



Photo 10

**Sampling point TB-3
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 11

**Sampling point TB-4
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 12

**Sampling point TB-5
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**

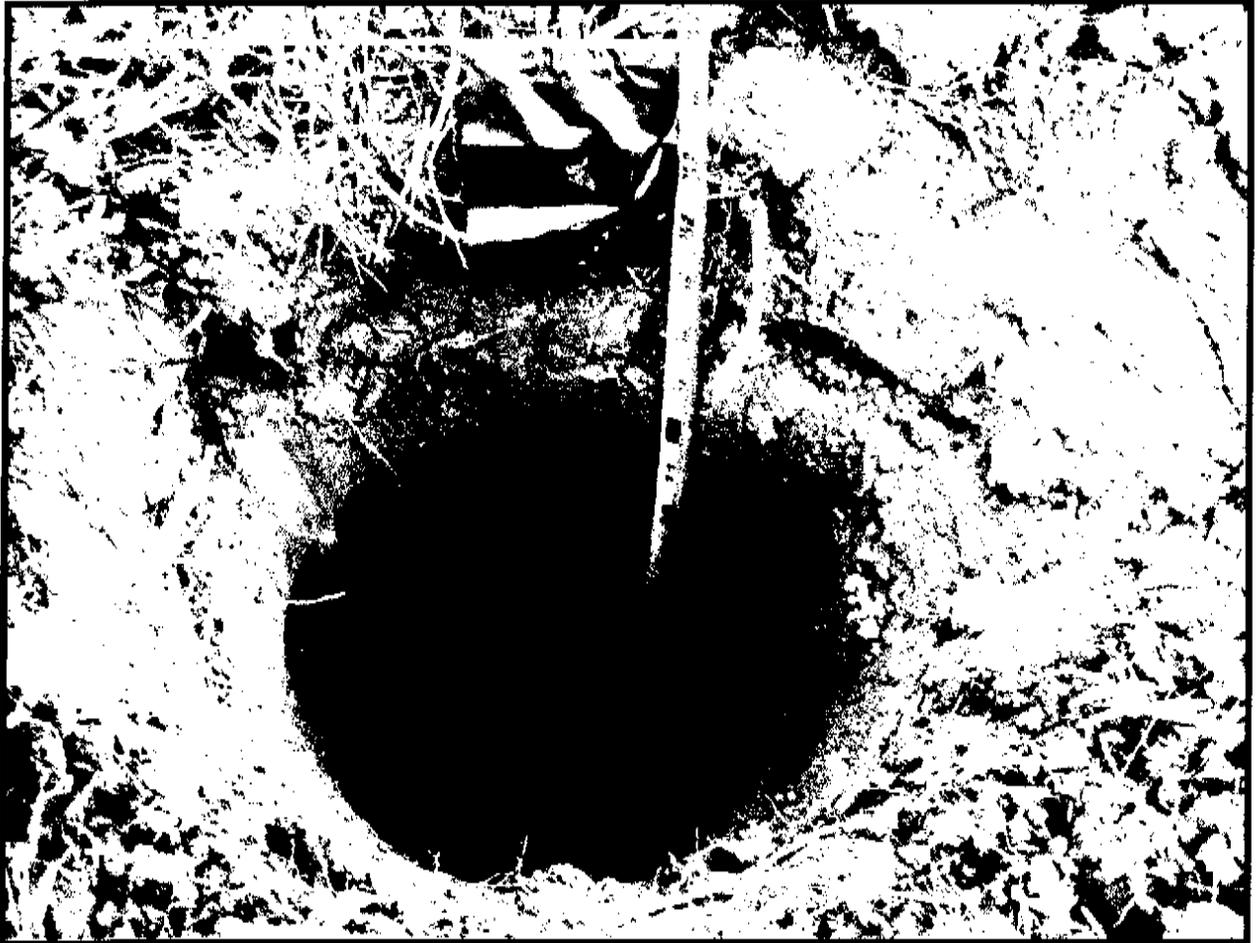


Photo 13

**Sampling point TB-6
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 14

**Sampling point TC-1
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 15

**Sampling point TC-2
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 16

**Sampling point TC-3
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 17

**Sampling point TD-1
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 18

**Sampling point TD-2
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 19

**Sampling point TD-3
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 20

**Sampling point TE-1
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 21

**Sampling point TE-2
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 22

**Sampling point TF-1
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**

4.0 WETLAND HYDROLOGY

As established in the Wetland Delineation Manual, wetland hydrology refers to all hydrologic characteristics of an area that are periodically flooded or have saturated soils to the surface at some time during the growing season. Numerous factors (e.g. precipitations, stratigraphy, topography, soil permeability, and plant cover) influence the wetness of an area.

Indicators of wetland hydrology may include, but are not necessarily limited to: drainage patterns drift lines, sediment deposition, watermarks, stream gage data and flood predictions, historic records, visual observation of saturated soil and visual observation of floods.

Other indicators for the hydric soils are described by the US Army Corps Engineer Wetland Delineation Manual (1987). The test consist of produce of organic matter and reduction by the accumulation or loss of iron, manganese, sulfur or carbon compounds and by adding the indicators to the soil it changes of color depending what element you are looking for.

According to the Flood Insurance Rate Map (FIRM) published by FEMA; Community Panel Number 720000-0040E the site is located outside the flood zone as delimited by the agency (Figure 7).

The National Wetland Inventory Map of the U. S. Fish and Wildlife Service neither the Puerto Rico Planning Board list Quebrada Arenas Ward in Vega Baja as a wetland area (Figure 8). The storm water runoff follows the site topographic contours or slopes (Figure 9).

The soil map for Quebrada Arenas area indicates that three possible areas are wetland (Figure 10). The only water body, with continuous flow, present at the study site is Quebrada Hicotea.

An approximately 0.57 acres of inundated area is located at 18 23.258'N 66 24.774' W (Photo 23). This area appears in the aerial photographs and in the soil map. The depth of surface water was approximately 23 inches and the vegetation growing in and around it is typical of wetlands: *Cyperus odoratus*, *Brachiaria mutica*, *Mitreola petiolata*, *Ludwigia octovalvis*, and *Mimosa pudica*.

A second area of inundated soil also exists between the sampling point TB-4 and TC-3. This area has an approximately area of 2.52 acres (2.602 cuerdas). The vegetation growing in this area consists of *Mimosa pigra*, *Roystonea borinquena*, *Urochloa maxima*, *Urena lobata* and *Bambusa vulgaris*.

The third area of inundated soil is located east of PR-645 near the oxidation pond and covers an approximately 0.139 acres (0.143 cuerdas) area. The vegetation growing in this point consists of *Thypha dominguensis* and *Brachiaria mutica*.

An approximately 0.51 acre (0.53 cuerdas) oxidation pond exists at the project site (Figure 9). This pond is considered as a permanent water body since it is not connected to a navigable water body. This pond was used, until the first days of November, to collect waters produced by the cattle farm activities. There is no presence of wetland vegetation in and around this pond.

1. Aerial photograph of the area, showing the location of the FEMA Flood Map (FEMA Flood Map No. 15000-1-0001) and the location of the FEMA Flood Map (FEMA Flood Map No. 15000-1-0002).

2. Aerial photograph of the area, showing the location of the FEMA Flood Map (FEMA Flood Map No. 15000-1-0001) and the location of the FEMA Flood Map (FEMA Flood Map No. 15000-1-0002).

3. Aerial photograph of the area, showing the location of the FEMA Flood Map (FEMA Flood Map No. 15000-1-0001) and the location of the FEMA Flood Map (FEMA Flood Map No. 15000-1-0002).

4. Aerial photograph of the area, showing the location of the FEMA Flood Map (FEMA Flood Map No. 15000-1-0001) and the location of the FEMA Flood Map (FEMA Flood Map No. 15000-1-0002).

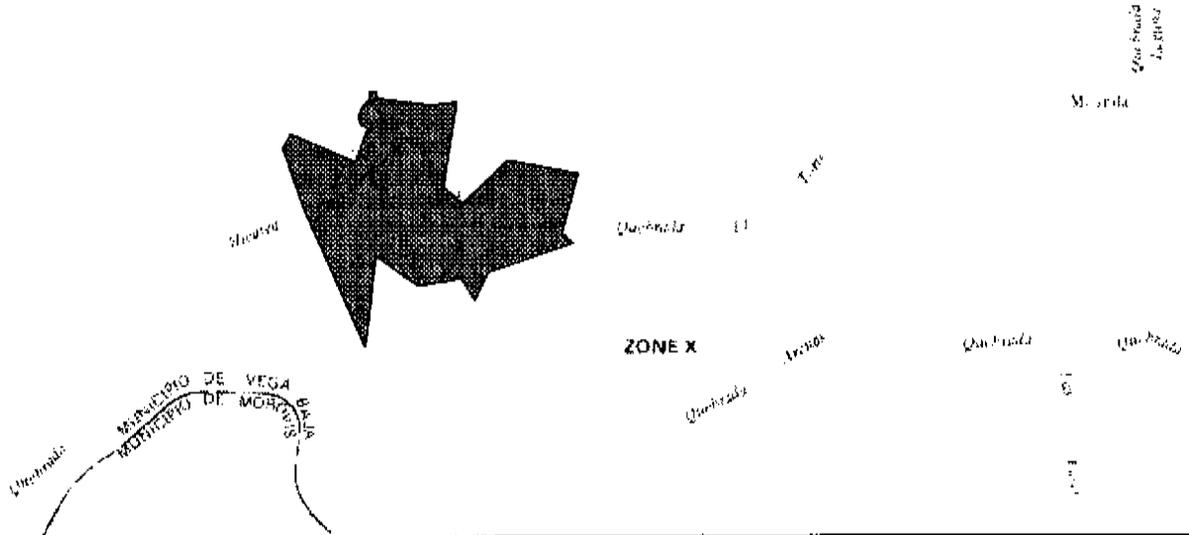


Figure 7

**FEMA Flood Map
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**

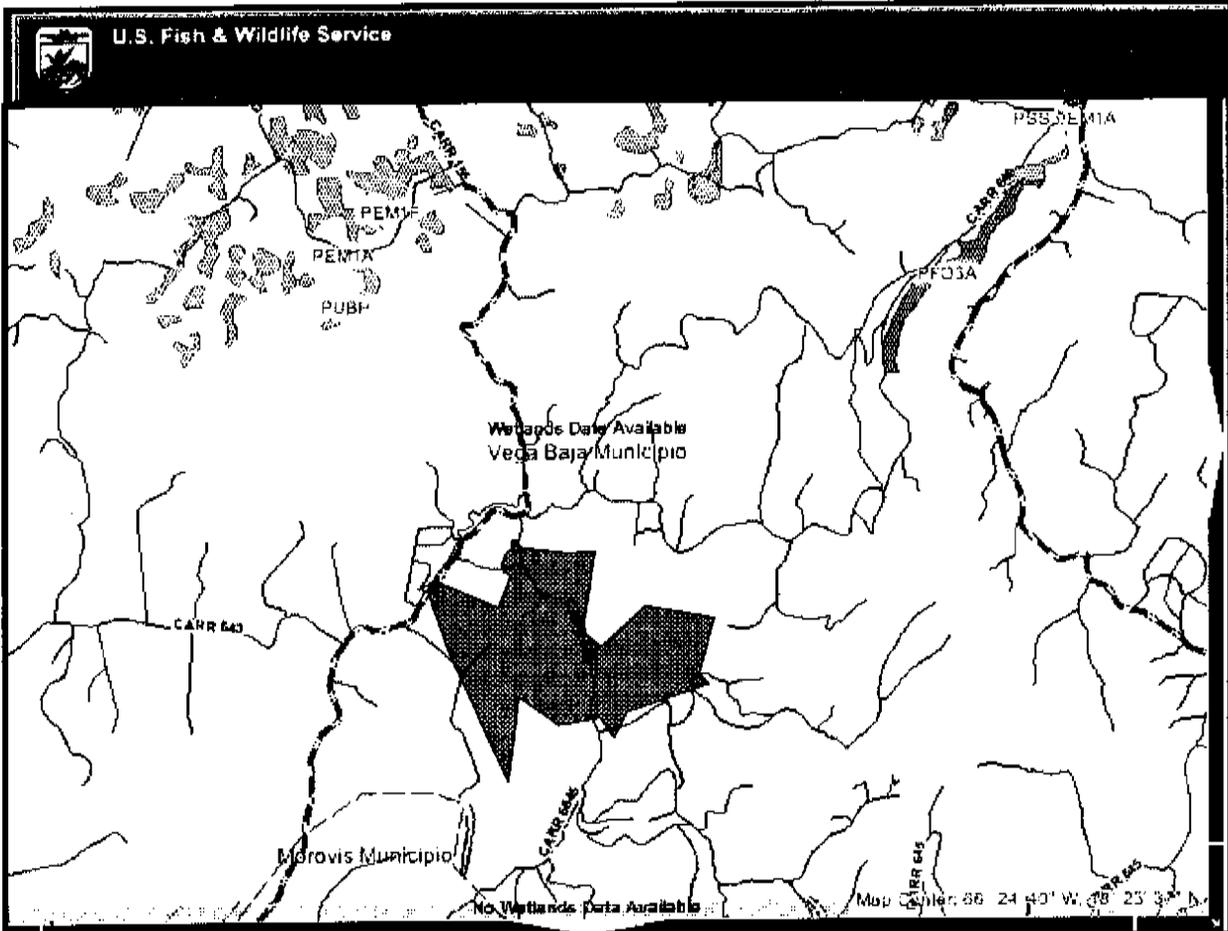


Figure 8

**National Wetland Inventory Map (USFWS)
 Monte Arenas
 PR- 645 Quebrada Arenas Ward
 Vega Baja, Puerto Rico**

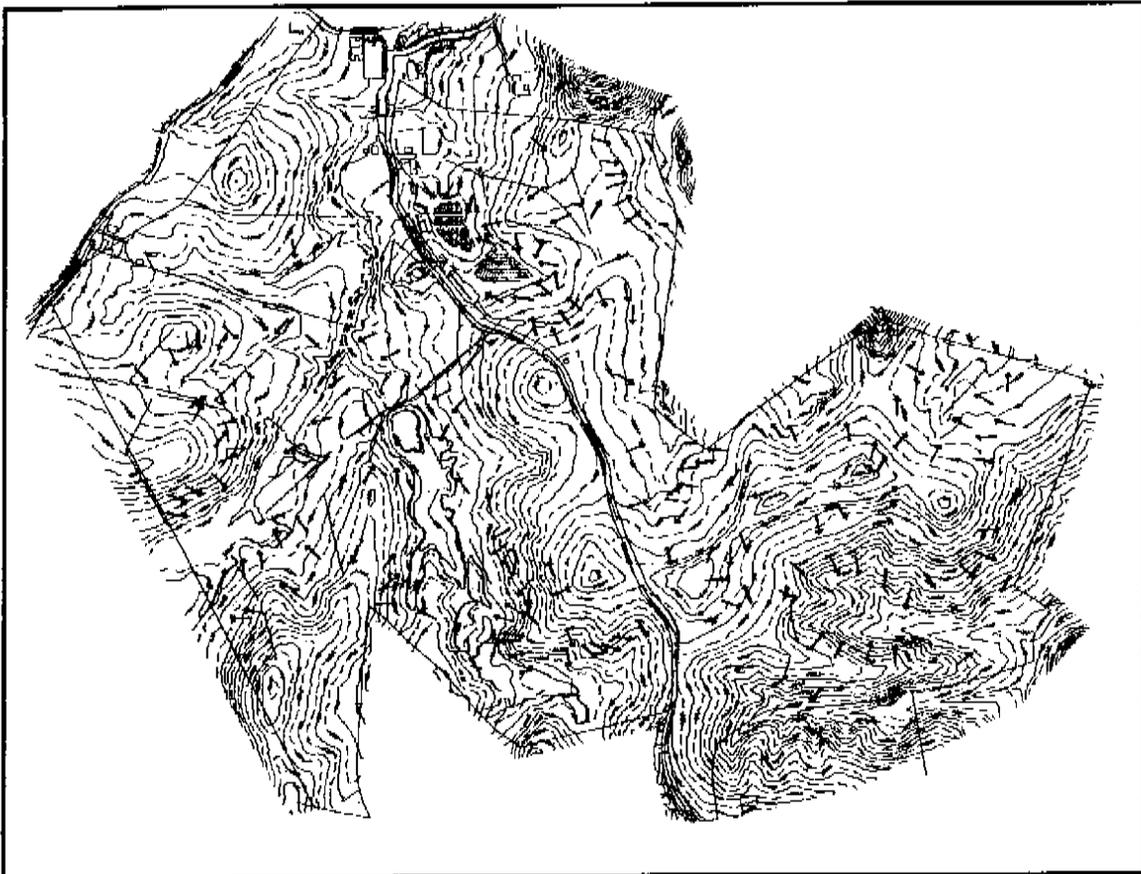


Figure 9

**Storm Water Courses
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**



Photo 23

**Wetland Area
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**

5.0 SOIL

According to the Soil Survey of the Arecibo Area of Puerto Rico (sheet # 23), there are seven types of soil in the study area. The soils are briefly described as follows:

CIE2 – Colinas clay loam, 12 to 20 percent slopes, eroded

This soil is moderately deep, steep, and well drained. It is on side slopes and ridgetops. Slopes range from 100 to 400 feet long. The areas of the soil range from 20 to 300 acres.

Typically, the surface layer is very dark grayish brown, firm clay loam about 8 inches thick. The subsoil is dark brown, friable clay loam 6 inches thick. The substratum extends to a depth of 60 inches or more. It is light yellowish brown, friable clay loam to a depth of 21 inches and yellow and white soft limestone at a depth of more than 21 inches.

Included with this soil in mapping are small areas of Soller and Naranjo soils and small areas from which the surface layers have been removed by erosion. Included areas make up 10 to 20 percent of the unit.

The permeability of this Colinas soil is moderate. The available water capacity is high. Runoff is rapid. The root zone is shallow, and natural fertility is medium. Reaction is moderately alkaline. Slippage of the soil is common in roadbanks, ditches, and drainage ways.

Slope and the depth to limestone make this soil poorly suited for cultivated crops, but some areas are in sugarcane. Crops on the soil respond well to fertilizer applications, but cultivation is limited because the soil is sticky when wet.

The soil is suitable for such pasture plants as pangolagrass, stargrass, and merkergrass. Using proper stocking rates and deferred grazing, controlling weeds, and fertilizing help to improve the survival rate of seedlings.

Slope and a susceptibility to landslides limit this soil for nonfarm development.

The capability subclass is VIe.

JuD2 – Juncal clay, 12 to 20 percent slopes, eroded

This soil is deep, moderately steep, and moderately well drained. It is on low, rolling hills and foot slopes in the humid limestone area. Slopes are 100 to 500 feet long. The areas of the soil range from 10 to 100 acres.

Typically, the surface layer is dark brown, firm clay about 8 inches thick. The subsoil is mottled, yellowish brown clay 32 inches thick. The substratum is yellow brown, mottled silty clay loam to a depth of 60 inches.

Included with this soil in mapping are small areas of Naranjo soils, small areas of slightly eroded Juncal soils, and small areas of soils with a surface layer of clay loam. Included soils make up 10 to 15 percent of the unit.

The permeability of this Juncal soil is moderate, and the available water capacity is high. Runoff and natural fertility are medium. Reaction is medium acid in the surface layer and subsoil and moderately alkaline in the substratum. The soil has moderate shrink-swell potential.

This soil is well suited for such cultivated crops as taniers, yams, pigeon peas, and plantains, but the slope and clayey texture hinder cultivation. Crops on this soil respond well to fertilizers.

This soil is well suited for such pasture plants as pangolagrass, improved bermudagrass, and merkergrass. Using proper stocking rates and deferred grazing, controlling weeds, and fertilizing are the chief pasture management concerns.

This soil is well suited for Honduras pine and Honduras mahogany, but slope limits the use of equipment. Equipment is further restricted because the soil is sticky and slippery when wet. Controlling brush

and weeds and fertilizing help to improve the survival rate of the seedlings.

Slope, low strength, and the moderate shrink-swell potential are the main limitations of the soil for nonfarm development.

The capability subclass is IIIe.

MoC2 - Moca Clay, 2 to 12 percent slopes, eroded

This soils is deep, gently sloping to sloping, and moderately well drained. It is on foot slopes and low, rolling hills in humid volcanic areas. Slopes are 200 to 800 feet long. The areas of the soil range from 20 to 100 acres.

Typically, the surface layer is dark reddish brown, firm clay about 6 inches thick. The subsoil is multicolored, mottled clay 24 inches thick. The substratum is multicolored, mottled clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Perchas and Vega Alta soils that make up 10 to 15 percent of the unit.

The permeability of this Moca soils is moderately slow, and the available water capacity is high. Runoff is medium. natural fertility is medium. Reaction throughout the soil is very strongly acid. The subsoil has a high shrink-swell potential.

This soil is well suited for plantains and taniens. Some small areas are in sugarcane, coffee, and bananas. Cultivation of the soil is hindered by the clayey texture. Crops on this soil respond well to applications of lime and fertilizer.

The soil is well suited for such pasture plants as pangolagrass and merkergrass. An erosion hazard and strong acidity are that main limitations. Using proper stocking rates and deferred grazing, fertilizing and liming, and controlling weeds, are the main pasture management concerns.

The soil is well suited for Honduras pine, kadam, and mahoe. The use of equipment is limited because the soil is sticky and slippery when wet. Controlling weeds and brush, hand planting, and fertilizing help to improve the survival rate of seedlings.

The high shrink-swell potential and low strength of the soil are the main limitations for nonfarm development.

The capability subclass is IIIe.

NaD – Naranjo clay, 5 to 20 percent slopes.

This soil is deep, sloping to moderately steep, and well drained. It is on the foot slopes and side slopes of limestone hills. Slopes are 100 to 800 feet slopes. The areas of the soil range from 20 to 100 acres.

Typically, the surface layer is very dark grayish brown clay about 8 inches thick. The subsoil is mainly yellowish brown and brownish yellow clay 14 inches thick. The substratum is brownish yellow and yellowish brown, mottled clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Colinas soils and exposed limestone bedrock that make up 5 to 10 percent of the unit.

The permeability of this Naranjo soils is moderate and the available water capacity is high. Runoff is medium. Organic matter content is high. The soil is moderately alkaline throughout. This subsoil has a moderate shrink-swell potential.

This soil is used mainly for plantains, sugarcane, taniens, pigeon peas, and corn. Some small areas are used for avocados. Slope and an erosion hazard are the main limitations for farming. The clayey texture of the soil hinders cultivation. Crops on this soil respond well to applications of fertilizer.

This soil is well suited for such pasture plants as pangolagrass, stargrass, and merkergrass. The erosion hazard is the main limitation. Use of proper stocking rates and deferred grazing, especially during

the rainy season, and controlling weeds and fertilizing are the main pasture management concerns.

The soil is well suited for Honduras pine, Honduras mahogany, mahoe, and robusta eucalyptus. Slope limits the use of equipment, and the soil is sticky and slippery when wet. Controlling weeds and brush, hand planting, and fertilizing help to improve the survival rate of seedlings.

Slope, the shrink-swell potential, and the clayey texture are the main limitations of the soil for nonfarm development.

The capability subclass is IIIe.

NaE – Naranjo clay, 20 to 40 percent slopes.

This soil is deep, steep, and well drained. It is on the side slopes and ridgetops of limestone hills. Slopes are 100 to 600 feet slopes. The areas of the soil range from 20 to 150 acres.

Typically, the surface layer is very dark grayish brown clay about 8 inches thick. The subsoil is mainly yellowish brown and brownish yellow clay 14 inches thick. The substratum is multicolored brownish yellow and yellowish brown, mottled clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Colinas soils and exposed limestone bedrock that make up 5 to 10 percent of the unit.

The permeability of this Naranjo soils is moderate and the available water capacity is high. Runoff is rapid. Organic matter content is high. The soil is moderately alkaline through. This subsoil has a moderate shrink-swell potential.

Some areas of this soil are used for such plantains, sugarcane, taniars, pigeon peas, and corn. Some small areas are used for avocados. Slope and an erosion hazard are the main limitations for farming. Cultivation is further limited because the soil is sticky when wet. Crops on this soil respond well to applications of fertilizer.

This soil is well suited for such pasture plants as pangolagrass, stargrass, and merkergrass. Using proper stocking rates and deferred grazing, controlling weeds and fertilizing are the main pasture management concerns.

The soil is well suited for Honduras pine, Honduras mahogany, mahoe, and robusta eucalyptus. Slope limits the use of equipment, and the soil is sticky and slippery when wet. Controlling weeds and brush, hand planting, and fertilizing help to improve the survival rate of seedlings.

Slope, the shrink-swell potential, and the clayey texture are the main limitations of the soil for nonfarm development.

The capability subclass is IVe.

SnC—Santa Clara clay, 2 to 12 percent slopes.

This soil is moderately deep, gently sloping to sloping, and well drained. It is on foot slopes and small hills. Slopes are 20 to 300 feet long. The areas of the soil range from 20 to 80 acres.

Typically, the surface layer is very dark grayish brown, firm clay about 9 inches thick. The subsoil is dark grayish brown and yellowish brown silty clay 16 inches thick. The substratum is yellowish brown silty clay 8 inches thick. Hard limestone is at a depth of 33 inches.

Included with this soil in mapping are small areas of San German soils and soils that have slopes of 12 to 20 percent. Also included are small areas of exposed limestone bedrock. Included areas make up 5 to 10 percent of the unit.

The permeability of this Santa Clara soil is moderate. The available water capacity is moderate. Runoff is moderate. Natural fertility is medium to high. Reaction is slightly acid in the surface layer and neutral to mildly alkaline in the subsoil and substratum.

This soil well suited for pigeon peas, plantains, and sugarcane. Some areas are used for citrus fruits and avocados. The clayey texture of the surface layer and subsoil somewhat hinders cultivation.

The soil is well suited for such pasture plants as pangolagrass, stargrass, and merkergrass. Applying fertilizer, using proper stocking rates and deferred grazing, and controlling weeds are the chief pasture management concerns.

The soil is well suited for such Honduras mahogany, Honduras pine, teak, and mahoe. Controlling brush and weeds and applying fertilizer help to improve the survival rate of seedlings.

The depth to rock is the main limitation of the soil for nonfarm development.

The capability subclass is IIIe.

VcC2 – Vega Alta Clay, 5 to 12 percent slopes, eroded

This soil is deep, sloping, and well drained. It is in small valleys between limestone hills and on the coastal plains. Slopes range from 50 to 150 feet in length. The areas of the soil range from 10 to 100 acres.

Typically, the surface layer is dark brown, firm sandy clay loam about 8 inches thick. The subsoil is multicolored, firm clay to a depth of 60 inches or more.

Included with this soil in mapping are areas of Almirante and Espinosa soils that make up to 5 to 10 percent of the unit.

The permeability of this Vega Alta soil is moderate, and the available water capacity is high. Runoff is medium. Natural fertility is medium. Reaction is very strongly acid in the surface layer and extremely acid in the subsoil.

This soil is mainly used for sugarcane. Some small areas are in pineapples, plantains and other crops. Slope and erosion hazard are the major limitations. Crops on this soil respond well to applications of lime and fertilizer.

The soil is well suited for pangolagrass, stargrass, paragrass, and merkergrass. Using proper stocking rates and deferred grazing, controlling weeds, and fertilizing are the main pasture management concerns. Some areas need supplemental irrigation during prolonged periods of drought.

Slope, the clayey texture, and low strength are the main limitation of this soil for non farm development.

The capability subclass is IIIe.

These soils and the sampling points are depicted with their respective symbols in the Soil Map provided in Figures 10 and 11, respectively.



<p>Figure 11</p>	<p>SAMPLING POINTS OVER SOIL MAP Monte Arenas PR- 645 Quebrada Arenas Ward Vega Baja, Puerto Rico</p>
------------------	--

6.0 HYDRIC SOIL

According to the National Technical Committee for Hydric Soils (NTCHS) the Hydric soils are defined as soils that were formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytes vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine if a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as depth and duration of the water table, is needed. Thus, criteria to identify properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a soil series that normally is associated with wetlands, the criteria is selected reviewing the properties described in the "Soil Taxonomy" (USDA, 1999) and "Keys to Soil Taxonomy" (USDA, 1998) and in the "Soil Survey Manual" (USDA, 1993).

A hydric soil is 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 (US Department of Agriculture (USDA) Soil Conservation Service (SCS) 1985, as amended by the National Technical Committee for Hydric Soil (NTCHS) in December 1986. The indicators used to make onsite determinations of hydric soils in Puerto Rico are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1996).

As stated in the Natural Resources Conservation Service (NRCS) Soil Map and the Hydric Soil List, developed for Puerto Rico, the Moca clay (MoC2) and the Vega Alta clay (VcC2) are listed as hydric soil. Both soils meets the saturation and ponding criteria, have hydric inclusions but do not meets the flooding criteria, neither contains hydric components. The other soils presents at the site are not listed on the NRCS Hydric Soil List.

7.0 VEGETATION

According to the Wetland Delineation Manual, hydrophytic vegetation is defined as the sum of the total macrophyte plant life growing in water, soil or on substrate that is at least periodically deficient in oxygen as a result of excessive water content.

The vegetation in the wetland consists of one or more plant association. Therefore, it is mandatory to consider plant species dominance among other things to determine if a particular area is dominated by hydrophytic vegetation. Dominate plants species were selected independently from each stratum of the plant community. Various measures were used to express the relative dominance of the plant species in the community:

1. Estimating those species having the greatest relative basal areas for the tree strata.
2. Percent of aerial cover for herbs stratum.
3. Stem density for shrubs/samplings and weedy vines strata.
4. Frequency of occurrence (percentage of sampling points that contain the species of interest).

For wetland determinations, vegetation samples were inspected visually, keeping in mind one or more for the dominance measures described above.

Various types of plant associations were identified within the surveyed area (Photo 24 and 25). The grassland was dominated by several species including: *Brachiaria mutica*, *Mimosa pigra*, *Rhynchospora nervosa* and *Urochloa maxima*. *Psidium guajava* shrubs were found along the site. The plants that were found in the sampling points are listed in the following table.

Table 2. Plants Identified at the Sampling Points.

<i>Scientific name</i>	<i>Common Name in Spanish</i>	<i>Regional Indicator</i>
<i>Andira inermis</i> (W.Wr.) DC.	Moca	FACW
<i>Bidens cinapiifolia</i> Kunth.in HBK	Alfilerillo	NL
<i>Bidens pilosa</i> L.	N/A	FACU
<i>Brachiaria mutica</i> (Forsk.) Stapf	Malojillo	FACW-
<i>Casearia sylvestris</i> Sw.	Cafeillo cimarrón	FAC
<i>Cestrum diurnum</i> L.	Dama de día	NL
<i>Cissus verticillata</i> (L.) Nicolson & Jarvis	Bejuco de caro	FAC
<i>Citharexylum fruticosum</i> L.	Palo de guitarra	NL
<i>Commelina erecta</i> L.	Cohitre azul	FAC
<i>Cynodon nlemfuensis</i> Vanderhyst	Yerba de estrella	NL
<i>Cyperus odoratus</i> L.	N/A	FACW+
<i>Desmodium incanum</i> DC.	Zarabacoa común	FACU
<i>Eleusine indica</i> (L.) Gaertn.	Pata de gallina	FAC
<i>Hypoxis decumbens</i> L.	Coquí	NL
<i>Ipomoea alba</i> L.	Bejuco de vaca	FACW
<i>Ipomoea purpurea</i> (L.) Roth	Bejuco	UPL
<i>Kyllinga brevifolia</i> Roth.	N/A	FAC
<i>Lantana camara</i>	Cariaquillo	FACU
<i>Lephiantes peltata</i>	Baquina	FAC
<i>Ludwigia octovalvis</i> (Jacq.) Raven	Cangá	OBL

Table 2, continued. Plants Identified at the Sampling Points.

<i>Scientific name</i>	<i>Common Name in Spanish</i>	<i>Regional Indicator</i>
<i>Macroptilium lathyroides</i> (L.) Urban	Látiros de pasto	FACU
<i>Mimosa pigra</i> L.	Mimosa negra	FACW
<i>Mitreola petiolata</i> (J.F. Gmel) Torr. & Gray	Mitreward	OBL
<i>Momordica charantia</i> L.	Cundeamor	FAC
<i>Paspalum notatum</i> Flügge	Yerba bahía	FAC
<i>Paspalum virgatum</i> L.	Matojo blanco	FACW
<i>Psidium guajava</i> L.	Guayaba	FAC
<i>Roystonea borinquena</i> O.F. Cook	Palma real	FAC
<i>Rynchospora nervosa</i> (Vahl) Boeck.	Coquí blanco	NL
<i>Senna siamea</i> (Lam.) Irwin & Barneby	Casia de siam	NL
<i>Solanum torvum</i> Sw.	Berenjena cimarrona	NL
<i>Spathodea campanulata</i> Beauv.	Tulipán africano	FACU
<i>Spermacoce verticilada</i> L.	Boton blanco	NL
<i>Sporobolus indicus</i> (L.) R. Br.	Malojillo	FACU
<i>Stachytarpheta jamaicensis</i> (L.) Vahl	Verbena	FACU
<i>Thespesia grandiflora</i> DC	Maga	NL
<i>Urena lobata</i> L.	Cadillo	FAC
<i>Vigna vixellata</i> (L.) Rich.	Frijol cimarrón	NL
<i>Zanthoxylum caribaeum</i> Lam.	Espino rubial	NL

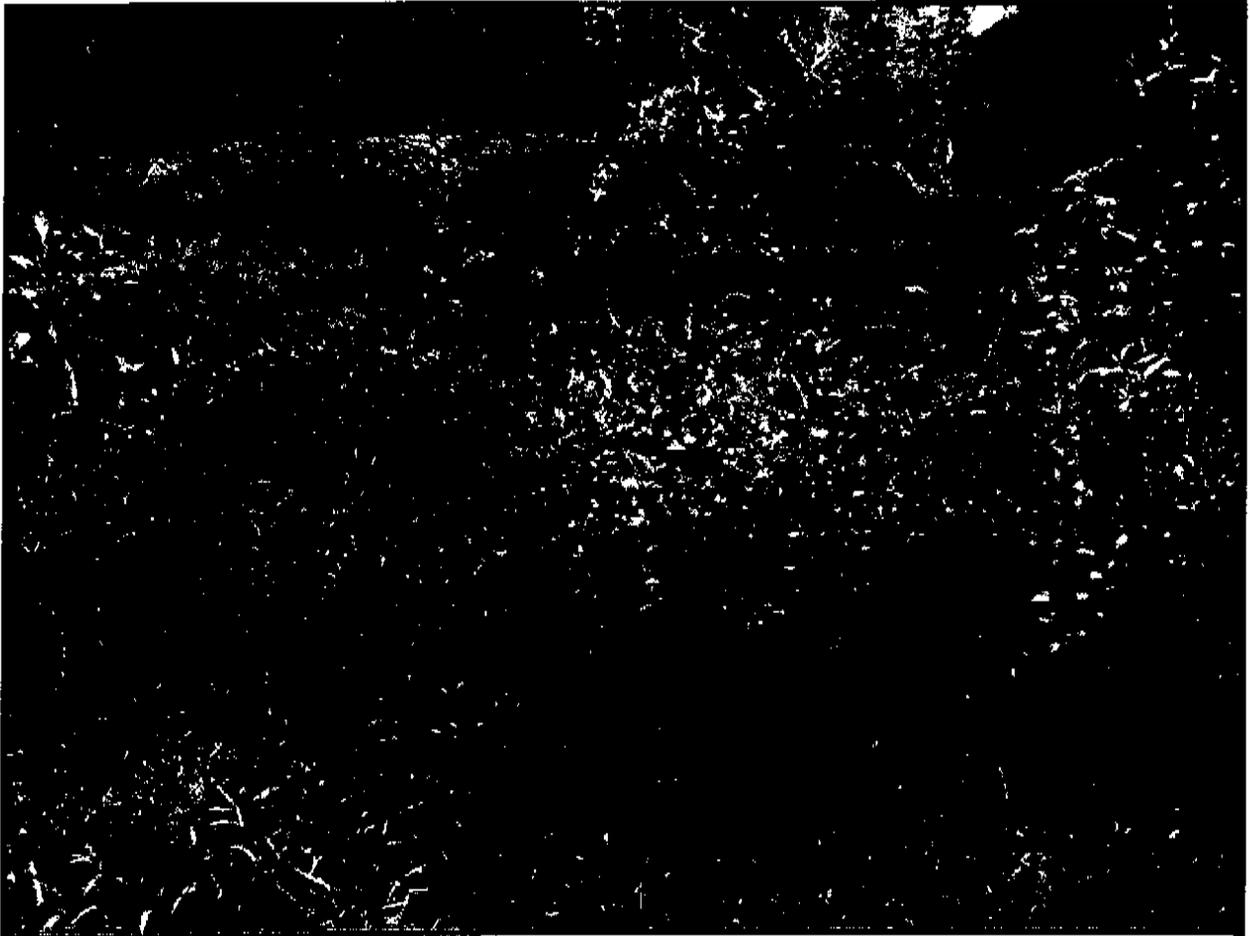


Photo 24

SITE VEGETATION TYPE
Monte Arenas
PR-645, Quebrada Arenas Ward
Vega Baja, Puerto Rico



Photo 25

SITE VEGETATION TYPE
Monte Arenas
PR-645, Quebrada Arenas Ward
Vega Baja, Puerto Rico

8.0 RESULTS AND CONCLUSION

The wetland conditions of the identified zones were confirmed by the observation of the hydrophytic vegetation, hydric soil, the presence of water in the channels and hydrologic characteristic of the site.

As a result of the preliminary field delineation three zones within the site were characterized as wetland.

The Hicotea Creek will be protected and no construction will be developed near this water body (Figure 12). An approximately total of 32.59 acres (33.50 cuerdas) will be conserved, in order to protect this creek, as green areas (Figure 12).

The first zone, located between sampling point TA-1 and TB-1, has an approximate area of 0.31 acres (0.32 cuerdas). The second zone, located between sampling point TB-4 and TC-3, has an approximate area of 2.52 acres (2.602 cuerdas). The third zone is located east of PR-645 near the oxidation pond. This third zone has an approximate area of 0.139 acres (0.143 cuerdas).

The combine impact for the zones is 2.969 acres (3.065 cuerdas). The remaining area is upland.

The Jurisdiction of the site is limited to the area complying with the mandatory technical criteria. See Preliminary Wetland Delineation, Transect and Sampling Points Location and Aerial Photo (Table 1, Figure 11 and 13).

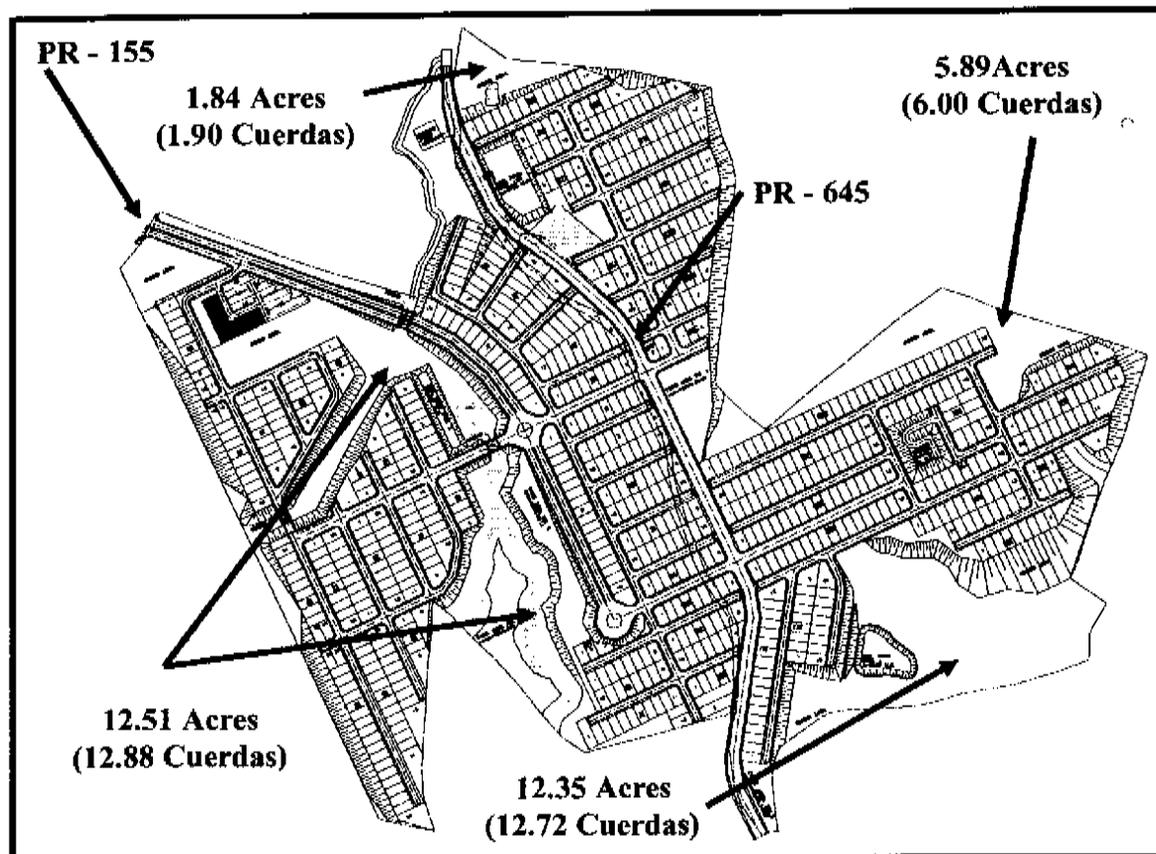


Figure 12

**Areas to be Conserved
 Monte Arenas
 PR- 645 Quebrada Arenas Ward
 Vega Baja, Puerto Rico**

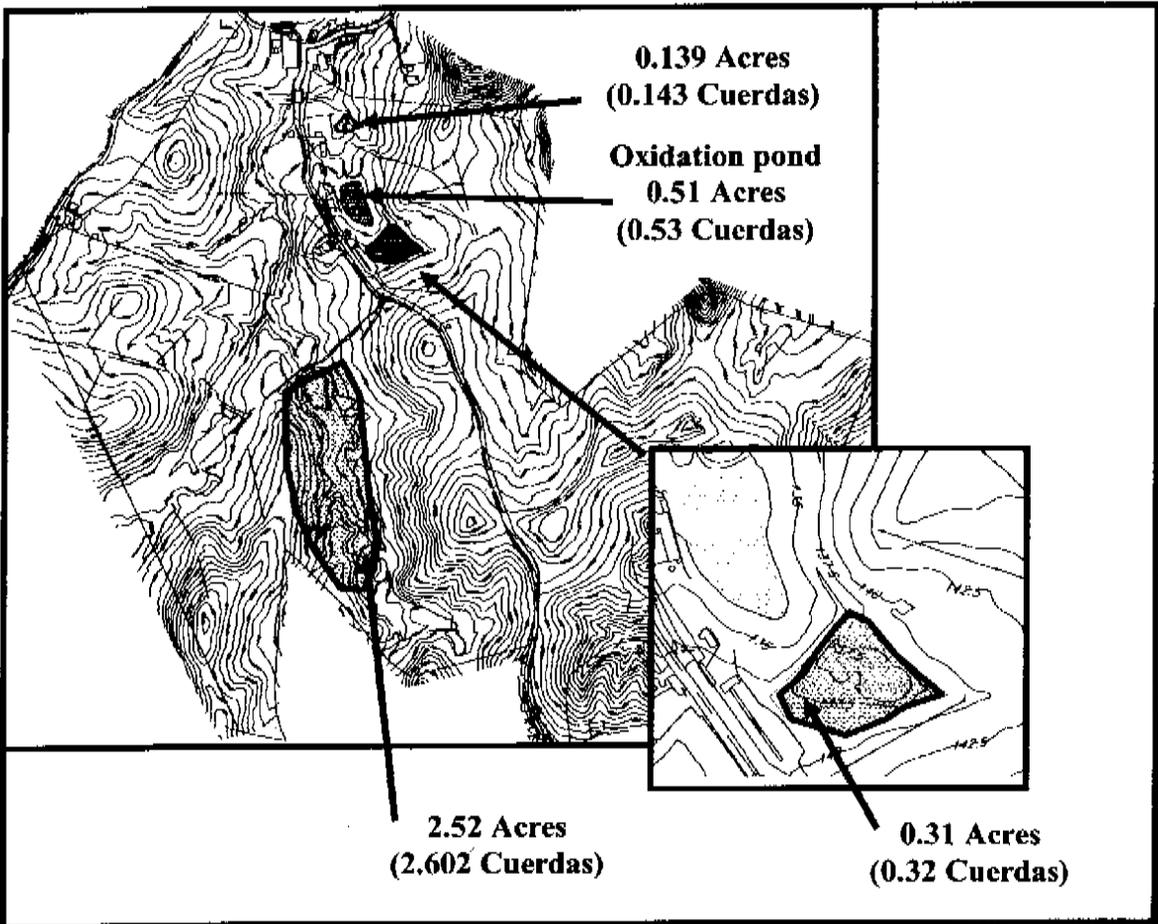
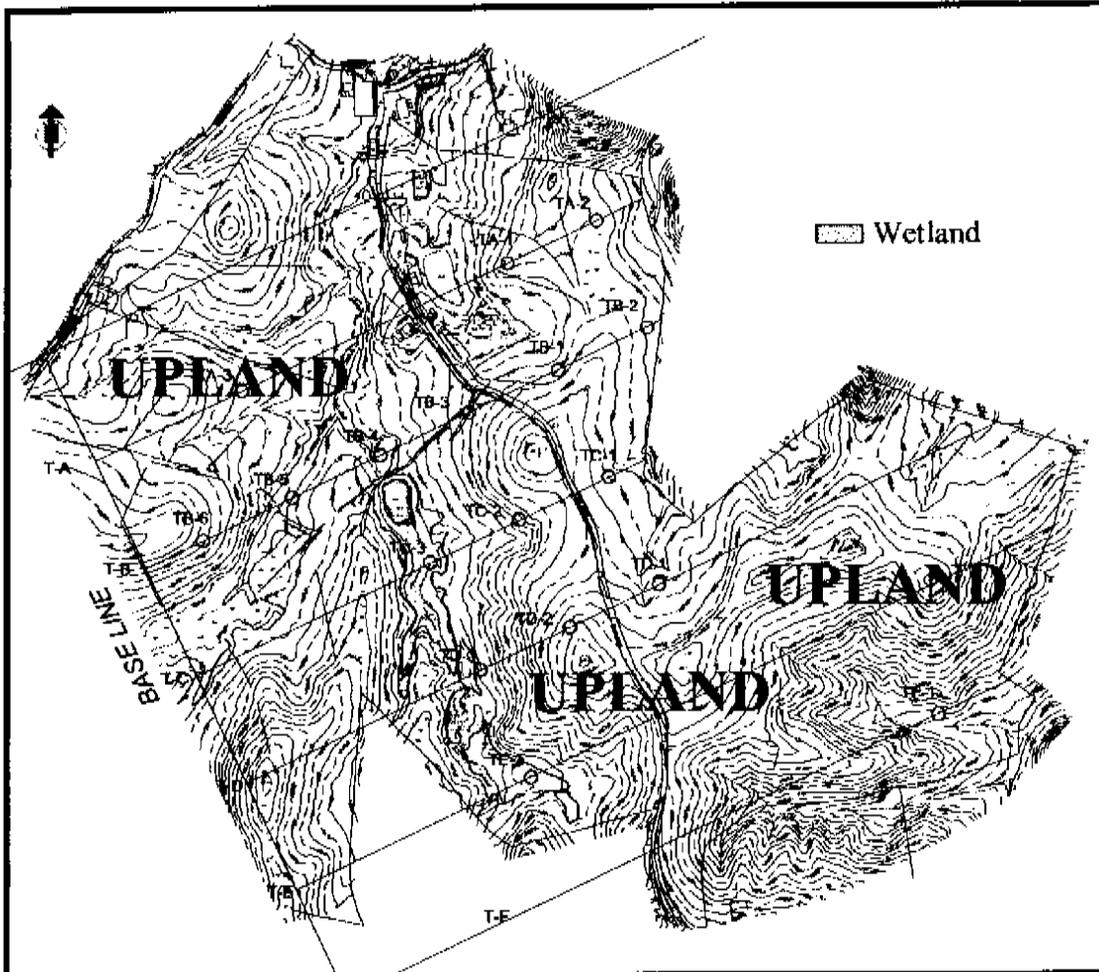


Figure 13

Areas to be Impacted
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico



<p>Figure 14</p>	<p>Preliminary Jurisdictional Determination Monte Arenas PR- 645 Quebrada Arenas Ward Vega Baja, Puerto Rico</p>
-------------------------	--

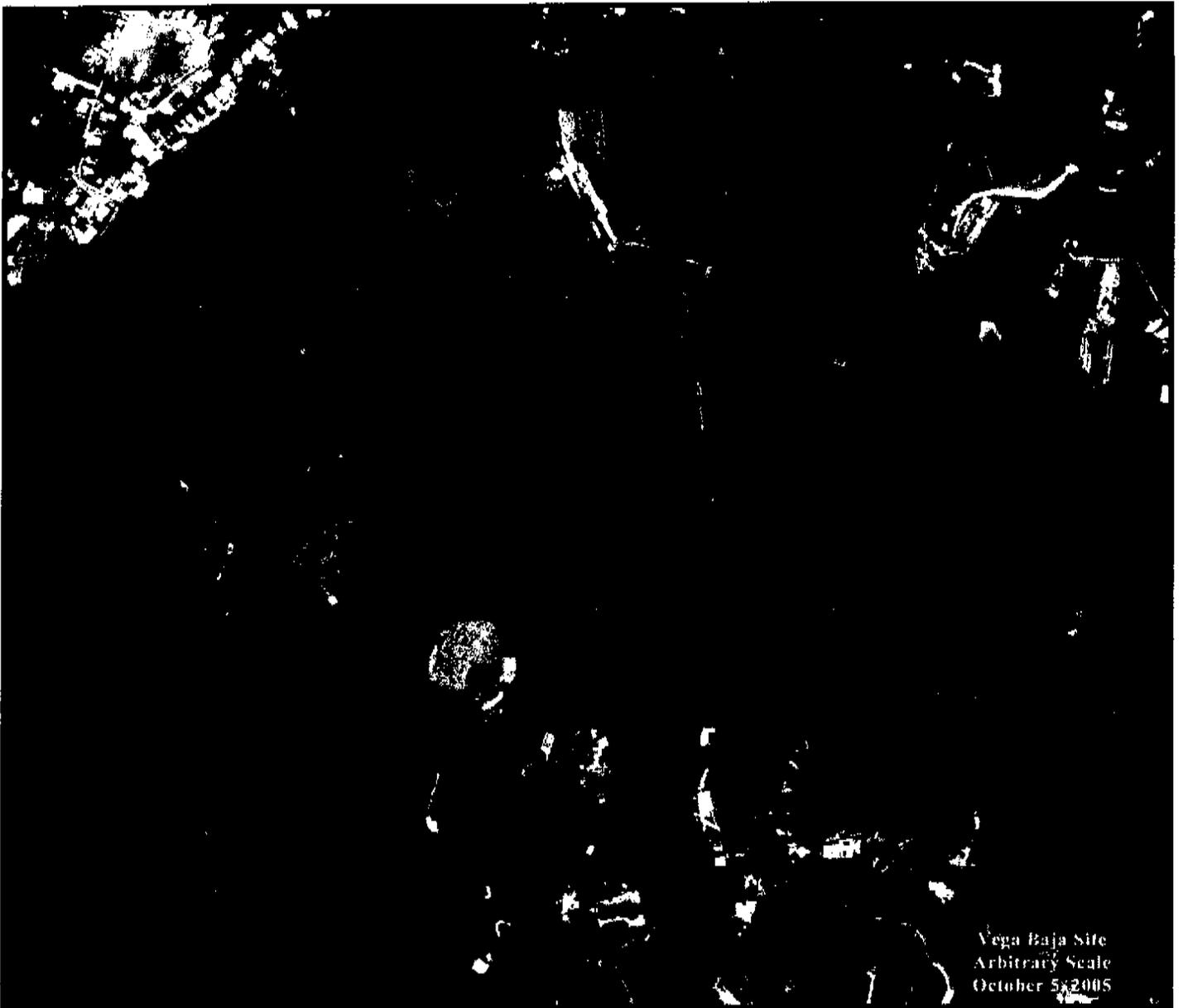


Photo 26

**Aerial Photography Showing Wetland Areas
Monte Arenas
PR- 645 Quebrada Arenas Ward
Vega Baja, Puerto Rico**

9.0 LITERATURE REVIEW

Acevedo-Rodríguez, P. & R.O. Woodbury. 1985. Los Bejucos de Puerto Rico. Vol. 1 Gen. Tech. Rep. SO-58. New Orleans, LA. US. Department of Agriculture, Forest Service, Southern Forest Experimental Station, 331pp.

Brinson M. M. 1993. A Hydrogeomorphic Classification for Wetlands Technical Report WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Cowardin, Lewis M., V. Carter, F.C. Golet & E.T. La Roe. 1979. Classification of Wetland and Deep water Habitats of the United State, U.S. Department of the Interior, Fish & Wildlife Service, of Biological Service, Wash. D.C.

Del Llano, Manuel, R.O. Woodbury & J Toro. 1982. Guía de los terrenos anegados de P.R., P.R. Departamento de Recursos Naturales y Ambientales San Juan, P.R.

Environmental Laboratory. 1978. Preliminary Guide to Wetland of P.R., Tech. Report Y-78-3, U.S. Army Engineer Waterways Experimental Station, Vicksburg, Miss. 77pp.

----- 2002. Hydric Soil Interpretations Section II: Natural Resources Information.

----- 1987. Corp of Engineers Wetland Delineation Manual, Tech. Report Y-87-1, U.S. Army Waterways Experimental Station, Vicksburg, Miss. 169pp.

García Molinari, O. & E. Mas. 1990. Guía Ilustrada de Yervas Comunes en Puerto Rico. Servicio de Extensión Agrícola, Universidad de P. R. 103pp.

----- 1952. Grasslands and Grasses of Puerto Rico. Agricultural Experiment Station, Bull. 102. University of Puerto Rico. 167pp.

Liogier, H. A. & L. F. Martorell. 1982. Flora of Puerto Rico and Adjacent Islands: A systematic Synopsis. Editorial Universidad de P.R., 342pp.

----- 1985. Descriptive Flora of Puerto Rico and Adjacent Islands Vol. 1 Casuarinaceae to Conrnceae. Editorial Universidad de P.R., 352pp.

----- 1988. Descriptive Flora of Puerto Rico and Adjacent Islands Vol. 2 Leguminosae to Anacardiaceae. Editorial Universidad de P.R., 481pp.

-----, 1994. Descriptive Flora of Puerto Rico and Adjacent Islands Vol. 3
Cryllaceae to Myrtaceae. Editorial Universidad de P.R., 461pp.

-----, 1995. Descriptive Flora of Puerto Rico and Adjacent Islands Vol. 4
Melastomataceae to Lentibulariaceae. Editorial Universidad de P.R., 617pp.

Little, E. L., & F. H. Wadsworth. 1964. Common Trees of Puerto Rico and the
Virgin Islands U.S.D.A. Forest Service, Agriculture Handbook No. 249:1-548.

-----, R.O. Woodbury, F.H. Wadsworth. 1974. Trees of Puerto Rico and the
Virgin Islands. Vol. 2 U.S.D.A. Forest Service, Agriculture Handbook No.
449:1024.

Martorell, L.F., A.H. Liogier & R.O. Woodbury. 1981. Catálogo de los Nombres
Vulgares y Científicos de las Plantas de Puerto Rico. Estación Experimental
Agrícola, Universidad de P.R. 231pp.

Munsell Soil Color Charts. 2000. GretagMacbeth, New Windsor, NY

Reed, P.B. Jr. 1995. Revision to the National List of Plant Species that Occur in
Wetland: Caribbean (Region C). U.S. Fish & Wildlife Service. Supplement to
Biological, Rep. 88 (26.12) 69pp.

Tiner, R.W. 1990. The Concept of a Hydrophytes for Wetland Identification.
BioScience Vol. 41 No. 4

USDA. Soil Conservation Service. 1982. Soil Survey of Arecibo Area of Puerto
Rico

USDA. Soil Conservation Serve. 1984. U.S.D.A. Agriculture information
Bulletin No. 460

USDA. Soil Conservation Service. 1993. Hydric Soil of the Caribbean Area.

APPENDIX



APPENDIX A: Data Forms

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	A
		Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Mimosa pigra</i>	Ar	FACW	9.		
2. <i>Urena lobata</i>	H	FAC	10.		
3. <i>Psidium guajava</i>	S	FAC	11.		
4. <i>Paspalum notatum</i>	H	FAC	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC : **100%**
(Excluding FAC-).

Remarks: 18°23.287'N
066°24.773' W 145.73 m

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase): <u>Naranjo series</u>	Drainage Class: Deep well drained in uplands Field Observations
Taxonomy (Subgroup): <u>Isohyperthermic eutropeptic rendolls</u>	Confirm Mapped Type? Yes X No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10 YR 3/2			Moderate fine granular structure, slightly sticky
8-12	B	10 YR 5/6			Fine and medium subangular blocky structure, slightly sticky
12-22	C	10 YR 6/8			Firm and slightly sticky

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfideic Odor
<input type="checkbox"/> Aquic Moisture Regimen
<input type="checkbox"/> Reducing Conditions
<input 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) |
|---|---|

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>Yes</u>	No	(Circle)	Is this Sampling Point Within a Wetland? Yes <u>No</u>
Wetland Hydrology Present?	<u>Yes</u>	<u>No</u>		
Hydric Soils Present	<u>Yes</u>	<u>No</u>		

Remarks: UPLAND

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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
		Transect ID:	A
		Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Mimosa pigra</i>	S	FACW	9. <i>Paspalum virgatum</i>	H	FACW
2. <i>Urena lobata</i>	H	FAC	10. _____	_____	_____
3. <i>Paspalum notatum</i>	H	FAC	11. _____	_____	_____
4. <i>Kyllinga brevifolia</i>	H	FAC	12. _____	_____	_____
5. <i>Vigna vixellata</i>	W	NL	13. _____	_____	_____
6. <i>Spermacocce verticilata</i>	H	NL	14. _____	_____	_____
7. <i>Commelina diffusa</i>	H	FAC	15. _____	_____	_____
8. <i>Eleusine indica</i>	H	FAC	16. _____	_____	_____

Percent of Dominant Species that are OBI, FACW or FAC : 77%
(Excluding FAC-).

Remarks: 18°23.321'N
066°24.710' W 148.47 m

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase): Taxonomy (Subgroup):	Drainage Class: Deep well drained in uplands Field Observations Confirm Mapped Type? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<u>Naranjo series</u> Isohyperthermic eutropeptic rendolls	

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10 YR 3/2			Moderate fine granular structure, slightly sticky
8-12	B	10 YR 5/6			Fine and medium subangular blocky structure, slightly sticky
12-22	C	10 YR 6/8			Firm and slightly sticky

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input checked="" type="checkbox"/> Sulfideic Odor
<input type="checkbox"/> Aquic Moisture Regimen
<input type="checkbox"/> Reducing Conditions
<input 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) |
|--|---|

Hydric Soil Present? Yes No

Remarks: UPLAND, Soil was slightly sandy and with sulfideic odor.

WETLAND DETERMINATION

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

Remarks: UPLAND

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

Project/Site:	Monte Arenas	Date:	November 18, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	A
		Plot ID:	3

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Mimosa pigra</i>	Ar	FACW	9.		
2. <i>Urena lobata</i>	H	FAC	10.		
3. <i>Bidens pilosa</i>	H	FACU	11.		
4. <i>Rynchospora nervosa</i>	H	NL	12.		
5. <i>Brachiaria mutica</i>	H	FACW	13.		
6. <i>Hypoxis decumbens</i>	H	NI	14.		
7. <i>Metriola petiolata</i>	H	OBL	15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC : 57%
(Excluding FAC-).

Remarks: 18°23.196'N
066°25.011' W 135.67 m

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase):	Moca series	Drainage Class:	Moderately well drained in uplands and coastal plains		
Taxonomy (Subgroup):	<u>Isohyperthermic vertic tropudults</u>	Field Observations Confirm Mapped Type?	Yes	X	No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-7	A	5 YR 3/4			Weak fine subangular blocky structure, firm, slightly sticky plastic
7-19	B	2.5 YR 4/8			Weak medium subangular blocky structure, firm, slightly sticky
19-22	C	2.5 YR 4/8			Massive and slightly sticky

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"/> Sulfideic Odor	<input type="checkbox"/> Organic Streaking, In Sandy Soils
<input type="checkbox"/> Aquatic Moisture Regimen	<input checked="" 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)

Hydric Soil Present? Yes No

Remarks: UPLAND, the soil in the A horizon do not match mapped type.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>Yes</u>	No (Circle)	Is this Sampling Point Within a Wetland? Yes <u>No</u>
Wetland Hydrology Present?	Yes	<u>No</u>	
Hydric Soils Present	<u>Yes</u>	No	

Remarks: UPLAND, there was no water presence in this sampling point.

Approved by HQUSACE 3/92

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
Do Normal Circumstances exist on the site?		<u>Yes</u>	No
Is the site significantly disturbed (Atypical Situation)?		Yes	<u>No</u>
Is the area a potential Problem Area (If needed, explain on reverse.)		Yes	<u>No</u>
		Community ID:	<u>T</u>
		Transect ID:	<u>B</u>
		Plot ID:	<u>1</u>

VEGETATION

Dominant Plan Species	Stratum	Indicator	1.	Dominant Plan Species	Stratum	Indicator	9.
1. <u>Mimosa pigra</u>	<u>S</u>	<u>FACW</u>	9.				
2. <u>Paspalum notatum</u>	<u>H</u>	<u>FAC</u>	10.				
3. <u>Rhynchospora nervosa</u>	<u>H</u>	<u>NL</u>	11.				
4. <u>Kyllinga brevifolia</u>	<u>H</u>	<u>FAC</u>	12.				
5. <u>Spermacocce verticilata</u>	<u>H</u>	<u>NL</u>	13.				
6. _____	_____	_____	14.				
7. _____	_____	_____	15.				
8. _____	_____	_____					

Percent of Dominant Species that are OBL, FACW or FAC : **60%**
(Excluding FAC-).

Remarks: 18°23.253'N
066°24.745' W 141.37 m

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase): <u>Naranjo series</u> Taxonomy (Subgroup): <u>Isohyperthermic eutropeptic rendolls</u>	Drainage Class: Deep well drained in uplands Field Observations Confirm Mapped Type? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	---

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10 YR 2/1			Moderate fine granular structure, slightly sticky
8-17	B	10 YR 5/62			Fine and medium subangular blocky structure, slightly sticky
17-21	C	10 YR 3/4		5%, grayish	Firm and slightly sticky

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfideic Odor
<input type="checkbox"/> Aquic Moisture Regimen
<input type="checkbox"/> Reducing Conditions
<input 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) |
|---|---|

Hydric Soil Present? Yes No

Remarks: UPLAND

WETLAND DETERMINATION

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

Remarks: UPLAND

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	B
		Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1. <i>Paspalum virgatum</i>	H	FACW	9.			
2. <i>Urena lobata</i>	H	FAC	10.			
3. <i>Paspalum notatum</i>	H	FAC	11.			
4. <i>Kyllinga brevifolia</i>	H	FAC	12.			
5. <i>Spermacocce verticilata</i>	H	NL	13.			
6. <i>Eleusine indica</i>	H	FAC	14.			
7. <i>Rhynchospora nervosa</i>	H	NL	15.			
8. _____			16.			

Percent of Dominant Species that are OBL, FACW or FAC : **71%**
(Excluding FAC-).

Remarks: 18°23.280'N 066°24.7100' W 152.8 m

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase): <u>Juncal series</u> Taxonomy (Subgroup): <u>Isohyperthermic typic tropudalfs</u>	Drainage Class: Deep well drained in uplands Field Observations Confirm Mapped Type? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.
0-7	A	10 YR 4/3			Weak fine and medium subangular blocky structure, slightly sticky
7-12	B	10 YR 5/6			Moderate medium and coarse subangular blocky structure, slightly plastic
12-21	C	10 YR 6/8	5 YR 3/2	50% reddish	Weak medium subangular blocky structure, slightly sticky

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regimen <input type="checkbox"/> Reducing Conditions <input 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)
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Remarks: UPLAND

WETLAND DETERMINATION

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

Remarks: UPLAND

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

Project/Site:	Monte Arenas	Date:	November 18, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	B
		Plot ID:	3

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Cynodon nlemfuensis</i>	H	NL	9. <i>Citharexylum fruticosum</i>	S	NL
2. <i>Urena lobata</i>	H	FAC	10. <i>Spathodea campanulata</i>	T	FACU
3. <i>Paspalum notatum</i>	H	FAC	11. <i>Mimosa pigra</i>	S	FACW
4. <i>Solanum torvum</i>	S	NL	12.		
5. <i>Cissus verticillata</i>	W	FAC	13.		
6. <i>Eleusine indica</i>	H	FAC	14.		
7. <i>Rhynchospora nervosa</i>	H	NL	15.		
8. <i>Momordica charantia</i>	W	FAC	16.		

Percent of Dominant Species that are OBL, FACW or FAC : 54%
(Excluding FAC-).

Remarks: 18°23.194'N
066°24.8070' W 129.32 m

HYDROLOGY

Recorded Data (Describe in Remarks) <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available Field Observations: Depth of Surface Water: <u> N/A </u> (in.) Depth of Free Water in Pit: <u> N/A </u> (in.) Depth of Saturated Soil: <u> N/A </u> (in.)	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input 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 Roots 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)
Remarks: No water present in this point.	

SOILS

Map Unit Name: (Series and Phase): <u>Naranjo series</u> Taxonomy (Subgroup): <u>Isohyperthermic eutropeptic rendolls</u>	Drainage Class: Deep well drained in uplands Field Observations Confirm Mapped Type? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	---

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.
0-7	A	10 YR 3/2			Moderate fine granular structure, slightly sticky
7-12	B	10 YR 4/3			Fine and medium subangular blocky structure, slightly sticky
12-21	C	10 YR 6/8			Firm and slightly sticky

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfidic Odor
<input type="checkbox"/> Aquic Moisture Regimen
<input type="checkbox"/> Reducing Conditions
<input 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) |
|--|---|

Hydric Soil Present? Yes No

Remarks: UPLAND

WETLAND DETERMINATION

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

Remarks: UPLAND

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

Project/Site:	Monte Arenas	Date:	November 18, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	B
		Plot ID:	4

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Citharexylum fruticosum</i>	S	NL	9. <i>Spathodea campanulata</i>	T	FACU
2. <i>Andira inermis</i>	T	FACW	10.		
3. <i>Mimosa pigra</i>	S	FACW	11.		
4. <i>Lantana camara</i>	H	FACU	12.		
5. <i>Lephiantes peltata</i>	S	FAC	13.		
6. <i>Thespesia grandiflora</i>	T	NL	14.		
7. <i>Zanthoxylum caribaeum</i>	T	NL	15.		
8. <i>Senna siamea</i>	T	NL	16.		

Percent of Dominant Species that are OBL, FACW or FAC : 33%
(Excluding FAC-).

Remarks: 18°23.176'N
066°24.866' W 109.60 m

HYDROLOGY

<p>Recorded Data (Describe in Remarks)</p> <p><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u> N/A </u> (in.)</p> <p>Depth of Free Water in Pit: <u> N/A </u> (in.)</p> <p>Depth of Saturated Soil: <u> N/A </u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input type="checkbox"/> Oxidized Roots Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
<p>Remarks: No water present in this point. Near this point there is a drainage channel that diverts waters from the oxidation pond located near the road.</p>	

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

Project/Site:	Monte Arenas	Date:	November 18, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	B
		Plot ID:	5

VEGETATION

Dominant Plan Species	Stratum	Indicator	Dominant Plan Species	Stratum	Indicator
1. <i>Senna siamea</i>	T	NL	9.		
2. <i>Cynodon nlenfuensis</i>	H	NL	10.		
3. <i>Mimosa pigra</i>	S	FACW	11.		
4. <i>Roystonea borinquena</i>	T	FAC	12.		
5. <i>Rynchospora nervosa</i>	H	NL	13.		
6. <i>Ipomoea alba</i>	W	FACW	14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBI, FACW or FAC : **50%**
 (Excluding FAC-).

Remarks: 18°23.120'N
 066°24.941' W 115.24 m

HYDROLOGY

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

Remarks: No water present in this point.

SOILS

Map Unit Name: (Series and Phase):	Moca series	Drainage Class:	Moderately well drained in uplands and coastal plains		
Taxonomy (Subgroup):	Isohyperthermic vertic tropudults	Field Observations Confirm Mapped Type?	Yes	X	No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	5 YR 3/4			Weak fine subangular blocky structure, firm, slightly sticky plastic
10-17	B	2.5 YR 4/4			Weak medium subangular blocky structure, firm, slightly sticky
17-21	C	2.5 YR 4/6			Massive and slightly sticky

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"/> Aquatic Moisture Regimen | <input checked="" 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) |

Hydric Soil Present? Yes No

Remarks: UPLAND, there was no water presence in this sampling point

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>Yes</u>	No	(Circle)	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	<u>No</u>		
Hydric Soils Present	<u>Yes</u>	No		

Remarks: UPLAND

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

Project/Site:	Monte Arenas	Date:	November 18, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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
		Transect ID:	B
		Plot ID:	6

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Ipomoea alba</i>	W	FACW	9. <i>Desmodium incanum</i>	W	FACU
2. <i>Cynodon nlenfuensis</i>	H	NL	10. <i>Commelina erecta</i>	H	FAC
3. <i>Mimosa pigra</i>	S	FACW	11. _____	_____	_____
4. <i>Roystonea borinquena</i>	T	FAC	12. _____	_____	_____
5. <i>Rynchospora nervosa</i>	H	NL	13. _____	_____	_____
6. <i>Spathodea campanulata</i>	T	FACU	14. _____	_____	_____
7. <i>Urena lobata</i>	H	FAC	15. _____	_____	_____
8. <i>Cyperus odoratus</i>	H	FACW			

Percent of Dominant Species that are OBL, FACW or FAC : 60%
(Excluding FAC-).

Remarks: 18°23.068'N
066°24.973' W 122.56 m

HYDROLOGY

Recorded Data (Describe in Remarks) <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available Field Observations: Depth of Surface Water: <u> N/A </u> (in.) Depth of Free Water in Pit <u> N/A </u> (in.) Depth of Saturated Soil: <u> N/A </u> (in.)	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input 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 Roots 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)
Remarks: No water present in this point.	

SOILS

Map Unit Name: (Series and Phase):		<u>Naranjo series</u>		Drainage Class:	Deep well drained in uplands		
Taxonomy (Subgroup):		<u>Isohyperthermic eutropeptic rendolls</u>		Field Observations			
				Confirm Mapped Type?	Yes	X	No
Profile Description:							
Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.		
0-10	A	10 YR 3/2			Moderate fine granular structure, slightly sticky		
10-17	B	10 YR 4/3			Fine and medium subangular blocky structure, slightly sticky		
17-21	C	10 YR 6/8			Firm and slightly sticky		
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 Regimen				<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)			
Hydric Soil Present?						Yes	No
Remarks: UPLAND							

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>Yes</u>	No (Circle)	
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present	Yes	No	
			Is this Sampling Point Within a Wetland? Yes No
Remarks: UPLAND			

Approved by HQUSACE 3/92

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR

Do Normal Circumstances exist on the site?	<u>Yes</u>	No	Community ID:	<u>T</u>
Is the site significantly disturbed (Atypical Situation)?	Yes	<u>No</u>	Transect ID:	<u>C</u>
Is the area a potential Problem Area (If needed, explain on reverse.)	Yes	<u>No</u>	Plot ID:	<u>1</u>

VEGETATION

1.	Dominant Plan Species	Stratum	Indicator	9.	Dominant Plan Species	Stratum	Indicator
	<u>Mimosa pudica</u>	<u>H</u>	<u>FAC</u>				
	<u>Urena lobata</u>	<u>II</u>	<u>FAC</u>				
	<u>Paspalum notatum</u>	<u>H</u>	<u>FAC</u>				
	<u>Rhynchospora nervosa</u>	<u>H</u>	<u>NL</u>				
	<u>Bidens pilosa</u>	<u>H</u>	<u>FACU-</u>				
6.				14.			
7.				15.			
8.				16.			

Percent of Dominant Species that are OBL, FACW or FAC : (Excluding FAC-).	60%
--	------------

Remarks: 18°23.144'N 066°24.679' W 155.21 m

HYDROLOGY

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

Remarks:

SOILS

Map Unit Name: (Series and Phase): Juncal series	Drainage Class: Deep well drained in uplands Field Observations Confirm Mapped Type? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Taxonomy (Subgroup): Isohyperthermic typic tropudalfs	

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.
0-7	A	10 YR 2/2			Weak fine and medium subangular blocky structure, slightly sticky
7-12	B	10 YR 5/6			Moderate medium and coarse subangular blocky structure, slightly plastic
12-21	C	10 YR 6/8			Weak medium subangular blocky structure, slightly sticky

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol
<input type="checkbox"/> Histic Epipedon
<input type="checkbox"/> Sulfidic Odor
<input type="checkbox"/> Aquic Moisture Regimen
<input type="checkbox"/> Reducing Conditions
<input 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) |
|--|---|

Hydric Soil Present? Yes No

Remarks: UPLAND

WETLAND DETERMINATION

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

Remarks: UPLAND

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

Project/Site:	Monte Arenas	Date:	November 18, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
Do Normal Circumstances exist on the site?		<u>Yes</u>	<u>No</u>
Is the site significantly disturbed (Atypical Situation)?		<u>Yes</u>	<u>No</u>
Is the area a potential Problem Area (If needed, explain on reverse.)		<u>Yes</u>	<u>No</u>
		Community ID:	<u>T</u>
		Transect ID:	<u>C</u>
		Plot ID:	<u>2</u>

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1.	<i>Rhynchospora nervosa</i>	H	NL				
2.	<i>Urena lobata</i>	II	FAC	10.			
3.	<i>Citharexylum fruticosum</i>	S	NL	11.			
4.	<i>Brachiaria mutica</i>	H	FACW	12.			
5.				13.			
6.				14.			
7.				15.			
8.				16.			
Percent of Dominant Species that are OBL, FACW or FAC : (Excluding FAC-).				50%			
Remarks: 18°23.118'N 066°24.864' W 129.20 m							

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase):		Juncal series		Drainage Class:	Deep well drained in uplands		
Taxonomy (Subgroup):		Isohyperthermic typic tropudalfs		Field Observations	Confirm Mapped Type?	Yes	X No
Profile Description:							
Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.		
0-11	A	10 YR 2/2			Weak fine and medium subangular blocky structure, slightly sticky		
11-12	B	10 YR 5/6			Moderate medium and coarse subangular blocky structure, slightly plastic		
12-21	C	10 YR 6/8			Weak medium subangular blocky structure, slightly sticky		
Hydric Soil Indicators:							
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regimen <input type="checkbox"/> Reducing Conditions <input 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)			
Hydric Soil Present?						Yes	<u>No</u>
Remarks: UPLAND							

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>Yes</u>	No	(Circle)	Is this Sampling Point Within a Wetland? Yes <u>No</u>
Wetland Hydrology Present?	Yes	<u>No</u>		
Hydric Soils Present	Yes	<u>No</u>		
Remarks: UPLAND				

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

Project/Site:	Monte Arenas	Date:	November 18, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	C
		Plot ID:	3

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Rhynchospora nervosa</u>	H	NL	9. <u>Desmodium incanum</u>	W	FACU
2. <u>Urena lobata</u>	H	FAC	10. <u>Eleusine indica</u>	H	FAC
3. <u>Citharexylum fruticosum</u>	S	NL	11. <u>Mimosa pigra</u>	S	FACW
4. <u>Brachiaria mutica</u>	H	FACW	12. _____	_____	_____
5. <u>Psidium guajava</u>	S	FAC	13. _____	_____	_____
6. <u>Sporobolus indicus</u>	H	FACU	14. _____	_____	_____
7. <u>Solanum torvum</u>	S	NL	15. _____	_____	_____
8. <u>Cyperus odoratus</u>	H	FACW	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC : **54%**
(Excluding FAC-).

Remarks: 18°23.050'N
066°24.964' W 124.51 m

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase):		<u>Juncal series</u>		Drainage Class:	Deep well drained in uplands	
Taxonomy (Subgroup):		<u>Isohyperthermic typic tropudalfs</u>		Field Observations		
				Confirm Mapped Type?	Yes	X No
Profile Description:						
Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.	
0-9	A	10 YR 2/2			Weak fine and medium subangular blocky structure, slightly sticky	
9-14	B	10 YR 5/6			Moderate medium and coarse subangular blocky structure, slightly plastic	
14-21	C	10 YR 6/8			Weak medium subangular blocky structure, slightly sticky	
Hydric Soil Indicators:						
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regimen <input type="checkbox"/> Reducing Conditions <input 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)				
Hydric Soil Present?					Yes	No
Remarks: UPLAND. Soil had a sandy texture.						

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>Yes</u>	No (Circle)	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present	Yes	No	
Remarks: UPLAND			

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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
		Transect ID:	D
		Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Mimosa pudica</i>	H	FAC	9.		
2. <i>Urena lobata</i>	H	FAC	10.		
3. <i>Paspalum notatum</i>	H	FAC	11.		
4. <i>Rhynchospora nervosa</i>	H	NL	12.		
5. <i>Bidens pilosa</i>	H	FACU-	13.		
6. <i>Mimosa pigra</i>	S	FACW	14.		
7. <i>Ludwigia octovalvis</i>	H	OBL	15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC : 71%
(Excluding FAC-).

Remarks: 18°23.074'N
066°24.655' W 154.23 m

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase): Taxonomy (Subgroup):	Drainage Class: Deep well drained in uplands Field Observations Confirm Mapped Type? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Juncal series Isohyperthermic typic tropudalfs	

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.
0-7	A	10 YR 2/2			Weak fine and medium subangular blocky structure, slightly sticky
7-12	B	10 YR 5/6			Moderate medium and coarse subangular blocky structure, slightly plastic
12-21	C	10 YR 6/8			Weak medium subangular blocky structure, slightly sticky

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regimen <input type="checkbox"/> Reducing Conditions <input 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)
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Remarks: UPLAND

WETLAND DETERMINATION

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

Remarks: UPLAND

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	D
		Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Mimosa pudica</i>	H	FAC	9.		
2. <i>Urena lobata</i>	H	FAC	10.		
3. <i>Paspalum notatum</i>	H	FAC	11.		
4. <i>Rhynchospora nervosa</i>	H	NL	12.		
5. <i>Bidens pilosa</i>	H	FACU-	13.		
6. <i>Mimosa pigra</i>	S	FACW	14.		
7. <i>Ludwigia octovalvis</i>	H	OBL	15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC : **71%**
(Excluding FAC-).

Remarks: 18°23.074'N
066°24.655' W 154.23 m

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase): Juncal series	Drainage Class: Deep well drained in uplands Field Observations
Taxonomy (Subgroup): Isohyperthermic typic tropudalfs	Confirm Mapped Type? Yes X No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.
0-7	A	10 YR 2/2			Weak fine and medium subangular blocky structure, slightly sticky
7-12	B	10 YR 5/6			Moderate medium and coarse subangular blocky structure, slightly plastic
12-21	C	10 YR 6/8			Weak medium subangular blocky structure, slightly sticky

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regimen <input type="checkbox"/> Reducing Conditions <input 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)
Hydric Soil Present?	Yes No

Remarks: UPLAND

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	(Circle)	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No		
Hydric Soils Present	Yes	No		

Remarks: UPLAND

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	D
		Plot ID:	2

VEGETATION

1.	Dominant Plant Species	Stratum	Indicator	9.	Dominant Plant Species	Stratum	Indicator
	<i>Mimosa pigra</i>	S	FACW				
	<i>Urena lobata</i>	H	FAC				
	<i>Vigna vixellata</i>	W	NL				
	<i>Rhynchospora nervosa</i>	H	NL				
	<i>Brachiaria mutica</i>	H	FACW				
	<i>Bidens pilosa</i>	H	FACU				
Percent of Dominant Species that are OBL, FACW or FAC : (Excluding FAC-).				50%			
Remarks: 18°23.141'N 066°24.748' W 152.74 m							

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase):		<u>Naranjo series</u>		Drainage Class:	Deep well drained in uplands		
Taxonomy (Subgroup):		<u>Isohyperthermic cutropeptic rendolls</u>		Field Observations			
				Confirm Mapped Type?	Yes	X	No
Profile Description:							
Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.		
0-8	A	2.5 YR 3/2			Moderate fine granular structure, slightly sticky		
8-12	B	10 YR 5/6			Fine and medium subangular blocky structure, slightly sticky		
12-22	C	10 YR 6/8			Firm and slightly sticky		
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"/>	Sulfideic Odor		<input type="checkbox"/>	Organic Streaking, In Sandy Soils			
<input type="checkbox"/>	Aquic Moisture Regimen		<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)			
Hydric Soil Present?						Yes	No
Remarks: UPLAND							

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>Yes</u>	No (Circle)	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	<u>No</u>	
Hydric Soils Present	Yes	<u>No</u>	
Remarks: UPLAND			

Approved by HQUSACE 3/92

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	D
		Plot ID:	3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1.	<i>Mimosa pigra</i>	S	FACW	9.			
2.	<i>Desmodium incanum</i>	W	FACU	10.			
3.	<i>Cynodon nlenfuensis</i>	H	NL	11.			
4.	<i>Rhynchospora nervosa</i>	H	NL	12.			
5.	<i>Ipomoea purpurea</i>	H	UPL	13.			
6.	<i>Paspalum notatum</i>	H	FAC	14.			
7.	<i>Macropitium lathyroides</i>	W	FACU	15.			
8.				16.			
Percent of Dominant Species that are OBL, FACW or FAC : (Excluding FAC-).				28%			
Remarks: 18°23.110'N 066°24.815' W 134.14 m							

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase):		<u>Juncal series</u>		Drainage Class:	Deep well drained in uplands	
Taxonomy (Subgroup):		<u>Isohyperthermic typic tropudalfs</u>		Field Observations		
				Confirm Mapped Type?	Yes	X No
Profile Description:						
Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.	
0-11	A	2.5 YR 3/3			Weak fine and medium subangular blocky structure, slightly sticky	
12-21	B	2.5 YR 5/6			Moderate medium and coarse subangular blocky structure, slightly plastic	
12-22	C	10 YR 6/8			Weak medium subangular blocky structure, slightly sticky	
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"/> Sulfideic Odor				<input type="checkbox"/> Organic Streaking, In Sandy Soils		
<input type="checkbox"/> Aquic Moisture Regimen				<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)		
Hydric Soil Present?					Yes	<u>No</u>
Remarks: UPLAND						

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	<u>No</u> (Circle)	Is this Sampling Point Within a Wetland? Yes <u>No</u>
Wetland Hydrology Present?	Yes	<u>No</u>	
Hydric Soils Present	Yes	<u>No</u>	
Remarks: UPLAND			

Approved by HQUSACE 3/92

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	E
		Plot ID:	1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1.	<i>Mimosa pigra</i>	Ar	FACW	9.	<i>Paspalum virgatum</i>	H	FACW
2.	<i>Urena lobata</i>	H	FAC	10.			
3.	<i>Paspalum notatum</i>	H	FAC	11.			
4.	<i>Kyllinga brevifolia</i>	H	FAC	12.			
5.	<i>Vigna vixellata</i>	W	NL	13.			
6.	<i>Spermacocce verticillata</i>	H	NL	14.			
7.	<i>Commelina diffusa</i>	H	FAC	15.			
8.	<i>Eleusine indica</i>	H	FAC	16.			

Percent of Dominant Species that are OBL, FACW or FAC : 77%
(Excluding FAC-).

Remarks: 18°23.321'N
066°24.710' W 148.47 m

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase):		<u>Naranjo series</u>		Drainage Class:	Deep well drained in uplands		
Taxonomy (Subgroup):		<u>Isohyperthermic eutropeptic rendolls</u>		Field Observations			
				Confirm Mapped Type?	Yes	X	No
Profile Description:							
Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.		
0-8	A	10 YR 3/2			Moderate fine granular structure, slightly sticky		
8-12	B	10 YR 4/3			Fine and medium subangular blocky structure, slightly sticky		
12-22	C	10 YR 6/8			Firm and slightly sticky		
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"/> Sulfideic Odor				<input type="checkbox"/> Organic Streaking, In Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regimen				<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)			
Hydric Soil Present?					Yes	No	
Remarks: UPLAND							

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>Yes</u>	No (Circle)	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	<u>No</u>	
Hydric Soils Present	Yes	<u>No</u>	
Remarks: UPLAND			

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	E
		Plot ID:	1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1.	<i>Mimosa pigra</i>	Ar	FACW	9.	<i>Paspalum virgatum</i>	H	FACW
2.	<i>Urena lobata</i>	H	FAC	10.			
3.	<i>Paspalum notatum</i>	H	FAC	11.			
4.	<i>Kyllinga brevifolia</i>	H	FAC	12.			
5.	<i>Vigna vixellata</i>	W	NL	13.			
6.	<i>Spermacoce verticillata</i>	H	NL	14.			
7.	<i>Commelina diffusa</i>	H	FAC	15.			
8.	<i>Eleusine indica</i>	H	FAC	16.			

Percent of Dominant Species that are OBL, FACW or FAC : 77%
(Excluding FAC-).

Remarks: 18°23.321'N
066°24.710' W 148.47 m

HYDROLOGY

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

SOILS

Map Unit Name: (Series and Phase):		<u>Naranjo series</u>		Drainage Class:	Deep well drained in uplands		
Taxonomy (Subgroup):		<u>Isohyperthermic eutropeptic rendolls</u>		Field Observations			
				Confirm Mapped Type?	Yes	X	No
Profile Description:							
Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.		
0-8	A	10 YR 3/2			Moderate fine granular structure, slightly sticky		
8-12	B	10 YR 4/3			Fine and medium subangular blocky structure, slightly sticky		
12-22	C	10 YR 6/8			Firm and slightly sticky		

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"/> Sulfideic Odor	<input type="checkbox"/> Organic Streaking, In Sandy Soils
<input type="checkbox"/> Aquic Moisture Regimen	<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)

Hydric Soil Present? Yes No

Remarks: UPLAND

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>Yes</u> No (Circle)	Is this Sampling Point Within a Wetland? Yes <u>No</u>
Wetland Hydrology Present?	Yes <u>No</u>	
Hydric Soils Present	Yes <u>No</u>	

Remarks: UPLAND

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

Project/Site:	Monte Arenas	Date:	November 11, 2005
Applicant/Owner:	Rio Piedras Housing Management	Country:	Vega Baja
Investigator:	ADC. CORP.	State:	PR
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.)		Yes	No
		Community ID:	T
		Transect ID:	F
		Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Brachiaria mutica</i>	II	FACW	9. <i>Cyperus odoratus</i>	H	FACW
2. <i>Ludwigia octovalvis</i>	H	OBL	10.		
3. <i>Paspalum notatum</i>	H	FAC	11.		
4. <i>Bidens pilosa</i>	H	FACU	12.		
5. <i>Vigna vixellata</i>	W	NL	13.		
6. <i>Solanum torvum</i>	S	NL	14.		
7. <i>Roystonea borinquena</i>	T	FAC	15.		
8. <i>Stachytarpetta jamaicensis</i>	H	FACU	16.		

Percent of Dominant Species that are OBL, FACW or FAC : 55%
(Excluding FAC-).

Remarks: 18°22.984'N
066°24.413' W 114.42 m Hydrophitic Vegetation Present

HYDROLOGY

Recorded Data (Describe in Remarks) <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available Field Observations: Depth of Surface Water: N/A (in.) Depth of Free Water in Pit N/A (in.) Depth of Saturated Soil: N/A (in.)	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input 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 Roots 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)
Remarks:	

SOILS

Map Unit Name: (Series and Phase):		<u>Naranjo series</u>		Drainage Class:	Deep well drained in uplands	
Taxonomy (Subgroup):		<u>Isohyperthermic eutropeptic rendolls</u>		Field Observations:		
				Confirm Mapped Type?	Yes	X No
Profile Description:						
Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.	
0-8	A	10 YR 3/2			Moderate fine granular structure, slightly sticky	
8-12	B	10 YR 5/62			Fine and medium subangular blocky structure, slightly sticky	
12-22	C	10 YR 6/8			Firm and slightly sticky	
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 Regimen		<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)		
Hydric Soil Present?					Yes	No
Remarks: UPLAND						

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No (Circle)	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present	Yes	No	
Remarks: UPLAND			



APPENDIX B: Professional Collaborators

CERTIFIED PROFESSIONAL COLLABORATORS

Ana L. León Torres, MS	Senior Environmental Ecologist, ADC, Corp.
Carmen M. Reyes Colón, MS	Environmental Specialist, ADC, Corp.
Geryn Cruz Cruz	Field Assistant, Drawings ADC, Corp.

Apéndice 11

Estudio Hidrológico – Hidráulico

PO BOX 190332
San Juan, PR 00919-0332
Phone: 787-748-6106
Fax: 787-760-0409
E-Mail: ancallec@caribe.net
Web: <http://netdial.caribe.net/~ancallec/>

CA Engineering



26 de enero de 2006

COPIA

Hon. Javier Vélez Arrocho
Secretario
Departamento de Recursos Naturales y Ambientales
San Juan, PR

Re: **O-CO-EJP01-CE-00003-03122004 2004-09-0615-JPU**
Estudio Hidrológico e Hidrológico
Monte Arenas
Vega Baja, PR



Señor Secretario:

Para su evaluación y endoso, adjunto sirvase encontrar una (1) copia del estudio de referencia
Adjunto también un *diskette* con los cómputos.

Con este motivo, le saludamos.

Cordialmente,

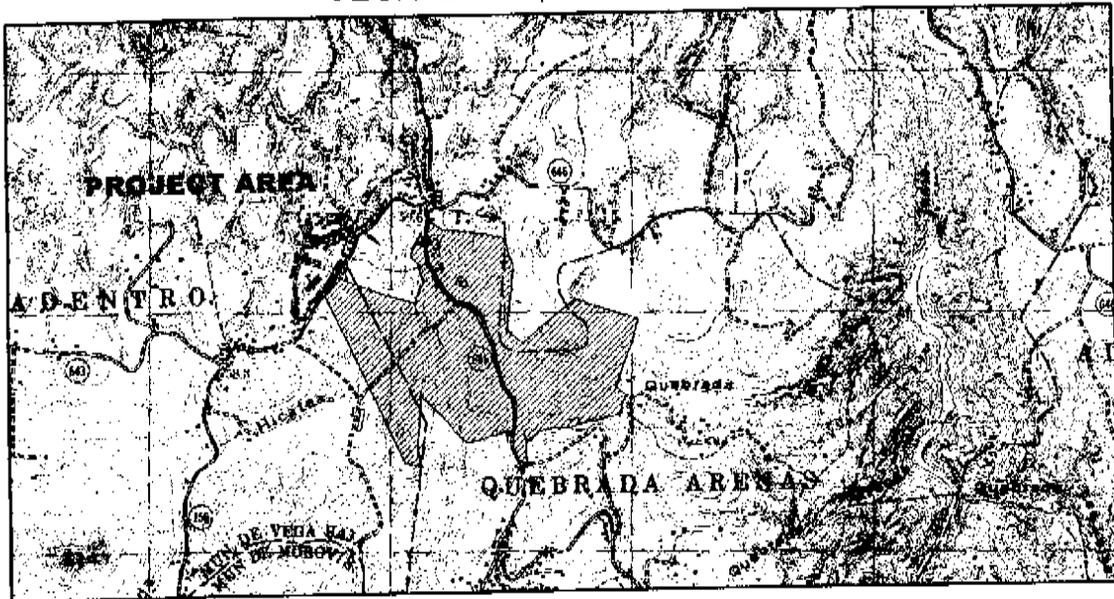
CA Engineering

Casiano Ancalle, P.E.
Principal

Adj. Estudio HH
Diskette

RIO PIEDRAS HOUSING CORP.
SAN JUAN, PUERTO RICO

HYDROLOGIC-HYDRAULIC STUDY
FOR MONTE ARENAS DEVELOPMENT
VEGA BAJA, PUERTO RICO



JANUARY, 2006

CA Engineering



PO BOX 190332, San Juan, PR 00919-0332
Phone: (787) 748-6106 Fax: (787) 760-0409

Website: <http://www.ca-eng.com/>
E-mail: ancallec@caribe.net