

# Appendix D

## Wild and Scenic Rivers

### Introduction

This appendix contains evaluations of the eligibility and suitability of rivers located in the Caribbean National Forest/Luquillo Experimental Forest for inclusion in the National Wild and Scenic River System. The System was established by the 1968 Wild and Scenic Rivers Act which states:

...the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes...

It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generation.

National Wild and Scenic River designation is a four-step process:

- 1) Eligibility study - identification of rivers with "outstandingly remarkable" values.
- 2) Potential classification - Wild, Scenic, or Recreation.
- 3) Suitability study - comparison of eligible segments and assessment of compatibility with the management of other resources to determine which rivers to recommend for designation.
- 4) Designation by Congress

An eligibility study and potential classification (Steps 1, 2) of the Forest's rivers was completed in 1989. The segments studied comprise approximately 22 miles of perennial streams of a total stream mileage of 1,125 on the Forest, of which about 928 miles are perennial. The eligibility study has been updated as part of this forest plan revision, and is included in this appendix.

The Wild and Scenic Rivers Act sets no specific requirements concerning the length of a river segment being considered, but states that a river segment is of sufficient length if, when managed as a Wild, Scenic or Recreational River, the "outstandingly remarkable" values are protected. The determination of whether a river or river segment contains outstandingly remarkable values is, for the most part, a judgment based on the qualities of a river relative to qualities of other rivers in the Forest and on adjoining private and state land.

A study of the suitability of the rivers determined to be eligible was completed as part of this forest plan revision, and is included in this appendix.

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## Eligibility Determination

The Wild and Scenic Rivers Act and the Final Revised *Interagency Guidelines for Eligibility, Classification, and Management of River Areas* (47 *Federal Register* 39453, September 7, 1982) provide direction for determining the eligibility of rivers within national forests for designation as a component of the National Wild and Scenic River system. To be eligible, a river must be free flowing and possess one or more of the following as outstandingly remarkable values:

- Scenic
- Recreational
- Geological/hydrological
- Biological
- Historic
- Cultural
- Other values, including ecological

The Nationwide Rivers Inventory recognized the desirability of representative wild and scenic rivers in each physiographic section of the nation. Therefore, each national forest unit should identify one or more rivers that best represents the values or combination of values in that geographic area and assess its eligibility for designation.

To the extent feasible, all rivers within national forests should be looked at for eligibility. However, most of the rivers in a forest will not require a detailed assessment as they either are not free-flowing, or obviously do not possess any outstandingly remarkable characteristics as defined by the forest's physiography type.

Although the Caribbean NF/Luquillo EF was not included in the National River Inventory (NRI) conducted by the National Park Service in 1981, several potentially eligible rivers on the Forest were identified as part of the initial forest planning effort (Table D-1). All named streams on the Forest received consideration for eligibility during the analysis.

**Table D-1. Wild and Scenic River Eligibility Summary.**

River	Length (Miles)	Outstandingly Remarkable Features							
		Scenic	Recreation		Historic/ Cultural	Biological		Geological	Ecological
			Quality	Use		Flora	Fauna		
Rio Cubuy	2.0	C	C	L	U	D	C	U	U
Rio Grande	3.0	C	C	M	U	D	D	U	U
Rio Espiritu Santo	5.5	D	D	M	D	D	D	C	U
Rio Sonadora	3.0	C	C	M	U	D	D	C	U
Quebrada Jimenez	5.0	C	C	L	U	C	D	U	U
Quebrada La Coca	1.0	D	D	H	U	U	U	D	U
Quebrada Juan Diego	1.0	D	D	M	D	C	C	U	U
Rio de la Mina	✓2.5	D	D	H	D	D	D	D	U
Rio Mameyes	✓7.5	D	D	H	D	D	D	D	D
Rio del Cristal	2.5	C	C	L	U	D	C	U	D
Rio Sabana Sur	2.5	C	C	L	D	C	D	D	U
Rio Camandulas	1.8	C	C	L	U	C	C	U	U
Rio Fajardo	8.0	D	C	L	U	C	C	D	U
Rio Icacos	✓4.8	D	D	L	D	D	C	D	U
Rio Sabana Norte	2.0	D	C	L	U	D	C	D	U

Table abbreviations:

C - Common	L - Low
D - Distinctive	M - Moderate
U - Unknown	H - High

Analysis done by a study team composed of Forest resource professionals and the Forest Supervisor resulted in the following rivers being determined eligible for designation as components of the National Wild and Scenic Rivers System. A field report which determined eligibility and assigned preliminary classification was completed in December, 1985. A description of the outstandingly remarkable values of each of the eligible river segments follows.

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**Rio  
Espiritu Santo**

The area being considered includes the Rio Espiritu Santo from the Forest boundary at El Verde to its headwaters and the Quebrada Sonadora from its confluence with the Espiritu Santo 4 miles below PR 186 to its headwaters .25 miles west of El Yunque Rock. The total length is 7.94 miles. The river is judged eligible based on its outstanding scenic, recreational and historic values, and fish and wildlife resources.

**Scenic Values**

The Espiritu Santo River and Quebrada Sonadora are areas of scenic landscape, abundant, unpolluted water, and relative isolation. The streams course through jumbles of gigantic rocks and massive rock outcrops which create many waterfalls, rapids, and pools. Dense tropical vegetation on steep, canyon-like banks provide a sense of nearly total isolation.

**Recreation Values**

The Espiritu Santo and Quebrada Sonadora PR-186 crossings are popular water play locations. Use of these rivers away from the roads is quite limited, although two lightly used trail sections do exist within the corridor.

**Geological and  
Hydrological  
Values**

The Rio Espiritu Santo Watershed covers an area of 4.0 sq. miles within the Forest, or 9.1% of the Forest. The average discharge for Quebrada Sonadora is 7.5 cu. ft./sec. The average discharge for Espiritu Santo is 60.1 cu. ft./sec. Water quality is good within the study area. The presence of Quebrada Sonadora and Rio Espiritu Santo Picnic Areas, Girl Scout Camp and Rio Grande Job Corps Center do cause some water quality degradation.

Because of steep gradients and a dense network of ephemeral channels, no significant floodplains are found. Using Scatena's Method for riparian wetlands estimates, the area contains approximately 126 acres of riparian habitat (Scatena, 1990).

## **Biological Values**

The Rio Espiritu Santo/Quebrada Sonadora rivers run through key currently occupied Puerto Rican Parrot habitat. The Rio Espiritu Santo area is also known to be inhabited by the endangered Puerto Rican Boa, particularly in its lower reaches. The Broad-winged and Sharp-shinned Hawks, both endangered species, and the Peregrine Falcon, a threatened species, are also known to use the area.

None of the five species of sensitive coquí are known to use the Rio Espiritu Santo corridor. The Red Fruit Bat, the only sensitive mammal designated on the Forest, is a potential inhabitant of the area.

Two endangered plant species, *Callicarpa ampla* and *Ternstroemia luquillensis*, and one proposed threatened plant species, *Coccoloba rugosa*, are known to occur along the Rio Espiritu Santo/Sonadora system. Eleven sensitive plant species are known to occur in association with the Rio Espiritu Santo/Sonadora system. These include: *Brunfelsia portoricensis*, *Branchionidium parvum*, *Calyptanthes luquillensis*, *Calyptanthes woodburyi*, *Cybianthus sintenisii*, *Eugenia eggersii*, *Laplacea portoricensis*, *Maytemus elongata*, *Marlierea sintenisii*, *Ravenia urbanii*, and *Xylosma schwaneckeanum*.

## **Historical and Cultural Values**

Historical sites located within the corridor include homestead sites from the mid-1800's to early 1900's, charcoal productions sites, and a CCC camp.

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**Rio Mameyes** The area being considered is the Rio Mameyes from the Forest boundary 1/2 mile west of the Road 988 bridge (Puente Roto) to its headwaters in the Baño de Oro Research National Area. Total length is 4.5 miles. The river is judged eligible based on its outstanding scenic, biological and recreation values.

**Scenic Values** The portion of the Mameyes from its headwaters to the confluence with the Rio de la Mina is remote and isolated. The stream course is a mass of jumbled boulders, and numerous small waterfalls and pools. Below the confluence with the La Mina, the Rio Mameyes enters a narrow, very scenic, gorge of about one mile in length. Along the gorge run the Carrillo (9) and La Coca (#8) Trails.

**Recreation Values** The Mameyes at the Puente Roto crossing is the most popular water play area on the Forest. All alternatives considered in this plan revision include the construction of a large picnic area at Puente Roto to enhance the experience of users of the area, and to protect soil and water quality.

**Geological and Hydrological Values** The Mameyes Watershed covers 6.88 sq. miles within the Forest, or 10.4% of the Forest. The average discharge at Station 0655 is 58.6 cubic ft./sec. Water quality is optimum within the study area of the upper segment, since the entire corridor is located in the Baño de Oro Natural Area, and no development exists. Water quality is good within the study area of the lower segment, affected to some degree by recreation use on the Rio de la Mina (a tributary of the Mameyes), and the heavy use near Puente Roto.

Due to steep slopes, no significant flood plains occur. Using Scatena's method for riparian wetlands estimates, there are approximately 73 acres of riparian wetlands along the Mameyes eligible segments.

**Biological Values** The Rio Mameyes provides important habitat for the Puerto Rican Parrot and Puerto Rican Boa, both endangered species. The endangered Broad-winged and Sharp-shinned Hawks, and the threatened Peregrine Falcon, are also known to occasionally use the area. No species of sensitive coquí are known to occur in the Rio Mameyes, but the numerous waterfalls associated with this system could potentially support populations of the Web-footed Coquí. Suitable habitat also exists for the sensitive Red Fruit Bat.

No endangered plant species are known to occur along the Mameyes. Three sensitive plant species, *Laplacea portoricensis*, *Ternstroemia heptasepala*, and *Xylosma schwaneckeanum*, are known to occur in the area. The unique Pterocarpus forest occurs within the river corridor. Stands of this buttress-rooted tree are uncommon not only on the island but throughout the Caribbean.

The Mameyes system enjoys the highest natural aquatic diversity and species richness of any Forest watershed; supporting all five species of native fish, all nine species of freshwater shrimp, and its only freshwater crab.

**Historical  
Cultural Values**

Within the proposed Scenic section of the river, there are homestead sites dating to the 1930's or earlier. There are no recorded heritage sites within the proposed Wild section of the Upper Mameyes River, nor within the proposed Recreation section of the Lower Mameyes.

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**Rio de la Mina** The Rio de la Mina segment being considered is from its confluence with the Rio Mameyes to its headwaters located east of PR 191. Total length is 2.1 miles. This river is judged eligible based on its outstanding scenic, recreation, biological and historic values.

**Scenic Values** The water course from its headwaters to the confluence with the Rio Mameyes is strewn with boulders of various sizes, forming many rapids, small waterfalls, and frequent pools.

**Recreation Values** The heaviest developed recreation use in the Forest occurs at the Palo Colorado and Sierra Palm Picnic Sites (originally built by the CCC) located along the Rio La Mina near its headwaters. From these recreation sites the La Mina Trail (#12) roughly parallels the river downstream to the La Mina Falls, one of the most spectacular waterfalls in the Forest. Trail 24 continues downstream from the La Mina waterfall and links with the La Coca Trail near the Río Mameyes. Along this trail an old mine tunnel can be seen in the streambank, where gold is said to have been extracted. (Trail 24 has been closed for several years because of small landslides, but is currently being re-constructed.),

**Geological and Hydrological Values** The Rio de la Mina is part of the Mameyes Watershed. The Rio de la Mina sub-watershed covers an area of 2.7 sq. miles or 6.1% of the Forest. Water quality is good within the study area, affected to some degree by the Palo Colorado and Sierra Palm Picnic Areas. Because of steep gradients and dense network of ephemeral channels, no significant flood plains are found. Using Scatenas's Method for riparian wetlands estimates, there are approximately 33 acres of riparian wetlands (Scatena, 1990).

**Biological Values**

The Rio de la Mina provides important habitat for the Puerto Rican Parrot and Puerto Rican Boa, both endangered species. The endangered Broad-winged and Sharp-shinned Hawks, and the threatened Peregrine Falcon, are also known to occasionally use the area.

No species of sensitive coquí are known to occur along the Rio de la Mina, but the numerous waterfalls associated with this system could potentially support populations of the Web-footed Coquí. Suitable habitat also exists for the sensitive Red Fruit Bat.

Two Endangered plant species, *Callicarpa ampla* and *Lepanthes eltorensis*, are known to occur along the study segment. Five Sensitive plant species are known to occur within the study corridor: *Conostegia hotteana*, *Marlierea sintenisii*, *Psidium sintenisii*, *Ternstroemia heptasepala*, and *Xylosma schwaneckeanum*.

**Historical Cultural Values**

This river's name, "La Mina", probably comes from a mid-1800's mining complex located within the proposed Scenic section. A series of homestead sites of the former community of Florida are located within the proposed Scenic corridor. Trail #24, and many of the facilities in the recreation complex along PR 191 were constructed by the CCC in the 1930's. PR 191 is also a CCC era project.

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**Rio Fajardo**

The area being considered is the Rio Fajardo from the Forest boundary approximately 1/2 miles east of East Peak to its headwaters 1/2 mile north of West Peak in the Baño de Oro Research Natural Area. Total length is 3.4 miles. This river is judged eligible based on its outstanding scenic values.

**Scenic Values**

The Rio Fajardo is certainly one of the most remote and isolated rivers on the Forest. The hike from the Forest boundary up the river to East Peak is extremely arduous and time consuming because of the ruggedness and steepness of the stream course. Huge boulders fill the river channel, and combined with a high volume of water flow, create a remarkably scenic landscape of water falls, water chutes, and pools of greatly varied sizes and depths.

**Recreation Values** This is one of the most remote and isolated rivers on the Forest. Access to the Forest boundary from the east side is difficult and not marked. No developed trails exist along this river, making hiking extremely arduous, and recreation use practically non-existent.

**Geological  
Hydrological  
Values** The Rio Fajardo watershed covers an area of an area of 9.5 sq. miles within the Forest, or 21.7% of the Forest. Water quality is optimum within the study area. The average discharge is 69.0 cubic ft./sec. Approximately 14 acres of flood plain conditions occur at gently sloping lower elevations of the study segment. Using Scatena's method for riparian wetlands estimates, there are approximately 54 acres of riparian habitat along the study segment (Scatena, 1990).

**Biological Values** The Rio Fajardo provides potential habitat for the Puerto Rican Parrot, the Puerto Rican Boa, the Broad-winged and Sharp-shinned Hawks, all endangered species; and the Peregrine Falcon, a threatened species.

No sensitive coquíes are known to occur in the Rio Fajardo, but the numerous waterfalls associated with this system could potentially support populations of the Web-footed Coquí. Suitable habitat also exists for the sensitive Red Fruit Bat.

No endangered or sensitive plants have as yet been found in this river system.

**Historical Cultural  
Values** This drainage has not been surveyed for Heritage resources, and to date none have been reported. It is probable that sites and artifacts of the types found along the rivers on the north side of the Forest are also present here.

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**Rio Icacos**

The area being considered is the Río Icacos from the confluence with the Río Cubuy (where they form the Río Blanco) to its headwaters approximately 1/2 mile south of the gate on PR 191. The total length is 2.9 miles. This river is judged eligible based on its outstanding scenic, historic and cultural values, and ecological values.

**Scenic Values**

The Río Icacos has some of the most varied terrain of any of the Forest's rivers. The stream gradient is less steep near its headwaters than further downstream in contrast to all rivers on the Forest with the exception of the Río Sabana. The stream exhibits a unique sandy bed due to its granodiorite origin in this upper, flatter section. Contrasting sharply is the downstream segment, which more closely resembles other rivers in the Forest with huge jumbled boulders, rapids, and steep gradient. The palm forest type is very conspicuous along the river bank, more so than any other major river in the forest.

**Recreation Values**

The river roughly parallels the closed section of PR 191 for about 2/3 of its length. The road provides easy hiking access to the river corridor, even though no trails currently exist. The river provides outstanding opportunities for semi-primitive recreation, including hiking, backpacking, and water play in a relatively isolated environment. The gentle gradient of the upper part of the river, creates sandy bottomed pools, and adjacent flat areas, unlike much of the forest.

**Geological  
Hydrological  
Values**

The river is within the Río Blanco Stock an intrusion of tertiary quartz diorite. The river headwaters have a gentle gradient and sandy clay flood plains. The downstream segments are characterized steep gradients and numerous boulders.

The Icacos River is located in Río Blanco Watershed. The Icacos River basin covers 812 acres (2.9% of the Forest land). Water quality is high within the study area, although frequent landslides associated with Río Blanco derived soils contribute high amounts of sediment to the stream. The average discharge is 15.0 cubic ft./sec. There are 63 acres of flood plain conditions along the upper valley. Using Scatena's Method for riparian wetlands estimates, there are approximately 37 acres of riparian wetlands along Río Icacos (Scatena, 1990).

**Biological Values** The Rio Icacos Valley is not currently occupied by the Puerto Rican Parrot, but was historically an important use area, and is designated as "essential habitat" for the species' recovery. The Icacos is known to be inhabited by the Puerto Rican Boa.

The Icacos Valley is occasionally visited by the endangered Broad-Winged Hawk, and possibly by the endangered Sharp-shinned Hawk and the threatened Peregrine Falcon. The sensitive Burrow Coqui is known to occur in the upper headwater areas. Suitable habitats exist for the sensitive Mottled and Web-footed Coquis and for the sensitive Red Fruit Bat.

Endangered plants known to occur in the area are *Callicarpa ampla*, *Ilex sintenisii*, *Ternstroemia luquillensis*, and *Ternstroemia subsessilis*. The study corridor provides unique habitats in which 15 species of Sensitive plant are known to occur: *Brunfelsia portoricensis*, *Brachionidium ciliolatum*, *Cordia wagnerorum*, *Eugenia eggersii*, *Laplacea portoricensis*, *Lindsaea stricta* var. *jamesoniiformis*, *Lepanthes dodiana*, *Lycopodium tenuicaule*, *Lycopodium wilsonii*, *Marlierea sintenisii*, *Myrica holdrigeana*, *Ravenia urbanii*, *Solanum woodburyi*, *Ternstroemia heptasepala* and *Xylosma schwaneckeanum*.

Although there are no aquatic PETS species designated on the Forest, the topography associated with the Rio Icacos Valley makes it a unique aquatic ecosystem. Whereas most Forest streams oversteepen in their upper reach, the upper Rio Icacos is a sinuous, low-gradient, slow moving stream characterized by fine substrates. It is one of only two such streams on the Forest.

**Historical Cultural Values** Civilian Conservation Corps (CCC) projects and sites are numerous within the study corridor, including trails, workcamps, PR 191, and the small hydroelectric dam and its associated penstock at the south end of the study section.

Several pre-Columbian petroglyph sites are located along this river downriver of the study section. There is one rockshelter within the corridor which has Spanish Colonial ceramics in association with flaked stone tools.

The dam located at the south end of the study area was built in the 1920's to supply water by pipeline to the Puerto Rico Electric Authority for a hydroelectric project. This dam is over 100 feet long and from 7 to 26 feet high, making it one of the largest on any river in the Forest. The impoundment itself is between 1/4 and 1/2 acre in size and over 20 feet deep at the spillway. Because a significant amount of water is being diverted from the river to power the hydroelectric project, the flow of the Icacos past this point is seriously reduced and can even be dry during certain times of the year. The combination of the dam and the landslides seriously detract from the scenic quality of the river in this section, and significant improvement cannot be expected for years to come as the landslides slowly heal.

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**Rio Sabana**

The area being considered is the Rio Sabana (tributary of the Rio Blanco) from the bridge on Road 191 at the south Forest boundary to its headwaters which reach to the Tradewinds National Recreation Trail approximately 3/4 of a mile east of El Cacique Peak. Total length is 2.1 miles. This river is judged eligible based on its scenic, recreation and ecological values.

**Scenic Values**

The Rio Sabana is a remote and isolated river, which runs for most of its course through area proposed for Wilderness in the current (1986) Forest Plan. The stream course is fairly rugged throughout and has a great degree of visual variety with rapids and pools abundant among the rocks. A middle section of about 1/2 mile in length has a flatter gradient and contains a unique and interesting ecosystem that is characterized by large beds of sphagnum moss.

**Recreation Values**

This river is located between the Tradewinds National Recreation Trail and a potential trailhead site on PR 191 at the downstream end of the study section. A trail reconstruction/reconstruction project is proposed in some plan revision alternatives to link these locations. The river at the PR 191 bridge is a popular water play site.

**Geological Hydrological Values**

The Sabana River is located in the Rio Blanco Watershed. The Rio Sabana basin covers 2,525 acres, or 9.1% of the Forest. Water quality is optimum in the study area. Approximately 24 acres of flood plain conditions occur at gently sloping middle elevations of the study section. Using Scatena's Method for riparian wetlands estimates, there are approximately 37 acres of riparian wetlands along Sabana River (Scatena, 1990).

**Biological Values**

The Rio Sabana is also not currently occupied by the Puerto Rican Parrot, but is designated as "Essential Habitat" for the future recovery of this species. The Sabana provides suitable habitat for other endangered species such as the Broad-winged and Sharp-shinned Hawks, and the Puerto Rican Boa, and possibly the threatened Peregrine Falcon. Two species of endangered plant, *Callicarpa ampla* and *Lepanthes eltorensis*, are found here.

Suitable habitat exists for the sensitive Web-footed Coqui and the Red Fruit Bat. Two species of sensitive plant, *Eugenia eggersii* and *Xylosma Schwaneckeanum*, have been found in the area.

This river system is one of two on the Forest which provides a unique high-elevation, low gradient streambed. The river generally provides excellent quality aquatic habitat, although the relatively small size of the watershed, combined with its location in the "rain shadow" of East Peak ridge, results in less flow than most of the other rivers being analyzed.

**Historic  
Cultural Values**

At the Forest boundary, which is the downstream limit for the study segment, is a penstock to the Icacos Dam, which was built in the 1920's.

## Potential Classification Of Eligible Rivers

The potential classification of a river is based on the condition of the river and the adjacent lands as they exist at the time of study. The Act specifies the following three classifications categories for eligible rivers.

- Wild** Those rivers or sections of rivers that are free of impoundment and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive lands.
- Scenic** Those rivers or section of rivers that are free of impoundment, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- Recreational** Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Pending the suitability studies the eligible rivers are classified as follows:

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### Río Espiritu Santo

- Wild** From headwaters of Rio Espiritu Santo to water supply intake immediately upstream from FDR 12 road crossing, 2.94 miles. From headwaters of both Quebrada Sonadora tributaries to 100 yards south of Route 186, 1.98 miles.
- Scenic** From water supply intake on Rio Espiritu Santo near FDR 12 to 100 yards south of Route 186, .78 miles.
- Recreational** On Rio Espiritu Santo, from 100 yards south of Route 186, north to Forest boundary, 1.96 miles. On Quebrada Sonadora, from 100 yards south of Route 186, north to Rio Espiritu Santo, .28 miles.

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## **Río Mameyes**

**Wild** From its headwaters in the Baño de Oro Natural Area to the crossing points of Trail #24 and Trail #11, just upstream from the confluence with the Río La Mina, 2.1 miles

**Scenic** From the crossing points of Trails #24 and #11 to the access point of Trail #7, 1.4 miles.

**Recreational** From the access point of Trail #7 to the Forest boundary west of the bridge on PR 191, 1.0 miles.

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## **Río La Mina**

**Wild** The La Mina has no Wild component.

**Scenic** From its confluence with the Río Mameyes upstream to the la Mina Falls, 1.2 miles.

**Recreational** From La Mina Falls to its headwaters located east of PR 191 between Km. 12 and Km. 13 in the El Yunque Recreation Area, 0.9 miles.

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## **Río Fajardo**

**Wild** The total length of the river corridor, from its headwaters approximately 1/2 mile north of West Peak to the Forest boundary approximately 1 1/2 miles east of East Peak, 3.4 miles.

**Scenic** The Río Fajardo has no Scenic component.

**Recreational** The Río Fajardo has no Recreational component.

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## **Río Icacos**

- Wild**                      The Río Icacos has no Wild component.
- Scenic**                    From its headwaters approximately 1/2 mile south of the intersection of the Mt. Britton Road (#9938) with PR 191 to the point where the river leaves National Forest ownership (approximately 1/4 miles upstream of the PREPA hydroelectric dam), 2.3 miles.
- Recreational**            The Río Icacos has no Recreational component.

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## **Río Sabana**

- Wild**                      From its headwaters approximately 3/4 of a mile east of El Cacique Peak to 1/4 mile north of the PR 191 crossing near the southern Forest boundary, 1.8 miles.
- Scenic**                    The Río Sabana has no Scenic component.
- Recreational**            From approximately 1/4 mile north of the PR 191 crossing to the southern Forest boundary, 0.3 mile.

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## Suitability Determination

The last stage in Wild and Scenic River study is the evaluation of suitability. This step provides the basis for recommending designation or non-designation of eligible rivers.

### Suitability Criteria

The following criteria were used to evaluate the suitability of eligible rivers:

- Land ownership within the river corridor.
- Compatibility of designation with other current and potential use within the river corridor.
- Comparison of the outstandingly remarkable features.

### Suitability Assessments

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#### Rio Espiritu Santo/Quebrada Sonadora

**Land Ownership** The river corridor contains 1600 acres of which 95% is in national forest ownership and 5% is privately owned.

**Compatibility with Other Uses** The Eliza Colbert Girl Scout Camp, the Commonwealth's Cuerpo de Voluntario Camp (a Job Corps-type training center), and University of Puerto Rico's Center for Energy and Environmental Research Station are located with the lower part of the corridor. A dam and pipeline are located on the Rio Espiritu Santo within the corridor, which provide water to the community of Morovis.

The Espiritu Santo and Quebrada Sonadora PR 186 crossings are popular water play locations. Use of these rivers away from the roads is quite limited, although two lightly use trail sections do exist within the corridor.

The river corridor comprises key occupied habitat for the critically endangered Puerto Rican Parrot. Any increased recreation use, resulting from designation and/or trail construction, could adversely affect recovery of the species. Increased recreation use could also adversely affect ongoing research of ecological processes in undisturbed conditions.

**Outstandingly Remarkable Features**

The Rio Espiritu Santo/Quebrada Sonadora have similar scenic and geological/hydrological values as the other eligible rivers on the north half of the Forest. Biological values are very high with key occupied Puerto Rican Parrot habitat and the presence of several species of rare plants.

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**Rio Mameyes**

**Land Ownership**

The upper Mameyes corridor contains 580 acres, of which 100% is in national forest ownership; the lower Mameyes corridor contains 625 acres, of which 75% is in national forest ownership, and 25% is privately owned.

625

The lands in private ownership have been identified as high priority for acquisition. The designation of this river would increase the likelihood that the Forest would receive the funding necessary to accomplish acquisition of these tracts.

**Compatibility with Other Uses**

The eligible Recreation section of the Mameyes includes Puente Roto, the most popular water play location on the Forest. The Scenic section flows through a highly scenic gorge accessed by a popular hiking trail. The Wild section forms a part of the boundary of the Baño de Oro Research Natural Area.

**Outstandingly Remarkable Features**

The Mameyes and its tributary, the Rio de la Mina, have the highest scenic, recreation, research, and biological values of any of the eligible rivers. One of its unique biological features is the Pterocarpus forest which occurs in its lower reaches near the Forest boundary.

Also, the Mameyes is the only river of its size in Puerto Rico, which flows essentially free of impoundment from its headwaters to the sea. Designation could provide some additional impetus for the protection of this condition.

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## **Rio de la Mina**

**Land Ownership**      The river corridor contains 214 acres, of which 100% is in national forest ownership.

**Compatibility with Other Uses**      The Recreation portion of the corridor includes the most popular developed recreation sites and hiking trail on the Forest, as well La Mina Falls, an outstanding scenic attraction. The Scenic portion below La Mina Falls is accessed by a recently reconstructed hiking trail, and includes a mine site of historical interest.

**Outstandingly Remarkable Features**      The Rio de la Mina, as a major tributary of the Mameyes River, shares the highest scenic, recreation, research, and biological values of any of the eligible rivers.

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## **Rio Fajardo**

**Land Ownership**      The river corridor contains 940 acres, of which 82% is in national forest ownership and 18% is privately owned.

**Compatibility with Other Uses**      The Rio Fajardo is virtually inaccessible with little potential for recreation use or trail construction because of extremely rough terrain. Because much of the corridor is within the Baño de Oro Research Natural Area, designation would not add much additional protection.

**Outstandingly Remarkable Features**      This river is the wildest, and one of the most scenic, of the eligible rivers.

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## **Rio Icacos**

**Land Ownership** The river corridor contains 876 acres, of which about 90% is in national forest ownership. There is private land on the river's east bank for about .9 miles above the confluence with the Cubuy River, and private land on both sides between about .4 and .6 miles above the Cubuy confluence.

**Compatibility with Other Uses** This Scenic corridor provides some of the best opportunities for dispersed recreation of any of the eligible rivers. The flatter terrain of the upper part of the river, and the closed section of PR 191 which parallels the river, provide potential for trail construction and off-trail hiking access. The lower .6 miles of the corridor includes private land on one and sometimes both sides of the River, and a small dam for hydroelectric power generation, owned by the PREPA.

**Outstandingly Remarkable Features** The Rio Icacos and Rio Sabana have different geological and more varied scenic values than the north side rivers. The upper part of the Icacos flows through flatter terrain forming highly attractive sandy bottomed pools. The corridor provides habitat for many species of rare plants, and outstanding examples of the palm forest occur along the river.

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## **Rio Sabana**

**Land Ownership** The river corridor contains 703 acres, of which 100% is in national forest ownership.

**Compatibility with Other Uses** The Sabana provides good opportunities for dispersed recreation use. Trail construction/reconstruction could connect the Tradewinds National Recreation Trail at the headwaters of this river with a picnic area/trailhead proposed at the downstream end of the corridor.

**Outstandingly Remarkable Features** The Sabana is similar in geological/hydrological and biological values to the Icacos, but is rated somewhat less scenic.

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## Suitability of Rivers by Alternative

Recommendation for Wild and Scenic River designation is part of the alternatives developed for this forest plan revision. The effects of designation of different combinations of eligible segments is analyzed in Chapter III of this revision. The river segments recommended for inclusion in the National Wild and Scenic Rivers System, is displayed by alternative, in Table D-2.

**Alternative A** Consistent with the direction in the current Forest Plan, this alternative does not recommend any eligible rivers for designation.

**Alternative B** This alternative emphasizes Wilderness designation and recreation opportunities. Wild and Scenic River designation is compatible with this emphasis. All six eligible rivers are recommended for designation.

**Alternative C and C-Mod (Preferred Alternative)** This alternative emphasizes protection of primary forest through Wilderness designation and Research Natural Areas, while providing a mix of other Forest uses. This alternative would select only the most unique and remarkable rivers. Four eligible rivers were determined to be suitable for designation.

**Alternative D** The emphasis of this alternative is maximum protection of primary forest, and opportunities for observational research. Wild and Scenic Rivers designation was found to have limited compatibility with this emphasis. Two eligible rivers were determined to be suitable for designation.

**Table D-2. Wild and Scenic River Recommendations by Segment and Alternative.**

Alternative B recommends all eligible river segments for designation. Alternative A recommends none. Alternatives C, C-mod and D recommend some of the eligible segments.

River	Eligible Segment	Length Miles*	Alternative			
			A	B	C & C-mod	D
Río Espiritu Santo/ Quebrada Sonadora	Wild	2.9		X		
	Scenic	0.8		X		
	Recreation	2.2		X		
Río Mameyes	Wild	2.1		X	X	
	Scenic	1.4		X	X	X
	Recreation	0.9		X	X	X
Río de la Mina	Scenic	1.2		X	X	
	Recreation	0.9		X	X	
Río Fajardo	Wild	3.4		X		
Río Icacos	Scenic	2.3		X	X	X
Río Sabana	Wild	2.3		X		
	Recreation	0.3		X		

X = Recommended for designation

\* Wild, Scenic or Recreation River designation would include a corridor averaging 1/4 mile on each side of the designated river segment. Therefore, acreage included in the designations could be approximately 320 acres per mile of river.

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## **Management Requirements**

### **Introduction**

Specific management requirements for designated rivers would be developed in management plans after designation, but would be similar to the generic management direction in Chapter 8.2 of the Land and Resource Management Planning Handbook (FSH 1902.12), reproduced below. (Some of these generic standards have limited applicability for the Forest.)

The effects of designation on potential development depends on the classification of the river segments. Generally, the Wild classification allows for an absolute minimum of man-made intrusions to preserve the primitive setting, the Scenic classification allows limited man-made intrusion so as to maintain the near natural setting, and Recreation classification allows a full range of resource use, as long as the values qualifying the river for designation are protected.

Pending designation and the subsequent development of river management plan(s), the following management direction will be implemented to ensure protection of the qualities that make the rivers eligible.

### **Wild Rivers**

#### **Timber Production**

Cutting of trees will not be permitted except when needed in association with a primitive recreation experience (such as clearing for trails and protection of users) or to protect the environment (such as control of fire). Timber outside the boundary but within the visual corridors will be managed and harvested in a manner to provide special emphasis to visual quality.

#### **Water Supply**

All water supply dams and major diversions are prohibited. Minor natural looking diversion facilities for providing water to livestock or for human use could be permitted if such facilities would not adversely impact wild river values.

#### **Hydroelectric Power**

No development of hydroelectric power facilities would be permitted.

#### **Flood Control**

No flood control dams, levees, or other work are allowed. Some minor rip rapping could be allowed if it would not violate the natural-like appearance and essentially primitive character of the river area.

**Mining**

New mining claims and mineral leases are prohibited within 1/4 mile of the river. Valid claims would not be abrogated. Subject to regulations that the Secretaries of Agriculture and Interior may prescribe to protect the values of rivers included in the National System, other existing mining activity would be allowed to continue. Existing mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation and pollution, and visual impairment. Reasonable access will be permitted.

**Road  
Construction**

No roads or other provisions for overland motorized travel would be permitted within a narrow incised river valley, or if the river valley is broad, within 1/4 mile of the riverbank. However, one or two inconspicuous roads leading to the river area, for the purpose of providing access to the river, may be permitted. Also, unobtrusive trail bridges could be allowed.

**Agriculture**

Agricultural use is restricted to a limited amount of domestic livestock grazing, pasture, and cropland devoted to hay production.

**Recreation  
Development**

Major public-use areas, such as large campgrounds, interpretive center, or administrative headquarters are located outside the wild rivers area. Simple comfort and convenience facilities, such as fireplaces, shelters, and toilets may be provided as necessary within the river area. These should harmonize with the surroundings.

**Structures**

A few existing structures could be allowed assuming such structures are not incompatible with the essentially primitive and natural values of the viewed. New structures would not be allowed except in rare instances to achieve management objectives (i.e. structures and activities associated with fisheries enhancement programs could be allowed).

## **Scenic Rivers**

### **Timber Production**

A wide range of silvicultural practices could be allowed provided that such practices are carried on in such a way that there is not substantial adverse effect on the river and its immediate environment. The river should be maintained in its near natural environment.

### **Water Supply**

All water supply dams and major diversions, that would have a direct and adverse effect on the values for which the river area is included in the National System, are prohibited. Modest diversions would be allowed only if there would be no direct and adverse effect on river values.

### **Hydroelectric Power**

No development of hydroelectric power facilities would be allowed.

### **Flood Control**

Flood control dams and levees would be prohibited.

### **Mining**

Subject to regulations that the Secretaries of Agriculture and the Interior may prescribe to protect the values of rivers included in the National System, new mining claims, and mineral leases could be allowed and existing operations allowed to continue. However, mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation and pollution, and visual impairment.

### **Road Construction**

Roads may on occasionally bridge the river area and short stretches of conspicuous or longer stretches of inconspicuous and well-screened roads or railroads could be allowed. Consideration will be given to the type of use for which roads are constructed and the type of use that will occur in the river areas.

### **Agriculture**

A wider range of agricultural uses is permitted. Row crops are not considered as an intrusion of the "largely primitive" nature of scenic corridors as long as there is not substantial adverse effect on the natural-like appearance of a river area.

**Recreation  
Development**

Larger scale public use facilities, such as moderate size campgrounds, public information centers, and administrative headquarters are allowed if such structures are screened from the river. Modest and unobtrusive marinas also can be allowed.

**Structures**

Any concentrations of habitations are limited to relatively short reaches of the river corridor. New structures that would have a direct and adverse effect on river values would not be allowed.

**Utilities**

This is the same as for wild river classification.

**Motorized  
Travel**

Motorized travel on land or water may be permitted, prohibited, or restricted.

**Recreation  
Rivers**

**Timber  
Production**

Timber harvesting would be allowed under standard restrictions to protect the immediate river environment, water quality, scenic, fish and wildlife, and other values.

**Water Supply**

Low dams, diversion works, rip rap, and other minor structures allowed provided the waterway remains generally natural in appearance.

**Hydroelectric  
Power**

No development of hydroelectric power facilities is allowed unless there would be no direct and adverse effect on values qualifying the river for the National System.

**Flood Control**

Straightening, rip-rapping, and other modification of the waterway could be allowed if there would not be a direct or adverse effect on river values. Existing flood control works would be maintained.

<b>Mining</b>	Subject to regulations that the Secretaries of Agriculture and the Interior may prescribe to protect values of rivers included in the National System, new mining claims and mineral leases are allowed and existing operations are allowed to continue. Mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation and pollution, and visual impairment.
<b>Road Construction</b>	Paralleling roads or railroads could occur on one or both river banks. There can be several bridges crossings and numerous river access points.
<b>Agriculture</b>	Lands may be developed for a full range of agricultural uses.
<b>Recreation Development</b>	Campgrounds and picnic areas may be established in close proximity to the river. However, recreational classification does not require extensive recreation development.
<b>Structures</b>	Small communities as well as dispersed or cluster residential developments are allowed. New structures are allowed for both habitation and for intensive recreation use.
<b>Utilities</b>	This is the same as for wild and scenic river classification
<b>Motorized Travel</b>	Motorized travel on land or water may be permitted, prohibited, or restricted. Controls will usually be similar to surrounding lands and waters.