Preliminary Jurisdictional Determination for the proposed project
Urbanización Monte Sierra
Barrio Caracoes
Mayagüez, Puerto Rico

Prepared for
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Caguas, PR 00725

Prepared by
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April 2007
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APPENDIX II: FIELD DOCUMENTATION:
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I. INTRODUCTION

1. Site Location and Description

Proposed residential project "Monte Sierra" is located in Quebrada Grande Ward of the Municipality of Mayagüez. This is situated south of Kilometer 1.1 of State Road PR-349. Figure 1: Location Map presents the lot position in the Mayagüez and Rosario USGS Topographic Quadrangles. The parcel estimated area is about 59.33 acres.

Topographically wise, the proposed project site is located in the hills located on the outskirts of the town of Mayagüez. Site elevations ranges from 50 to 160 meter above sea level, slopes are moderately steep, about 20 to 40 percent. Site is almost all forested, especially along the ravine and gullies that drain upland runoff. The existing relatively permanent topographic conditions constitute the "normal circumstances" for the purpose of the 404 jurisdiction.

![Figure 1: Location Map](image)

Preliminary Jurisdictional Determination
Urbanización Monte Sierra
Barrio Caracoles
Mayagüez, Puerto Rico
2. Purpose

Recognizing the potential for continued or accelerated degradation of the Nation's waters, the U.S. Congress enacted the Clean Water Act (hereafter referred to as the Act), formerly known as the Federal Water Pollution Control Act (33 USC 1344). The objective of the Act is to maintain and restore the chemical, physical, and biological integrity of the waters of the United States. Section 404 of the Act authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into the water of the United States, including wetlands. In Puerto Rico, the office responsible for overseeing and enforcing compliance with the Act is the Antilles Regulatory Section, Antilles Office, Jacksonville District, Corps of Engineers.

The purpose of this Jurisdictional Determination is to establish whether or not the proposed project site has wetland features the purpose of Section 404 of the Clean Water Act, and attempting to classify it by wetland type according to 1999 Cowardin's wetland classification.

3. Methodology

The methodology used for this Wetlands Delineation Study is based on the procedures contained in the Wetlands Delineation Manual issued by the Unites States Corps of Engineers (Final Report dated January 1987).

Based on the low level of complexity and the scarce quantity and quality of available information for the area in question, a Level 3 "routine" approach was selected using primarily qualitative procedures.

Because the projected area is situated on moderately steep hills with ravines and upland drainage gullies, a series of sampling point were established on those ravines and gullies that could present mandatory technical criteria. A total of four (4) sampling points were randomly located along the low areas of the ravines. Sampling points are identified in the study design map submitted. The fieldwork was conducted on March 11, 2007.
II. ENVIRONMENTAL INFORMATION

1. Climate

The study area is located within the subtropical humid ecological lifezone. In the Mayagüez Area, as in most of Puerto Rico, there is only a small variation each year from the average temperature. Mean daily maximum temperature ranges from 86.1° F in January to 90.2° F in August along the coast. The mean daily minimum temperature varies from 63.3° F in March to 70.9° F in August. Average relative humidity in mid afternoon is about 69% along the coast. Humidity is higher at night, and the average at dawn is about 80 percent. Except during January and February, days are warm yearlong and nights are warm throughout the year.

Much of the rainfall is orographic and is produced by the lifting of moist trade winds over interior ridges. The rainfalls as brief showers that are frequently moderate to heavy, especially in the period May through November, being the period between December thru April the driest (Figure 2). The average precipitation ranges from 1.17 inches in February to 14.77 inches in September, averaging 65.9 inches. The dry season occurs during the period of December through March. Precipitation data for the central northern coast of Puerto Rico are given on Table 1.

Figure 2: Annual Precipitation Data from the Mayagüez Airport
(Based on data for the period of 1998-2005)
<table>
<thead>
<tr>
<th>Year</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Annual Precipitation @ Mayaguez Airport</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>1.30</td>
<td>2.49</td>
<td>6.58</td>
<td>2.62</td>
<td>4.18</td>
<td>9.71</td>
<td>16.28</td>
<td>12.88</td>
<td>5.40</td>
<td>0.50</td>
<td>0.84</td>
<td>2.46</td>
<td>8.29</td>
</tr>
<tr>
<td>2000</td>
<td>1.30</td>
<td>1.54</td>
<td>4.21</td>
<td>3.50</td>
<td>9.18</td>
<td>6.84</td>
<td>13.52</td>
<td>18.45</td>
<td>9.52</td>
<td>6.56</td>
<td>2.75</td>
<td>2.37</td>
<td>0.82</td>
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<tr>
<td>2001</td>
<td>7.74</td>
<td>16.72</td>
<td>23.22</td>
<td>16.72</td>
<td>19.33</td>
<td>1.09</td>
<td>2.73</td>
<td>3.58</td>
<td>1.19</td>
<td>1.17</td>
<td>0.16</td>
<td>6.96</td>
<td>18.07</td>
</tr>
<tr>
<td>2002</td>
<td>4.14</td>
<td>3.68</td>
<td>10.73</td>
<td>10.82</td>
<td>10.09</td>
<td>6.09</td>
<td>3.06</td>
<td>5.60</td>
<td>5.56</td>
<td>4.38</td>
<td>2.98</td>
<td>6.09</td>
<td>9.07</td>
</tr>
<tr>
<td>2003</td>
<td>0.54</td>
<td>0.62</td>
<td>0.32</td>
<td>0.20</td>
<td>0.14</td>
<td>0.19</td>
<td>0.25</td>
<td>0.20</td>
<td>0.19</td>
<td>0.32</td>
<td>0.62</td>
<td>0.54</td>
<td>0.08</td>
</tr>
<tr>
<td>2004</td>
<td>3.55</td>
<td>5.73</td>
<td>5.32</td>
<td>8.42</td>
<td>6.45</td>
<td>8.22</td>
<td>7.74</td>
<td>6.29</td>
<td>4.88</td>
<td>3.22</td>
<td>1.19</td>
<td>0.01</td>
<td>1.70</td>
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<tr>
<td>2005</td>
<td>0.92</td>
<td>0.33</td>
<td>0.15</td>
<td>3.37</td>
<td>9.73</td>
<td>7.32</td>
<td>12.84</td>
<td>11.99</td>
<td>4.38</td>
<td>3.82</td>
<td>2.98</td>
<td>0.68</td>
<td>5.60</td>
</tr>
<tr>
<td>Total</td>
<td>1.32</td>
<td>1.77</td>
<td>1.17</td>
<td>2.25</td>
<td>8.43</td>
<td>12.86</td>
<td>7.70</td>
<td>13.99</td>
<td>13.79</td>
<td>13.61</td>
<td>13.23</td>
<td>12.04</td>
<td>20.04</td>
</tr>
</tbody>
</table>

**Notes:**
- Based on data for the period of 1998-2005.
- Table 1: Annual Precipitation Data from the Mayaguez Airport
2. Geology

There are four major lithologically distinct rock groups present in the Mayagüez region. They are: the Bermeja Complex of Jurassic to Early Cretaceous age; a suite of volcanic, volcaniclastic, plutonic, and sedimentary rocks of Late Cretaceous age; limestone formations of Late Cretaceous age; and alluvial deposits of Quaternary age. The Bermeja Complex of Jurassic to Early Cretaceous age (Montgomery and others, 1994) consists primarily of serpentinite, amphibolite, basalt, and chert. It is highly deformed and metamorphism has destroyed most primary textures, bedding, and lithological relations. It is most extensively exposed in the southwestern part of the Mayagüez region.

III. WETLAND INDICATORS

Wetlands have the following general diagnostic environmental characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology. Evidence of a minimum of one positive wetland indicator from each parameter must be found in order to make a positive wetland determination.

1. Vegetation

For the purpose of Corps of Engineers Wetland Delineation Manual (Tech. Report Y-87-1), hydrophytic vegetation is defined as the sum of the total macrophyte plant life that grows in water, soil or substrate that is at least periodically deficient in oxygen as result of excessive water content.

Site vegetation consists of more than one plant associations. Therefore, as mandatory we are taking into consideration plant species dominance among other parameter in order to determine jurisdiction. Relative dominant plant species were selected independently from each stratum (upper canopy layer, understory layer, shrub and tall herbs layer, and the ground cover layer) of the plant community. For each stratum of a particular plant community, dominant species are to the most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceed 50 percent of the total dominance measure for the stratum, in addition to any other species comprising 20 percent or more of dominance measure for the stratum (50/20 rule). Various measures were used to express the relative dominance of the plant species for each particular plant community:

- Estimating those species having the greatest relative basal area for the tree stratum;
- Percent of aerial cover for herbs stratum;
- Stem density for shrubs and/or saplings and woody vines stratum;
- Frequency of occurrence (percentage of sampling points that contain the species of interest).

For determination purposes, vegetation samples were done visually, using one or more of the plant dominance measurements described above.

Mostly tress, woody vines, and tree saplings and shrubs dominate the study area. Among the identified woody species surveyed along the forested ravines were recognized the presence of, in the main, of species characteristic of stationary formations, in particular evergreen and deciduous stationeries associations, typical of serpentine forest ranges of western Puerto Rico.

On most surveyed areas, the forest was organized on two (2) stratums, with some deciduous trees such as *Hymanea curbaril*, *Cecropia peltata*, and *Andira inermis* in the canopy stratum, and *Myrcia spendens*, *Syzygium jambos*, *Licaria salicifolia*, and *Casearia sylvestris* in the forest understory. Ground cover was dominated chiefly by *Piper aduncum*, *Ichnanthus paliens* *Teiostachya alopecuroidea*, *Deffenbachia seguine* and *Thelyptis poiteana*. These last two species, which are hydrophytes, are readily found on the basin of the intermittent creek and other wet places found along the ravines and/or gullies.

2. Soils

The soils parameter must be considered in any plant community in which: the community is dominated by one or more FAC species; no community type dominated by OBL species is present; the boundary between wetlands and nonwetlands is gradual or non-distinct; and the area is known to or is suspected of having, significantly altered hydrology. The Natural Resources Conservation Service of the United States Department of Agriculture lists the soils observed in the proposed mitigation area as hydric and non-hydric, but does support the growth of hydrophytes.

According to the Soil Survey of Mayagüez Area of Western Puerto Rico (Sheet No. 46), do not indicate a particular type or association of soils for the site. Instead indicates that the site soils are classified as "Serpentine outcrop (So)", which are areas where 75 to 100 percent of the soil surface are cover by a serpentine outcrops. The slope ranges from 0 to 60 percent. In accordance to the Natural Resources...
Conservation Service, 80% of the proposed area is of this type of soil. See Figure 3.

Some irregularly shaped areas not covered by the outcrop, which consist of gravelly or cobbly soil materials are five inches (5) thick and soil color are red, black, or reddish brown. In few places there are pockets of red or black soils between the outcrops. This type of soil was particularly observed on the intermittent riverbed.

These red or reddish-brown soils use to contain a great portion of iron oxides (derives from primigenital rocks) that have not been exposed to excessive humidity. Therefore, in general the red color indicates that these soils are well drained.

Other types of mapped soil unit are found on lesser amount were Mucara clay, 20 to 40% slopes, eroded (MxF2) and Rosario clay, 20 to 40% slopes, eroded (RSE2). Mucara soil series consist of moderately deep, well drained, and moderately permeable. These soils are found on strongly dissected side slopes and narrow ridgetops throughout volcanic uplands.

In a representative soil profile the surface layer is about six (6) inches thick and very dark grayish brown in color. The subsoil, to a depth to 12 inches, is very dark grayish brown to brown in color. The substratum is highly weathered volcanic rock. The depth to the consolidated rock is to about 22 inches.

These soils are very affected by erosion thus they are not suitable for cultivation. Their used are restricted to grazing, woodland, or wildlife habitat. Most of the site's acreage is forested.

Rosario soil series consist of moderate deep, well drained, and moderately permeable soils. These are formed from weathered serpentine rock. The slope ranges from 12 to 60 percent.

In a representative soil profile the surface layer about six (6) inches thick is dusky red. The subsoil is to about 22 inches deep, is dusky red to dark red slightly sticky and slightly plastic that is abruptly underlain by consolidated seprinite rock.

Generally, these soils are not suited for cultivation. Their used are limited for untamed pastures, woodlands, or wildlife habitat. Slope, past erosion, shallow root zone, available water capacity, low fertility are limitations.
3. Hydrology

Wetland hydrology refers to the presence of water either above the soil surface or within the soil for a sufficient period of time during the year, so that it would significantly influence the plant types and soil that occur in a particular area.

Site wetland hydrology is limited to the intermittent creek channel. It is strongly influenced mainly by the surface flow. Other factors such as precipitation, and groundwater discharge may contribute to the wetland hydrology. The wetland hydrologic characteristic is that of a riverine wetland, which intercept the water table so it receives groundwater in addition to precipitation and headwater flooding.

Headwater flooding is the driving forces for wetland existence at this area. Redoximorphic features, drainage patterns, and oxidizing root channels are the most wetland hydrology indicators been observed in the study area.
a. Swamps and Marshes

There is no swamps or marshes in or near the study site. The area is upland located on slopes and ridgetops, which have a very rapid runoff and well-drained soils.

b. Natural Stream Systems

The proposed project site contains two (2) unnamed creeks, which flow from east to west, have a well-characterized stream channel corridor with a shallow riverbed. Parts of these creeks have an intermittent flow in the higher elevations and an upper perennial flow in the lower elevations, with a high gradient and the velocity of the water is high.

On both riverine subsystems, the streambed is largely composed of cobbles and gravel. Although, some part where flow is cause by ground water intersections the streambed bed are vegetated.

Since the water table is not level and generally follows the slope of the land above it, the water table has intersected the land surface in some places, forming springs, streams and marshes.

c. Manmade Structures/Canals

There is no manmade structures or canals within the study area

d. Flood plain

The flood plain are comprise to the creek corridor limited by it channel banks
Figure 4: Wetland Inventory Map.
III. SUMMARY OF ROUTINE WETLAND DETERMINATION

<table>
<thead>
<tr>
<th>Transect/Plot</th>
<th>Hydrophytic vegetation</th>
<th>Wetland hydrology</th>
<th>Hydric soils</th>
<th>Sample point is in wetland</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Plate 2)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2 (Plate 3)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>3 (Plate 3)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>4 (Plate 5)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Wetland by flooding</td>
</tr>
</tbody>
</table>

V. CONCLUSION

For the purpose of Section 404 of the Clean Water Act, field inspection for hydrophytic vegetation, wetland hydrology and hydric soils indicates the existence of an upland area within a intermittent unnamed creek that has jurisdiction. Field inspection and the preliminary jurisdictional determination coincide with the Fish and Wildlife Service Inventory Map (Mayagüez Quadrangle). According to the FWS Inventory Map, one wetland area is occasionally flooded by headwaters. Water from this creek ultimately ended on the Mayagüez Bay, through the Majagual Canal. (See Figure 5: Wetland Inventory Map)

These jurisdictional wetlands are depicted in the enclosed Preliminary Wetland Delineation.
VI. REFERENCES

Cardona, Julio E., and Manuel Rivera

Florida Department of Environmental Protection

Godfrey, Robert K. & Jean W. Wooten
1979 Aquatic and Wetland Plants of the Southeastern United States: Monocotyledons. The University of Georgia Press, Athens.

Liogier, Henry Alain


Martorell, L.F., A.H. Liogier, and R.O. Woodbury
1981 Catálogo de los Nombres Vulgares y Científicos de las Plantas de Puerto Rico. Universidad de Puerto Rico, Estación Experimental Agrícola.

Mueller-Dombois, D., and H. Ellenbergh

The United States of America


Tiner, Ralph W.

Turbier, J. and Westmacott, R.
APPENDIX I
PRELIMINARY WETLAND DELINEATION

Preliminary Jurisdictional Determination
Urbanización Monte Sierra
Barrio Caracoles
Mayagüez, Puerto Rico
Iván Ruiz & Associates
Environmental Consultants

PRELIMINARY WETLAND DELINEATION
marzo, 2007

ProyectoResidencial “Monte Sierra”
BarrioQuebrada Grande, Mayagüez
APPENDIX II
FIELD DOCUMENTATION
PHOTOGRAPHS

Preliminary Jurisdictional Determination
Urbanización Monte Sierra
Barrio Caracoles
Mayagüez, Puerto Rico
Photo 1: View of Sampling Point 1 pit.

Photo 2: View of Sampling Point 2 pit.

Iván Ruiz & Assoc.

Plate: 1

Preliminary Jurisdictional Determination
Urbanización Monte Sierra
Mayagüez, Puerto Rico

April 2007
Photo 3: View of vegetation on SP 2.

Photo 4: View of vegetation on SP 3.

Photo 5: View of vegetation on SP 4.

Iván Ruiz & Assoc.

Plate: 2

April 2007

Preliminary Jurisdictional Determination

Urbanización Monte Sierra

Mayagüez, Puerto Rico
Photo 6: View of upper perennial unnamed creek.

Photo 7: View of Sampling Point 2 pit.

Photo 8: Sampling Point 4.

Iván Ruiz & Assoc.

Plate: 3

Preliminary Jurisdictional Determination
Urbanización Monte Sierra
Barrio Caracoles
Mayagüez, Puerto Rico

April 2007
APPENDIX III
FIELD DOCUMENTATION
DATA FORMS

Preliminary Jurisdictional Determination
Urbanización Monte Sierra
Barrio Caracoles
Mayagüez, Puerto Rico
DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Urb. Monte Sierra, Quebrada Grande Ward
Applicant/Owner: Desarrolladora Caribeña, Inc.
Investigator: Rolando Santos

Date: March 11, 2007
County: Mayaguez
State: Puerto Rico

Community ID: H
Transsect ID: N/A
Plot ID: 1

Do Normal Circumstances exist on the site? Yes No
Is the site significantly disturbed (Atypical Situation)? Yes No
Is the area a potential Problem Area? Yes No
(If needed, explain on reverse.)

VEGETATION

<table>
<thead>
<tr>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Kyllinga brevifolia</td>
<td>H</td>
<td>NI</td>
</tr>
<tr>
<td>2. Pueraria phaseoloides</td>
<td>H</td>
<td>NI</td>
</tr>
<tr>
<td>3. Mikania cordifolia</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC): 1/3 = 33%

Remarks: Sampling point located on an open area, near Municipal pave road.

HYDROLOGY

X Recorded Data (Describe in Remarks):
  □ Stream, Lake, or Tide Gauge
  □ Aerial Photographs
  □ Other

X No Recorded Data Available

Field Observations:
Depth of Surface Water: N/A (in.)
Depth to Free Water in Pit: >16 (in.)
Depth to Saturated Soil: >16 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
  □ Inundated
  □ Saturated in Upper 12 Inches
  □ Water Marks
  □ Drift Lines
  □ Sediment Deposits
  □ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
  □ Oxidized Root Channels in Upper 12 Inches
  □ Water-Stained Leaves
  □ Local Soil Survey Data
  □ FAC-Neutral Test
  □ Other (Explain in Remarks)

Remarks: No wetland hydrology indicators were observed at this sampling point.
SOILS

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Horizon</th>
<th>Matrix Color</th>
<th>Mottle Colors</th>
<th>Mottle Abundance/Shape/Contrast</th>
<th>Texture, Concretions, Structure, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 4</td>
<td>Ap</td>
<td>10YR 3/2</td>
<td>No mottles</td>
<td>N/A</td>
<td>Silty clay loam</td>
</tr>
<tr>
<td>4 -</td>
<td>C</td>
<td>10R 4/6</td>
<td>No mottles</td>
<td>N/A</td>
<td>Clay, gravelly and cobbles</td>
</tr>
</tbody>
</table>

Hydric Soil Indicators:
- Histosol
- Histic Epipedon
- Sulfidic Odor
- Anoxic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chrome Colors

Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks: No hydric soil indicators were observed at this sampling point.

WETLAND DETERMINATION

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☐ No ☐</th>
<th>Wetland Hydrology Present?</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soils Present?</td>
<td>Yes ☐ No ☐</td>
<td>Is this Sampling Point Within a Wetland?</td>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>

Remarks: Sampling point located on a gully.

Approved by HQUASCE 3/92
DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Urb. Monte Sierra, Quebrada Grande Ward
Applicant/Owner: Desarrolladora Caribeña, Inc.
Investigator: Rolando Santos

Date: March 11, 2007
County: Mayagüez
State: Puerto Rico

Do Normal Circumstances exist on the site? Yes No
Is the site significantly disturbed (Atypical Situation)? Yes No
Is the area a potential Problem Area? (If needed, explain on reverse.)

Community ID: T
Transect ID: N/A
Plot ID: 2

VEGETATION

<table>
<thead>
<tr>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Dieffenbachia seguine</td>
<td>H</td>
<td>OBL</td>
</tr>
<tr>
<td>2. Ichnanthus pallens</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>3. Telostachya alopecuroidea</td>
<td>H</td>
<td>FACU</td>
</tr>
<tr>
<td>4. Piper aduncum</td>
<td>T</td>
<td>FACW</td>
</tr>
<tr>
<td>5. Hymenaea courbaril</td>
<td>T</td>
<td>FACU</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
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<tr>
<td>8.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake, or Tide Gauge
- Aerial Photographs
- Other

X No Recorded Data Available

Field Observations:
Depth of Surface Water: N/A (in.)
Depth to Free Water in Pit: >16 (in.)
Depth to Saturated Soil: >16 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- Inundated
- Saturated in Upper 12 Inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 Inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No wetland hydrology indicators were observed at this sampling point.
## SOILS

<table>
<thead>
<tr>
<th>Map Unit Name</th>
<th>Sepentinite Outcrop</th>
<th>Drainage Class</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Series and Phase):</td>
<td></td>
<td>Field Observations</td>
<td>N/A</td>
</tr>
<tr>
<td>Taxonomy (Subgroup):</td>
<td></td>
<td>Confirm Mapped Type?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Profile Description:

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix Color</th>
<th>Mottle Colors</th>
<th>Mottle Abundance/Size/Contrast</th>
<th>Texture, Concretions, Structure, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 15</td>
<td>AE</td>
<td>10YR 3/2</td>
<td>No mottles</td>
<td>Silty clay loam</td>
</tr>
</tbody>
</table>

### Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors

- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

**Remarks:** No hydric soil indicators were observed at this sampling point.

## WETLAND DETERMINATION

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Hydric Soils Present?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Is this Sampling Point Within a Wetland?** Yes No

**Remarks:** Sampling point located on a dry gully.

Approved by HQUACE 3/92
DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

<table>
<thead>
<tr>
<th>Project/Site: Urb. Monte Sierra, Quebrada Grande Ward</th>
<th>Date: March 11, 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicant/Owner: Desarrolladora Caribeña, Inc.</td>
<td>County: Mayaguez</td>
</tr>
<tr>
<td>Investigator: Rolando Santos</td>
<td>State: Puerto Rico</td>
</tr>
<tr>
<td>Do Normal Circumstances exist on the site? Yes No</td>
<td>Community ID: T</td>
</tr>
<tr>
<td>Is the site significantly disturbed (Atypical Situation)? Yes No</td>
<td>Transect ID: N/A</td>
</tr>
<tr>
<td>Is the area a potential Problem Area? Yes No</td>
<td>Plot ID: 3</td>
</tr>
</tbody>
</table>

VEGETATION

<table>
<thead>
<tr>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Iochnanthus pallens</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>2. Syzygium jambos</td>
<td>S/SH</td>
<td>FACW</td>
</tr>
<tr>
<td>3. Myrica splendens</td>
<td>T</td>
<td>FAC</td>
</tr>
<tr>
<td>4. Hymenaea courbaril</td>
<td>T</td>
<td>FACU</td>
</tr>
</tbody>
</table>

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 3/4 - 75%

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks):
- Stream, Lake, or Tide Gauge
- Aerial Photographs
- Other

X No Recorded Data Available

Field Observations:
- Depth of Surface Water: N/A (in.)
- Depth to Free Water in Pit: >16 (in.)
- Depth to Saturated Soil: >16 (in.)

Wetland Hydrology indicators:
Primary Indicators:
- inundated
- Saturated in Upper 12 inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
- Oxidized Root Channels in Upper 12 inches
- Water-Stained Leaves
- Local Soil Survey Data
- FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: No wetland hydrology indicators were observed at this sampling point.
**SOILS**

Map Unit Name:
(Series and Phase): 
Taxonomy (Subgroup): 

Sepentinite Outcrop  
N/A  
N/A

Drainage Class:  
Field Observations  
Confirm Mapped Type?

Yes  No

Profile Description:

<table>
<thead>
<tr>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>(inches)</td>
</tr>
<tr>
<td>0 - 16</td>
</tr>
</tbody>
</table>

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sullicic Oder
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks: No hydric soil indicators were observed at this sampling point.

**WETLAND DETERMINATION**

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wetland Hydrology Present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hydric Soils Present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is this Sampling Point Within a Wetland?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

Remarks: Sampling point located on a dry gully.

Approved by HOUSACE 3/92
DATA FORM  
ROUTINE WETLAND DETERMINATION  
(1987 COE Wetlands Delineation Manual)

Project/Site: Urb. Monte Sierra, Quebrada Grande Ward  
Applicant/Owner: Desarrolladora Caribeña, Inc.  
Investigator: Rolando Santos  
Date: March 11, 2007  
County: Mayagüez  
State: Puerto Rico

Do Normal Circumstances exist on the site? Yes ☐ No ☐  
Is the site significantly disturbed (Atypical Situation)? Yes ☐ No ☐  
Is the area a potential Problem Area? Yes ☐ No ☐  
(If needed, explain on reverse.)

Community ID: T  
Transsect ID: N/A  
Plot ID: 4

---

VEGETATION

<table>
<thead>
<tr>
<th>Dominant Plant Species</th>
<th>Stratum</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Thelypteris poiteana</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>2. Dieffenbachia sequine</td>
<td>H</td>
<td>OBL</td>
</tr>
<tr>
<td>3. Ichnanthus pallens</td>
<td>H</td>
<td>FAC</td>
</tr>
<tr>
<td>4. Cecropia peltata</td>
<td>T</td>
<td>FAC</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).  
4/4 = 67%

Remarks:

---

HYDROLOGY

X Recorded Data (Describe in Remarks):  
☐ Stream, Lake, or Tide Gauge  
☐ Aerial Photographs  
☐ Other  
X No Recorded Data Available

Field Observations:  
Depth of Surface Water: N/A (in.)  
Depth to Free Water in Pit: 5 (in.)  
Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:  
Primary indicators:  
X Inundated  
☐ Saturated in Upper 12 inches  
☐ Water Marks  
☐ Drift Lines  
☐ Sediment Deposits  
X Drainage Patterns in Wetlands  
Secondary indicators (2 or more required):  
☒ Oxidized Root Channels in Upper 12 inches  
X Water-Stained Leaves  
☒ Local Soil Survey Data  
☒ FAC-Neutral Test  
☐ Other (Explain in Remarks)

Remarks: Sampling point located on the basin of an intermittent creek.
**SOILS**

<table>
<thead>
<tr>
<th>Map Unit Name</th>
<th>Sepentine Outcrop</th>
<th>Drainage Class: N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Series and Phase):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxonomy (Subgroup):</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

**Profile Description:**

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Horizon</th>
<th>Matrix Color (Munsell Moist)</th>
<th>Mottle Colors (Munsell Moist)</th>
<th>Mottle Abundance/Size/Contrast</th>
<th>Texture, Concretions, Structure, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 16</td>
<td>AE</td>
<td>10R 4/2</td>
<td>No mottles</td>
<td>N/A</td>
<td>Silty clay loam</td>
</tr>
</tbody>
</table>

**Hydric Soil Indicators:**

- Histosol
- Histic Epipedon
- Sulfic Ochre
- Aquatic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors

- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

**Remarks:**

---

**WETLAND DETERMINATION**

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes</th>
<th>No (Circle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Hydric Soils Present?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Is this Sampling Point Within a Wetland?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Remarks:**

 Approved by HQUACE 3/82