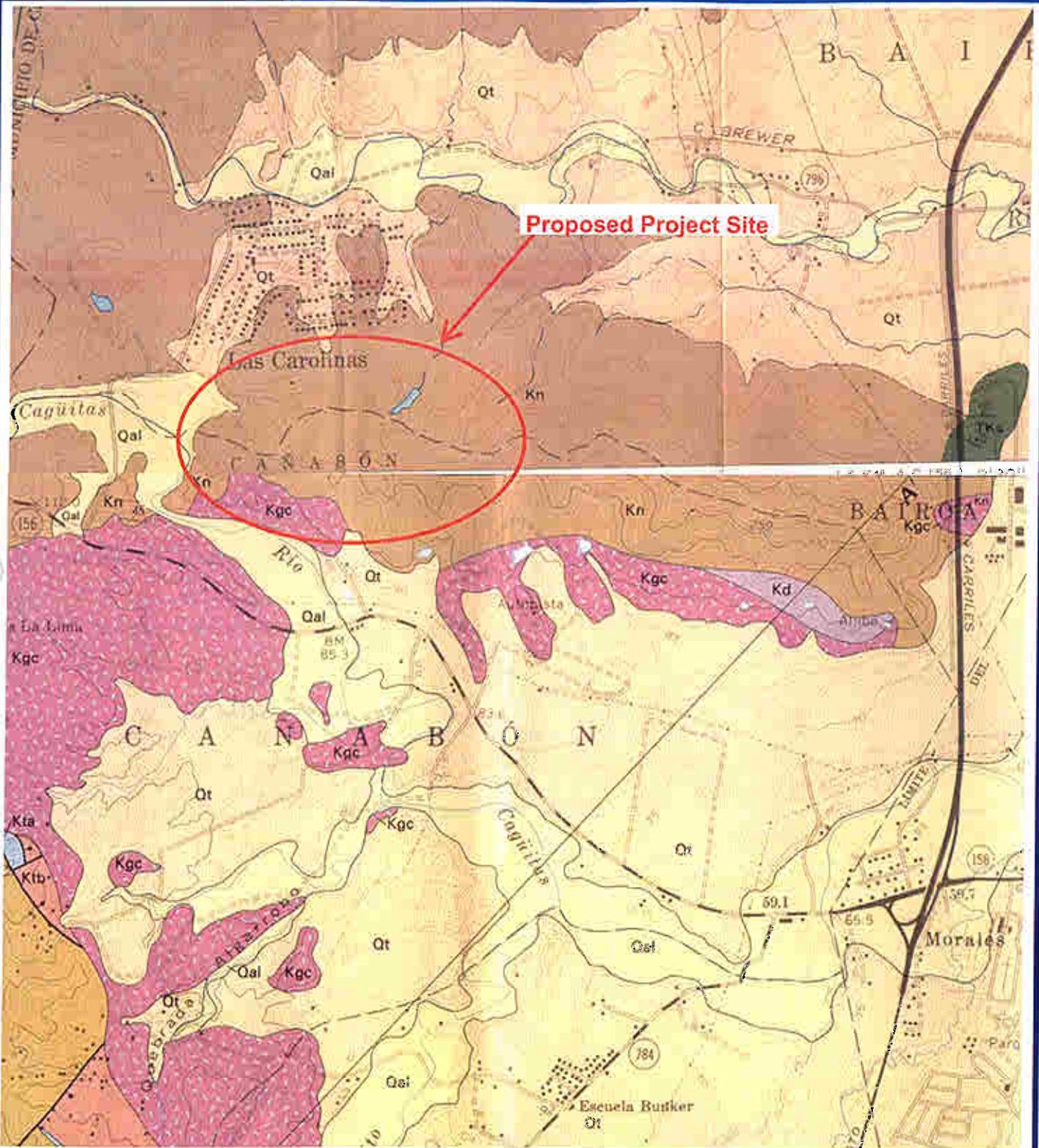


Appendix 5



Appendix 5. Geological Map

Name: LOS FARALLONES
Address: State Road PR-156, km. 56.0, Cañabón Ward,
Caguas, Puerto Rico.



Prepared for: Terramar Development Group (TDG)
USGS (Geological Map Quadrangle de Aguas Buenas y Caguas)

April 2006
Not to Scale

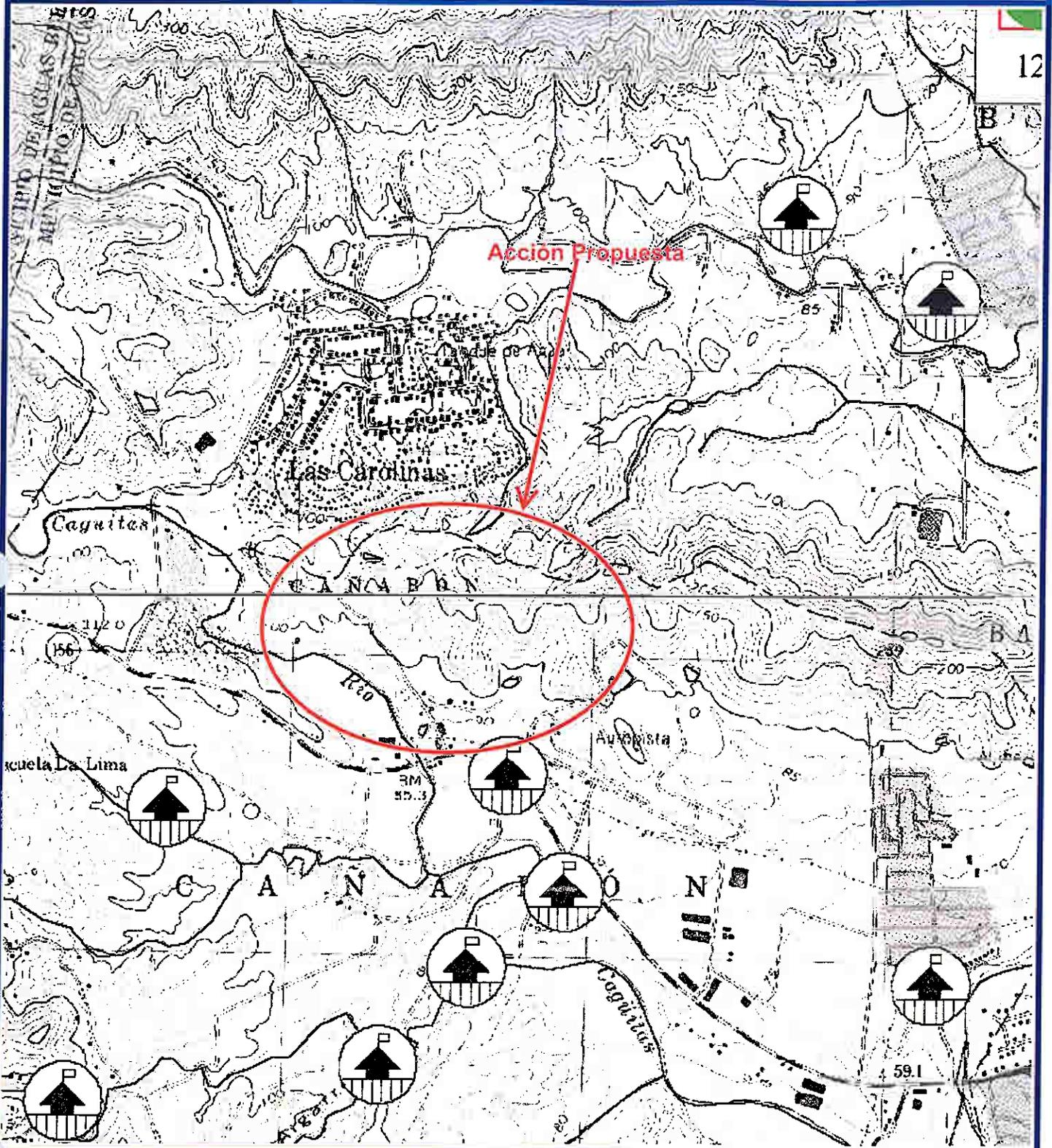
Appendix 6



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Appendix 6. Environmental Sensitivity Index

Nombre: **LOS FARALLONES**
Dirección: **Carretera Estatal PR-156, Km. 56.0, Barrio Cañabon, Caguas, Puerto Rico.**



Preparado para: **Terramar Development Group (TDG)**
ESIMAP 38 and 24

Abril 2006
No a Escala

Appendix 7

Table 2. Identified vegetation within the boundaries of the site.

Common Name	Scientific Name	Common Name	Scientific Name
Trees			
Acacia amarilla	<i>Albizia Lebbek</i>	Tulipán Africano	<i>Spathodea campanulata</i>
Guayaba	<i>Psidium guajava</i>	Pomarrosa	<i>Eugenia jambos</i>
Camasey	<i>Miconiia mirabilis</i>	Uvilla	<i>Cocoloba diversifolia</i>
Roble Nativo	<i>Tabebuia Heterophylla</i>	Ucar	<i>Bucida buceras</i>
Palma Real	<i>Roystonea borinquena</i>	Guacimilla	<i>Trema micrantha</i>
Almendro	<i>Terminalia catappa</i>	Maga	<i>Thespesia grandiflora</i>
María	<i>Calophyllum brasiliense</i>	"Fiddle leaf fig"	<i>Ficus lyrata</i>
Teca	<i>Tectona grandis</i>	Pendula	<i>Citharexylum fruticosum</i>
Limón	<i>Citrus limon</i>	Mariposa	<i>Bauhinia monandra</i>
Adonidia	<i>Veitvhia merrilli</i>	Quenepa	<i>Melicoccus bijugatus</i>
Yagrumo Hembra	<i>Cecropia peltata</i>	Yagrumo Macho	<i>Schefflera morototoni</i>
Pterocarpus	<i>Pterocarpus indicus</i>	Espino rubial	<i>Zanthoxylum martinicense</i>
Reina de las Flores	<i>Lagerstroemia speciosa</i>	Capa prieto	<i>Cordia alliodora</i>
Mango	<i>Mangifera indica</i>	Guaraguao	<i>Guarea guidonea</i>
Hoja Menuda	<i>Eugenia rhombea</i>	China	<i>Citrus sinensis</i>
Bucayo Gigante	<i>Eri-trina poeppigiana</i>	Jusillo	<i>Calycogonium</i>
Cafeillo	<i>Casearia sylvestris</i>	Ceiba	<i>Ceiba pentandra</i>
Toronja	<i>Citrus paradisi</i>	Laurel Amarillo	<i>Nectandra turbacensis</i>

Continuation Table 2. Identified vegetation within the boundaries of the site.

Ficus	<i>Ficus benjamina</i>	Clavelina	<i>Caesalpinia pulcherrima</i>
Moca	<i>Andira inermis</i>	Tostado	<i>Casearia decandra</i>
Guamá americano	<i>Pithecellobium</i>	Higuillo	<i>Piper aduncum</i>
Flamboyán	<i>Delonix regia</i>	Camasey	<i>Miconia prasina</i>
Algarrobo	<i>Hymenaea courbaril</i>	Tamarindo	<i>Tamarindos indica</i>
Bucare	<i>Eritrina furca</i>	Cafeillo	<i>Casearia sylvestris</i>
Calambreña	<i>Cocoloba venosa</i>	Peronías	<i>Adenantha pavonina</i>
Guara	<i>Cupania americana</i>	Corcho	<i>Guapira fragrans</i>
Bambú	<i>Bambusa vulgaris</i>	Guamá	<i>Inga laurina</i>
Palo Blanco	<i>Casearia guianensis</i>	Papaya	<i>Carica papaya</i>
Camasey peludo	<i>Heterotrichum</i>	Pana de Pepita	<i>Artocarpus altilis</i>
Morinda	<i>Morinda citrifolia</i>	Flamboyán Amarillo	<i>Peltophorum</i>
Caimito	<i>Chrysophillum</i>	Guaba	<i>Inga vera</i>
Higüero	<i>Crescentia cujete</i>	Laurel de Benjamina	<i>Ficus benjamina</i>
Rabo ratón	<i>Casearia arborea</i>	Palma de Coco	<i>Cocos nucifera</i>
Mata-ratón	<i>Gliricidia sepium</i>	Gaeta	<i>Trichilia pallida</i>
Maricao	<i>Byrsonima spicata</i>	Guano	<i>Ochroma pyramidale</i>
Cupey	<i>Clusia rosea</i>	Limón de Cabro	<i>Citrus limon</i>
Tartago	<i>Jatropha curcas</i>	Pomarrosa rosada	<i>Eugenia malaccense</i>
Corazón	<i>Anona reticulata</i>	Schefflera	<i>Shefflera actinophylla</i>
Moral	<i>Cordia sulcata</i>		

Continuation Table 2. Identified vegetation within the boundaries of the site.

Herbaceous & Grasses			
Yerba Pangola	<i>Digitaria insularis</i>	Moriviví	<i>Mimosa púdica</i>
Quinino de Pasto	<i>Leonotis nepetifolia</i>	Cohitre Azul	<i>Commelina elegans</i>
Coquí Blanco	<i>Rhynchospora Nervosa</i>	Cardo	<i>Cirsium mexicanum</i>
Bejuco de estrella	<i>Pedilanthus tithymaloides</i>	Cadillo	<i>Pavonea fructicosa</i>
Margarita Blanca	<i>Bidens cynapifolia</i>	Clavelillo rojo	<i>Emilia fosbergii</i>
Orégano	<i>Lippia micromera</i>	Yerba Caimán	<i>Alternanthera philoxeroides</i>
Latiros del Pasto	<i>Macroptilium lathyroides</i>	Zarabacoa común	<i>Desmodium incanum</i>
Malanga	<i>Colocassia esculenta</i>	"No name"	<i>Piper glabreccens</i>
Verdolaga Francesa	<i>Talinum triangulare</i>	Cariaquillo	<i>Lantana involucrata</i>
"No Name"	<i>Parthenium hysteroporus</i>	LAGU	<i>Lagenocarpus guianensis</i>
Matraca	<i>Crotalaria falcata</i>	Matraca	<i>Crotalaria retusa</i>
Yerba Socialista	<i>Vernonia cinerea</i>	No name	<i>Oxalis barrelieri</i>
Isabel Segunda	<i>Plumbago auriculata</i>	CYOD	<i>Cyperus odoratus</i>
Jacinto	<i>Eichhornia crassipes</i>	Trébol de Agua	<i>Nymphoides indica</i>
A las doce me Voy	<i>Ruellia brittoniana</i>	"No name"	<i>Cuphea atrigulosa</i>
"No name"	<i>Desmodium adscendens</i>	Eclipta Blanca	<i>Eclipta prostrata</i>
Sacabuche	<i>Physallis angulata</i>	"No name"	<i>Dissotis rotundifolia</i>
Maní	<i>Araschis hipogea</i>	Many-Roots	<i>Ruellia tuberosa</i>

Continuation Table 2. Identified vegetation within the boundaries of the site.

Margarita Amarilla	<i>Wedelia trilobata</i>	Pancha	<i>Tridax procumbens</i>
"no name"	<i>Elephantopus mollis</i>	Palanca de Cangrejo	<i>Heliconia humilis</i>
"No name"	<i>Spermacoche sp.</i>	Verdolaga de Abrojo	<i>Kallstroemia maxima</i>
Ají pico de paloma	<i>Capsicum spp</i>	Yerba de Clavo	<i>Ludwigia octovalvis</i>
"No name"	<i>Odontonema cuspidatum</i>	Yerba Venezolana	<i>Paspalum fasciculatum</i>
Yerba jicotea	<i>Polygonum</i>	Lechuga de Agua	<i>Pistia stratiotes</i>
Arrocillo	<i>Echinochloa colonum</i>	Romerillo	<i>Bidens alba</i>
Cypo	<i>Cyperus polystachyos</i>	Malojilla	<i>Eriochloa polystachya</i>
Pata de Gallina	<i>Eleusine indica</i>	Guinea	<i>Panicum maximum</i>
Dama de día	<i>Cestrum diuumum</i>	"No name"	<i>Kyllinga brevifolia</i>
Maraca roja	<i>Canna glauca</i>	Malojillo	<i>Brachiaria purpurascens</i>
Matojo de Burro	<i>Sporobolus indicus</i>	"Tropical fimbry"	<i>Fimbristylis cymosa</i>
Rábano cimarrón	<i>Dieffenbachia seguine</i>	Cotorera de playa	<i>Heliotropium curassavicum</i>
Yerba de Río	<i>Echinochloa polystachya</i>	Trompetilla	<i>Hymenachne amplexicaulis</i>

Continuation Table 2. Identified vegetation within the boundaries of the site.

Vines			
Bejuco de Puerco	<i>Ipomoea tiliacea</i>	Batatilla Blanca	<i>Merremia quinquefolia</i>
Guaco Falso	<i>Mikania congesta</i>	Cundeamor	<i>Momordica charantia</i>
Aguinaldo Amarillo	<i>Ipomoea polyanthes</i>	Bejuco de Caro	<i>Cissus verticillata</i>
Bejuco de Costilla	<i>Paullinia pinnata</i>	Bellísima	<i>Antigonon guatemalense</i>
Chicharos	<i>Lablab purpureus</i>	Oreja de Ratón	<i>Cissampelos preira</i>
Flor de Conchita	<i>Centrosema virginianum</i>	Flor de Luna	<i>Ipomoea violacea</i>
Flor de Pito	<i>Centrosema pubescens</i>	Frijol silvestre	<i>Vigna luteola</i>
Ñame	<i>Dioscorea alata</i>	"no name"	<i>Syngonium podophyllum</i>
Picapica	<i>Mucuna pruriens</i>	"No name"	<i>Ipomoea calantha</i>
"No name"	<i>Ipomoea hederifolia</i>	Gloria de la Mañana	<i>Ipomoea setifera</i>
Parcha	<i>Passiflora edulis</i>	"No name"	<i>Macroptilium atropurpureum</i>
Crosandra	<i>Crossandra infundibuliformis</i>	"No name"	<i>Calopogonium caeruleum</i>
Tortera o Pica-Pica	<i>Mucuna urens</i>	Calabaza	<i>Cucúrbita moschata</i>

Continuation Table 2. Identified vegetation within the boundaries of the site.

Shrubs			
Bermeja Cimarrona	<i>Solanum torvum</i>	Zarza	<i>Mimosa ceratonia</i>
"No name"	<i>Senna spectabilis</i>	Café de la india	<i>Muralla paniculata</i>
Gandul	<i>Cajanus cajan.</i>	Amapola	<i>Hibiscus rosa</i>
Rabo de gato	<i>Acalypha hispida</i>	Jengibre de Jardín	<i>Alpina purpurata</i>
Volantines Preciosos	<i>Cleome speciosa</i>	Higuereta	<i>Ricinus communis</i>
Bejuco de Paloma	<i>Trichostigma octomdrum</i>	"no name"	<i>Urena lobata</i>
Mimosa Negra	<i>Mimosa pigra</i>	Mimosa	<i>Mimosa pellita</i>
Tintillo	<i>Randia aculeata</i>	Indio	<i>Erythroxylon brevipes</i>
Anamú	<i>Pitiveria alliacea</i>	"No Name"	<i>Urena Sp.</i>
Malvavisco	<i>Malachra urens</i>	Talantro	<i>Senna alata</i>
"No name"	<i>Senna bicapsularis</i>	Tuatúa	<i>Jatropha gossyfolia</i>
Guineo	<i>Musa paridasiaca</i>	Heliconia	<i>Heliconia humilis</i>

Appendix 8

Apéndice 8. Acuíferos

Nombre: LOS FARALLONES
Dirección: Carretera Estatal PR-156, km. 56.0, Barrio Cañabon, Caguas, Puerto Rico.

Figure 80. Alluvium that fills valleys incised into bedrock in the interior and coastal areas of Puerto Rico forms small aquifers that are locally important for industrial, municipal, and domestic supplies.



EXPLANATION

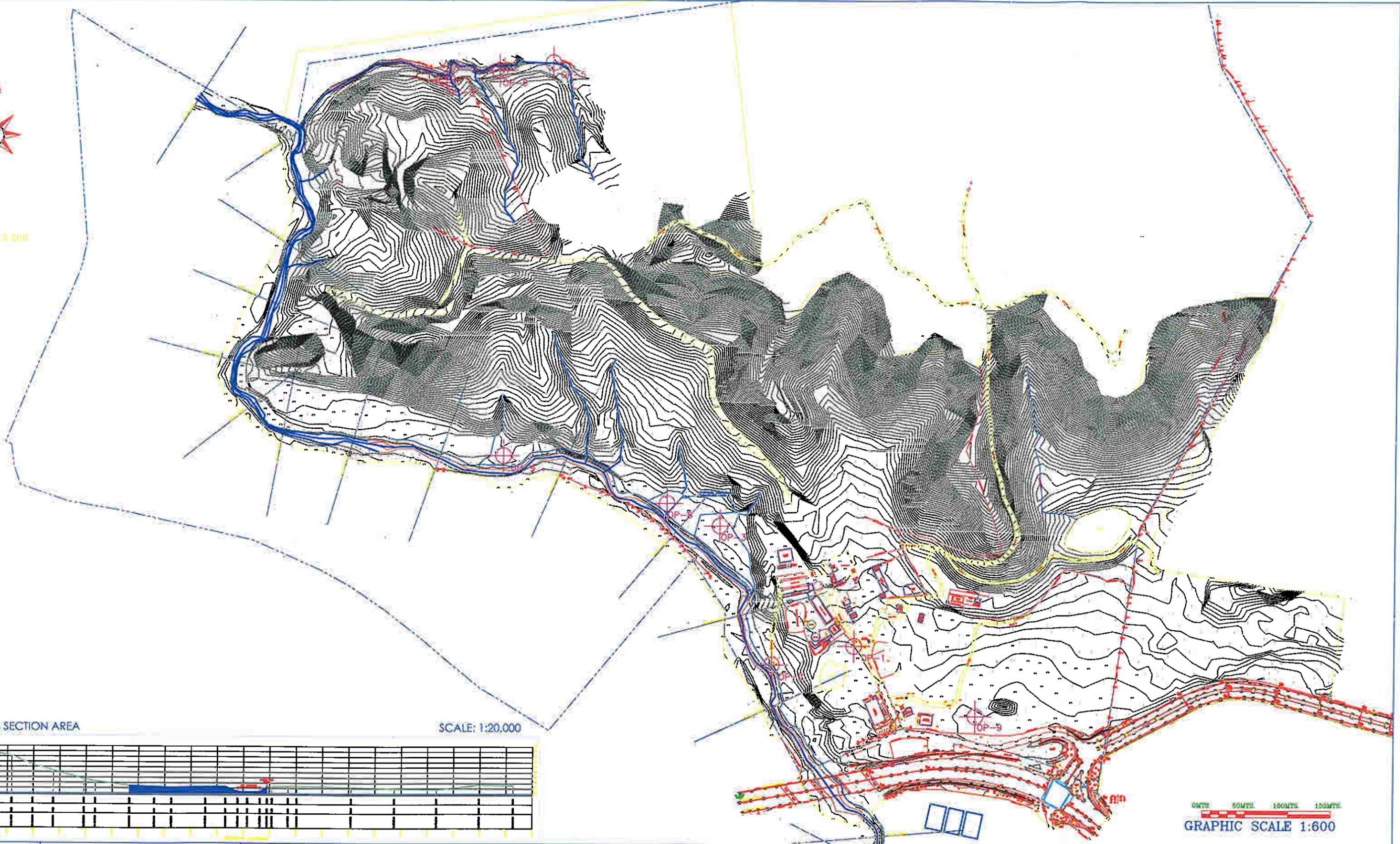


Alluvial valley aquifers	J	Yabucoa Valley
A	K	Maunabo valley
B	L	Cayey valley
C	M	Río Tallaboa valley
D	N	Río Yauco and Guayanilla valley
E	O	Río Loco valley (Guánica area)
F	P	Lajas Valley
G	Q	Río Guanajibo Valley
H	R	Río Grande Añasco Valley
I	S	Río Culebrinas valley

Base modified from U.S. Geological Survey digital data

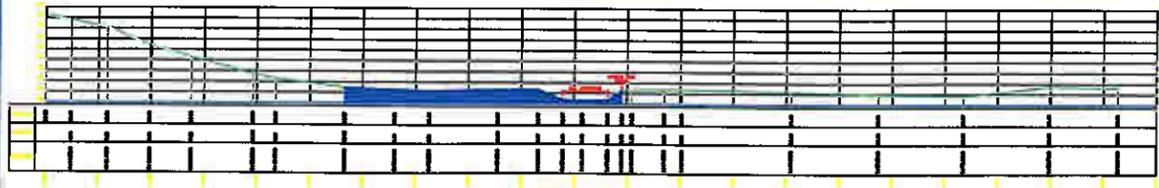


SCALE 1:2,500



CROSS SECTION AREA

SCALE: 1:20,000



0MYS 50MYS 100MYS 150MYS
GRAPHIC SCALE 1:600

REV	DATE	DESCRIPTION
	16/06/06	FINAL FIELD VISITS

OBSERVATION POINTS

ORIGINAL SURVEYING PLAN FROM P.J.D.C., INC PROFESSIONAL SURVEYORS. NO MATHEMATICS OR GEOMETRIC DATA WAS MODIFIED FROM ITS ORIGINAL VERSION.

PREPARED BY:

 REVISED BY:
 DATE:
 04/04/06

PRELIMINARY JURISDICTIONAL DETERMINATION

PREPARED FOR:
 TERRAMAR DEVELOPMENT GROUP (TDG)
 PO Box 190941, San Juan, PR. 00919

SUBMITTED TO:
 U.S. CORPS OF ENGINEERS

LOS FARALLONES

CARRETERA PR-156, KM 56.0, SECTOR CAÑABON, MUNICIPIO DE CAGUAS, PUERTO RICO

CONTRACT NUMBER	
DRAWING NO.	REV.
SCALE:	1:600
SHEET	2 of 3

