SHAUGHNESSEY NO.
123301

REVIEW NO.
3

EE BRANCH REVIEW

DATE: IN 2-3-84 OUT 2-10-84

FILE OR REG. NO. 359-706

PETITION OR EXP. PERMIT NO.

DATE OF SUBMISSION 11-28-83

DATE RECEIVED BY HED 2-2-84

TD REQUESTED COMPLETION DATE 3-2-84

EEB ESTIMATED COMPLETION DATE 3-2-84

RD ACTION CODE/TYPE OF REVIEW 315/Amendment

TYPE PRODUCT(S): I, D, H, F, N, R, S Fungicide

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. H. Jacoby (21)

PRODUCT NAME(S) Aliette

COMPANY NAME Rhone-Poulenc Inc.

SUBMISSION PURPOSE Proposed Registration of Non-bearing Citrus Use

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
123301	Aluminum tris(o-ethylphosphonate)	80

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EE Branch Review

PESTICIDE NAME Fosetyl-Al

100 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

Proposed registration of Aliette Fungicide for use on non-bearing citrus trees.

100.2 Formulation Information

(from Aliette label)

ACTIVE INGREDIENT:

Aluminum tris (0-ethyl phosphonate) 80%

INERT INGREDIENTS: 20%

100.3 Application Methods, Directions, Rates

(from Aliette label)

"Non bearing Citrus (In all areas except California)

CROP	PEST	RATE	APPLICATION
Citrus non-bearing (trees that will not produce marketable fruit for 12 months after the last application)	Phytophthora foot and root rot.	(lbs/100 gals 5.0	Apply as a foliar spray to run-off at each leaf flush. Nursery trees, re-sets and new plantings should be treated at time of planting. Do not apply more than 400 gallons of spray solution per acre per application. Do not exceed 4 applications per year."

100.4 Target Organisms

(from Aliette label)
Phytophthora foot and root rot

100.5 Precautionary Labeling

(from Aliette label)

"ENVIRONMENTAL HAZARDS do not apply directly to water or wetlands. Do not contaminate water by cleaning of equipment or disposal of wastes."

101 Hazard Assessment

101.1 Discussion

This is a request for the foliar application of Aliette to citrus trees (non-bearing for 12 months after the last application). An application rate of 5 lbs/100 gals is requested on the label with a maximum of 400 gallons of spray solution. This is equal to 21 lbs of product per acre or 16 lbs of active ingredient (a.i.) per acre. This exceeds the previous maximum of 3 lbs a.i./acre by 13 lbs. The following also allows 4 applications per year and excludes this use for the state of California.

101.2 Likelihood of Adverse Effects to Non target Organisms

Exposure

Applications of fosetyl-Al at the maximum suggested rate of 13 lbs pounds per acre provides for the following maximum expected residues, developed per the articles of Hoerger and Kenaga (1972) and Kenaga (1973):

Vegetation Type/Insect/Soil Surface	Expected Concentrations from 16 lbs a.i/A. (ppm)
Sparse foliage (short grasses)	3840
Long grasses	1760
Leafy situations	2000
Dense foliage/ small insects	928
Pods/seeds/large insects	192
Fruits	112
Soil (0.1 inch)	3,525

Estuarine species are expected to be exposed to fosetyl-Al. Attachment I, a map of Florida citrus acreage, indicates that the counties of Pasco, Hillsborough, and Desoto have between 25,000 and 100,000 acres of commercial citrus. Mantee, Charlotte, and Lee counties have less acreage 5,000 to 25,000 acres. Attachment II consists of two maps showing the estuarine areas around the Tampa Bay, Charlotte Harbor, and Caloosahatchee Bay. As one can see both estuarine areas and commercial citrus areas overlap, thus, there is a likelihoo of exposure for estuarine species.

Concerning aquatic contamination, the estimated concentration in a 0.5 foot acre-layer pond is 11.771 ppm if applied directly to the surface of the pond. The hydrolysis of fosetyl-al at pH values between 5 and 9 is less than 10% degradation after one month . Hence, the estimated concentration of direct application would be expected to persist for several months. Though, the material is highly water soluble and, thus, susceptible to dilution. Also, interception by the foliage and evaporation would be expected to limit the amount of chemical reaching water. The labeling limits the further estimating of the expected concentration in water since the interval between applications and the method of application, i.e. mist blower were not available.

To estimate the concentration from runoff a 0.5 foot acre-layer pond the following method was used.
Assumptions:

1. Maximum application rate = 16 lbs a.i./A
2. Drainage basin = 1 A
3. % runoff = 1%
4. Surface area = 1A
5. Average depth = 0.5 ft (6 inches)

$$EEC = \frac{\text{Maximum application rate (lbs a.i./A) x Size of drainage basin (A) x \% runoff (decimal)}}{\text{Surface area of body of water (A) x Average depth (ft x 43560 ft}^2\text{/A x 62.3 lbs/ft}^3}$$

$$EEC = \frac{16 \text{ lbs a.i./A} \times 1\text{A} \times 0.01}{1\text{A} \times 0.5 \text{ ft} \times 43560 \text{ ft 2/A} \times 62.3 \text{ lbs/ft}^3}$$

EEC = 11.8 ppm

However, this runoff calculation does not take into consideration the effect of aerobic microbial degradation of fosetyl-Al. Aerobic studies demonstrate a very short half life. The half life of 1 to 1 1/2 hrs can be expected for these soil types: loamy sand, silt loam, and clay loam soils. For sandy loam soil the half life was even shorter, only 20 minutes. Hence, runoff contribution to the contamination of the pond would be expected to be minimal.

Hazard

Freshwater aquatic organisms do not appear to be affected by this material until concentrations exceed 51.84 ppm as evidenced by the following acute toxicity values:

Species	Test	Results
Rainbow trout	LC_{50}	75.8 ppm (51.4-111.8 ppm)
Bluegill sunfish	LC_{50}	> 150 < 200 mg/l

Species	Test	Results
Daphnia magna	LC_{50}	304 mg/l (178-465 mg/l)

Minimal hazard is expected to freshwater aquatic organisms. However, in a large citrus state, such as, Florida, exposure through drift to the marine and estuarine environment would be expected. Spray drift onto shallow estuarine areas could result in hazardous concentrations. Such drift is more likely when tree height applications are necessary. In addition this route of exposure would allow contact with the marine/estuarine species before the hydrosoil. Soil bacterial breakdown would not be expected to play as significant a role as under the runoff scenario. Concerning the toxicity to marine species, the grass shrimp is the most sensitive of all aquatic species (LC_{50} = 3.6 mg/l). In view of these items, the acute toxicity of fosetyl-Al to marine/estuarine fish and oysters is needed for these species to complete this hazard assessment. Though fosetyl-Al is persistant, chronic studies will be deferred until the acute studies are available.

101.3 Endangered Species

This portion of the review will be deferred until the requested studies are available.

101.4 Adequacy of Toxicity Data

The six basic studies meet the guideline requirements as does the grass shrimp LC_{50} studies. However, two additional studies are needed to complete the hazard assessment:

1. 96-hour LC_{50} for estuarine or marine fish, preferably, on the sheepshead minnow, Cyprinodon variegatus.

2. 48-hour EC_{50} for oyster embryo larvae, preferably, on the American oyster.

Chronic studies will be deferred until the acute studies are available.

101.5 Adequacy of Labeling

This section will be deferred until the risks to marine/estuarine species have been assessed.

102 Classification

This section will be deferred until the risks to marine/estuarine species have been assessed.

103 Conclusions

EEB has reviewed the proposed conditional registration of fosetyl-Al for use on nonbearing citrus. EEB is unable to complete an incremental risk assessment (3(c)(7)finding) for this use because pertinent ecological effects data are lacking. In order to assess the risks associated with this use EEB requires the following data:

1. 96-hour LC_{50} for estuarine or marine fish, preferably, on the sheepshead minnow Cyprinodon variegatus.

2. 48-hour EC_{50} for oyster embryo larvae, preferably, on the American oyster.

Dennis J. McLane, Wildlife Biologist Dennis McLane
Ecological Effects Branch
Hazard Evaluation Division (TS-769) Date: 2-29-84

Raymond W. Matheny Raymond W. Matheny
Head, Review Section No. 1
Ecological Effects Branch
Hardard Evaluation Division (TS-769) Date: 2-29-84

Clayton Bushong, Chief Norman Cook for CB
Ecological Effects Branch 3.1.84
Hazard Evaluation Division Date:

Attachments

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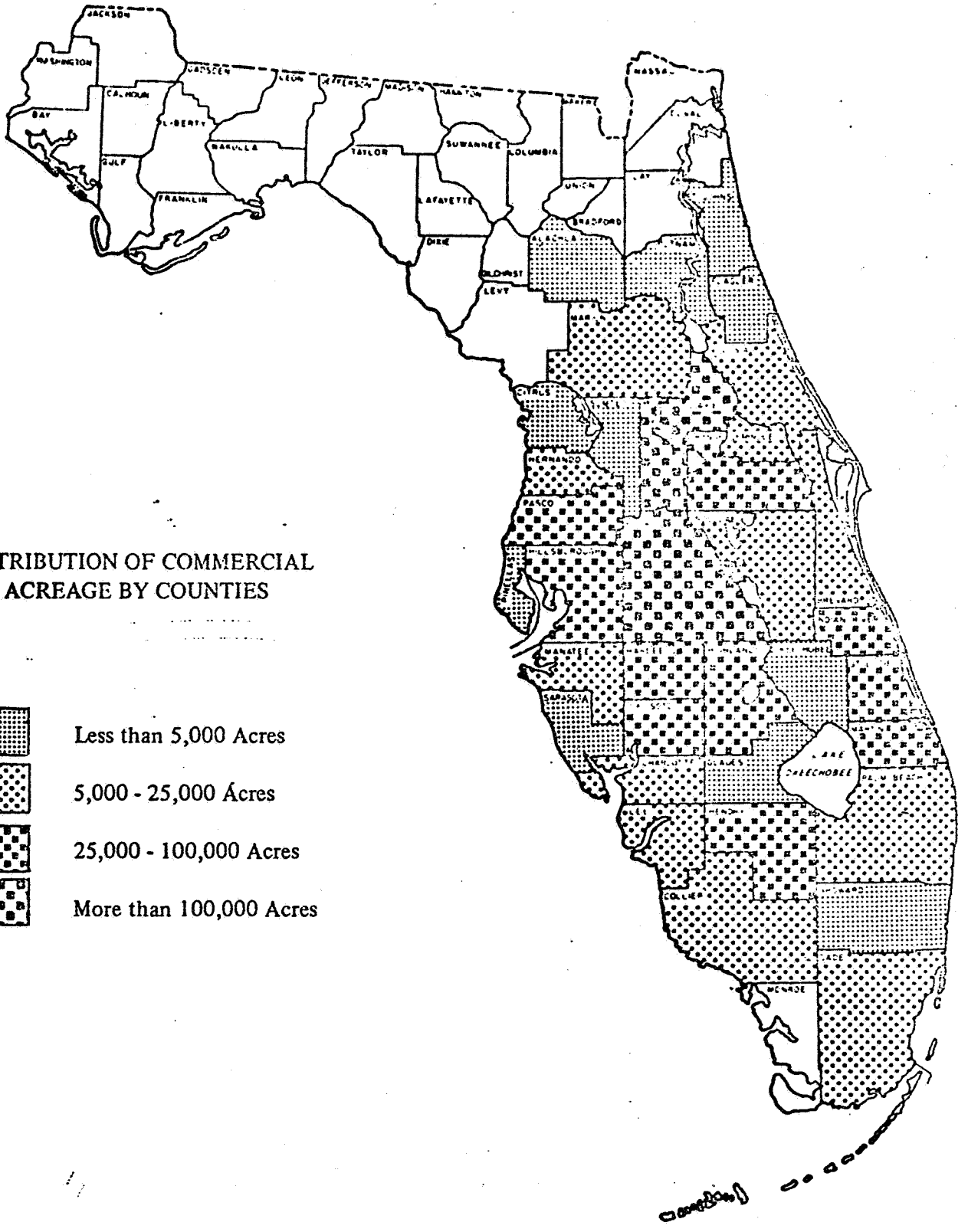

COMMERCIAL CITRUS INVENTORY
AS OF JANUARY 1980

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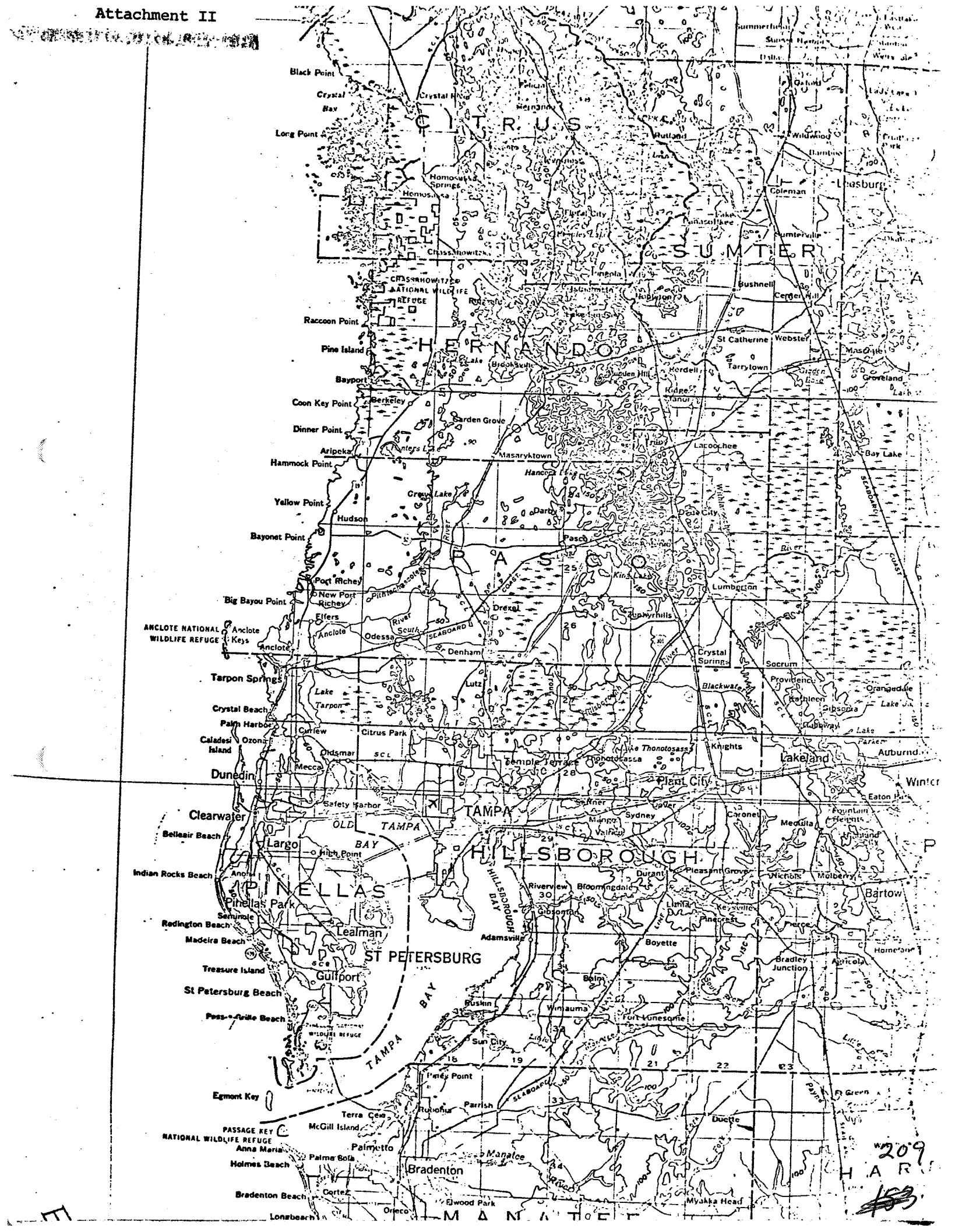
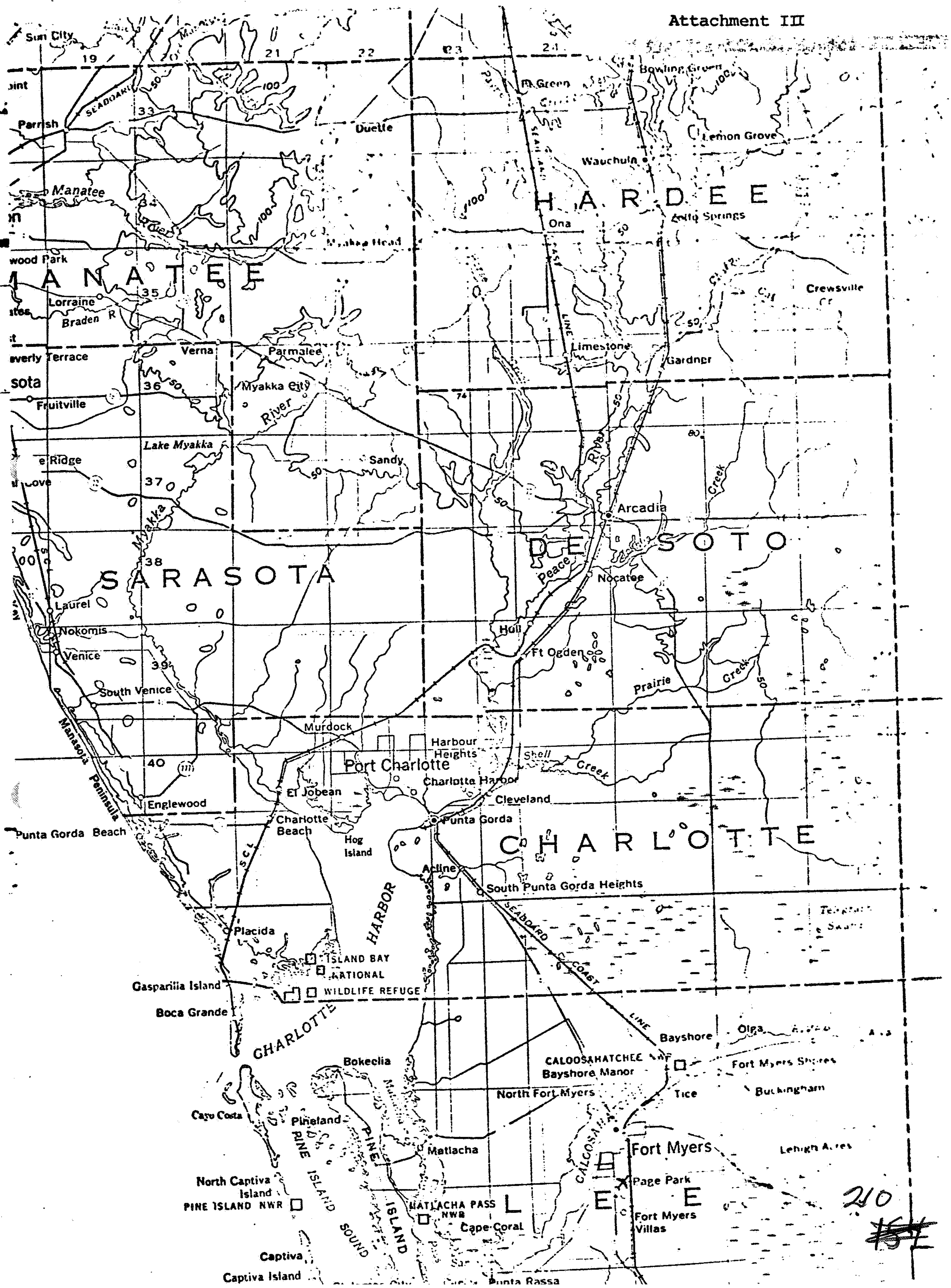
Attachment II



Attachment III



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